

info

ELNOS
GROUP

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**STRATEŠKO
JAČANJE**
NA EVROPSKOM TRŽIŠTU

**STRATEGIC
STRENGTHENING**
AT EUROPEAN MARKET

Veliki jubilej / Great Jubilee:
TRADICIJA DUGA 70 GODINA
70 YEARS LONG TRADITION

Projekti / Projects:
REVITALIZACIJA HE ZVORKNIK
REVITALIZATION OF HPP ZVORKNIK

Projekti / Projects:
LINK ZA BUDUĆNOST ŠVEDSKE MREŽE
LINK FOR FUTURE OF SWEDISH NETWORK



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Dragi prijatelji, poštovani partneri,

Pred vama je poseban broj našeg časopisa. Rekla bih da je čitav svijet Elnos Grupe sažet u uvodnim stranama. Dotakli smo univerzalne teme koje obično pokreću značajne godišnjice i jubileji: odakle smo, gdje smo i kuda idemo? Na ova pitanja odgovore smo potražili kod predsjednika Elnos Grupe Dušana Torbice, ne propustite ovaj intervju. O našem velikom 70-godišnjem jubileu i tome odakle smo, podsjećamo sa posebnim ponosom i pijetetom. U naslovnoj priči, o strateškom jačanju naše Grupe, saznajte kuda idemo.

Univerzalne teme uvijek su otvorene. Iz različitih uglova, one prožimaju sve strane časopisa. Kako je riječ o godišnjaku, veći dio sadržaja posvećen je poslovnoj godini iza nas. To je godina uspjeha i izuzetnih poslovnih rezultata, u sve tri oblasti poslovanja, koje najbolje ilustruju naši projekti i reference.

Nadam se da ćete i u ovom broju otkriti novi, interesantan dio svijeta Elnos Grupe. Naš svijet je bogat tradicijom i uspomenama sa gradilišta, događaja, putovanja, druženja, iz kancelarija, ali i velikim planovima i aktivnostima koji doprinose stvaranju perspektiva i trajnih vrijednosti za nove generacije.

Uživajte čitajući,

Dear friends and partners,

Hereby we introduce you a special issue of our magazine. I would say that entire Elnos Group world is summarized in introductory pages. We touched universal topics, which usually start significant anniversaries and jubilees: where are we from, where are we now and where are we going? We looked for the answers to these questions from Dušan Torbica, the President of the Elnos Group, so do not miss this interview. We would like to remind you where we come from as well as of our 70-years' jubilee proudly and with special piety. In the title story, story on strategic strengthening of our Group, find out where we are heading.

Universal topics are always open. They spread throughout magazine and bring views from different angles. As this is annual issue, most of the contents are dedicated to previous business year. This is a year of success and extraordinary business results in three business areas, which is reflected through our projects and references in the best way.

I hope that you will discover a new and interesting part of Elnos Group world in this issue. Our world is rich in tradition and memories from construction sites, events, trips, offices, and big plans and activities contributing creating perspectives and long-term values for the new generations to come.

Enjoy reading,



Mirjana Šrbac

Glavni i odgovorni urednik / Editor in Chief

Menadžer za korporativne

komunikacije / Manager of Corporate

Communications



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A professional portrait of a middle-aged man with short, light-colored hair and glasses. He is wearing a dark suit, a white shirt, and a striped tie. He is smiling and looking directly at the camera. The background is blurred, showing what appears to be an office or hallway.

Kurs usmjeren na
**DUGOROČNI
RAST**

Long-term growth direction

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“Ponosan sam na stalno jačanje našeg kapaciteta, čiji je cilj dugoročno jačanje kompanije, njene pozicije i rezultata, ali i stvaranje perspektiva i trajnih vrijednosti za nove generacije.”

SR Predsjednik Uprave Elnos Grupe Dušan Turbica, razgovarao je sa nama o rezultatima ostvarenim u 2014., novoosnovanim članicama i predstavnstvima Elnos Grupe i 2015. godini, kao godini velikih jubileja.

U prethodnoj godini ostvareni su najbolji poslovni rezultati Elnos Grupe. Na šta ste posebno ponosni?

Ponosam sam na zaposlene i profesionalnost koju njegujemo na kompletnom tržištu, što nam je i omogućilo stvaranje boljeg rezultata i korektnih odnosa sa investitorima. Takođe sam ponosan na stalno jačanje našeg kapaciteta, čiji je cilj dugoročno jačanje kompanije, njene pozicije i rezultata, ali i stvaranje perspektiva i trajnih vrijednosti za nove generacije.

Otvirate vrata novih tržišta u Evropi. Koja su to tržišta i kakve planove imate u startnoj godini?
Naša Grupa je ove godine proširila svoje djelovanje na prostor Evropske unije i Evropske ekonomski zajednice, osnivanjem novih poslovnih subjekata. Otvaramo se prema tržištu Austrije, Njemačke, Islanda i Slovenije, gdje očekujemo i prve poslove. Naravno, nova tržišta i poslovanje nismo ograničili na samo ove zemlje. Interesantno nam je evropsko tržište, a namjera nam je da se u narednih nekoliko godina aktiviramo i na prostoru Afrike.

Da se podsjetimo, prva kompanija koju ste osnovali u EU jeste Elnos Nordic u Švedskoj. Da li ste zadovoljni rezultatima ostvarenim na tom tržištu?

Veoma smo zadovoljni rezultatima na švedskom tržištu, kao i poslovima koje smo dobili za ovu godinu i koje dogovaramo za naredne godine. Perspektiva Elnos Grupe u Švedskoj je već stabilna. U predojećem periodu namjeravamo kadrovski ojačati tim u Švedskoj, za rad na skandinavskom tržištu, i proširiti portfolio u oblasti trafostanica.

Da se vratimo još dalje u prošlost. Ovo je godina značajnog jubileja, 70 godina od osnivanja Agrovojvodine i 20 godina od kada je taj kolektiv osnovao Elnos BL u Banjaluci. Šta biste istakli

kao najveće ostvarene domete i postavljene zaloge za budućnost?

Osjećam posebno zadovoljstvo i ponos, s obzirom na to da je Agrovojvodina veliko ime u poslovnom svijetu bivše Jugoslavije, prepoznatljiva i aktivna unutar i izvan granica države. Izuzetne poslovne domete ovog giganta, kulturu i tradiciju sa ponosom baštinkom od osnivanja do danas.

Prije desetak godina, naša vizija je bila da postanemo internacionalna elektroenergetska inženjering kompanija. Smatram ostvarenje ove vizije, kao i njen permanentan razvoj, našim najvećim dometom. Istakao bih da je ovaj rezultat postignut kroz dobra kadrovska rješenja i organizaciju unutar kompanije.

Zalog za budućnost je nastaviti sa jačanjem kadrovske strukture i profesionalnog odnosa zaposlenih unutar kompanije prema krajnjem investitoru.

Elnos Grupa je porodična kompanija, čije je poslovanje i razvoj počelo u krugu porodice. Koliko vam je značila ta podrška?

Kada se kreće u porodični biznis, čiji je cilj razvoj biznisa i dobrobiti porodice, onda se i biznis njeguje sa posebnom odgovornošću, baš kao i porodica. U odnosu sa poslovnim partnerima uvijek sam polazio od toga da će, ako napravim neki pogrešan korak, okljati i ime porodice. Zahvaljujući velikoj podršci, razumijevanju i uključivanju porodice u posao, stigli smo do rezultata koje danas imamo. Uz takvu podršku i zajedničko pravljenje planova za kompaniju, mogu reći da sam više nego zadovoljan, i da kroz tu prizmu vidim razvoj kompanije.

Sa jedne strane uspješno njegujete tradiciju, a sa druge podjednako uspješno pratite i globalne trendove. Koja biste strateška partnerstva izdvojili kao najznačajnija za praćenje globalnih trendova?

Dobar odnos sa partnerima je izuzetno značajan u svim sfarama poslovanja. Samo politika dobrih partnerskih odnosa, sa planskim pristupom tržištu, može funkcionišati i imati svoju budućnost. Smatram da je za praćenje globalne vizije biznisa i napretka, najzad i opstanka na tržištu, neophodna bliska saradnja sa vodećim internacionalnim koncernima.

Mi smo potpuno posvećeni stvaranju i jačanju saradnje i strateških partnerstava sa kompanijama koje imaju istu ili sličnu poslovnu politiku, čime se dugoročno stvara perspektiva za poslovnu stabilnost.

Osvrni se i na regionalno tržište. Ponovo je aktivirana saradnja sa Elektroprenosom BiH nakon dužeg niza godina bez njihovog investicionog ciklusa u oblasti inženjeringu.

Osnovna djelatnost naše kompanije i jeste posao u elektroprenosnim kompanijama, bilo da su regionalne ili evropske. Saradnja sa ovim kompanijama jedna je od značajnih karika za stabilnost i kontinuitet našeg poslovanja. Više smo nego zadovoljni što su se stekli uslovi za ponovno aktiviranje investicija u Elektroprenosu BiH, posebno zbog činjenice da smo sa njima započeli neke od prvih poslova koji su nam danas, maltene, primat.

Koja ste nova rješenja ponudili regionalnom tržištu?

Analizirajući zahtjeve i trendove tržišta, odredivali smo pravac razvoja kompanije, portfolija i kadrovske strukture. Izdvojio bih obnovljive izvore energije, kao jednu od najatraktivnijih oblasti energetike u kojoj smo formirali timove za mini-hidroelektrane, vjetroparkove i solarnu energiju. Istakao bih i toplane na biomasu, kao novi segment našeg poslovanja i pozitivan primjer vida toplifikacije koji donosi niz benefita: stabilno napajanje, znatno smanjenu emisiju CO₂ i nezavisnost u snabdijevanju pogonskim energentom.

Elnos Grupa je poznata i po društveno odgovornom poslovanju. Podržali ste mnoge kulturne, obrazovne, sportske i stručne aktivnosti i događaje. Za donatorski rad ovjenčani ste ordenima Svetog Save i dr Nikodima Milaša. Šta je vaš motiv? Na šta ste posebno ponosni?

Svaki pojedinac, kao član društva u kome živi i radi, mora imati odgovornost prema porodici, poslu i društvu u cjelini. U skladu sa tim se mora i ponašati, biti odgovoran i voljan da pomogne u skladu sa svojim mogućnostima. Ista situacija je i u duhovnoj sferi, jer čovjek mora negdje da pripada, a logično je

da pripada svom narodu i vjeri. Normalno je da sam i ponosan na sve rezultate koje sam postigao, oni me dodatno motivišu da radim, stvaram i pomažem.

Imate malo slobodnog vremena. Kako ga najradije provodite?

Svoje slobodno vrijeme najradije provodim sa svojim najbližima, porodicom, a najljepše trenutke provodim sa unucima i unukama.

Vaš kurs je usmjeren ka dugoročnom rastu i postizanju ekonomskog, ekološkog i društvenog napretka. Šta vidite kao najveće izazove u narednom periodu?

Dugoročan plan je praćenje kursa kojim smo krenuli. Najveći izazovi su stabilan i kontrolisan internacionalni razvoj, svima neophodna politička stabilnost u regionu i aktivno praćenje ekonomskih prilika, a interni razvoj kompanije u organizacionom, kadrovskom i tržišnom smislu.



Dušan Torbica, predsjednik Uprave Elnos Grupe / President of the Board of Directors

"I am proud of our capacity constant growth, whose aim is company's long-term strengthening, its position and results, but also creation of perspectives and lasting values for the upcoming generations."

#####

EN Dušan Torbica, the President of the Board of Directors of the Elnos Group talked to us about the results achieved in 2014, newly-established Members and Representative Offices of the Elnos Group and about 2015, being a year of great jubilees.

The best business results were achieved in the Elnos Group in the previous year. What is it that you are especially proud of?

I am proud of employees and professionalism of entire market, which provided us with better results and fair relationships with investors. Besides, I am proud of our capacity constant growth, whose aim is company's long-term strengthening, its position and results, but also creation of perspectives and lasting values for the upcoming generations.

You are opening doors of new markets in Europe. Which markets we are talking about and what plans do you have for this year?

Our Group spread its EU and EEC limits this year by establishing new business entities. We are opening

markets of Austria, Germany, Iceland and Slovenia, where we also expect new projects to be realized. Of course, we have not limited our new markets and business within these countries. We are interested in European market, and we intend to activate on the African market in the years to come.

Let us remind ourselves: the first company you established in the EU is the Elnos Nordic in Sweden.**Are you satisfied with the results accomplished on this market?**

We are very satisfied with the results on the Swedish market, as well as with project we got for this year and the ones we are contracting for the next year. Elnos Group future in Sweden is already stable. In the upcoming period, we intend to strengthen this team in Sweden in staff field, for work in Scandinavian markets, and spread portfolio in the substation area.

Let us go back further in the past. This is the

year of significant jubilees, 70 years since Agrovojvodina has been founded, and 20 year since the Elnos BL has been established in Banja Luka. What achieved goals and future behests would you put in the first plan?

I am especially satisfied and proud since Agrovojvodina was a big name in business world of former Yugoslavia, recognized and active within and out of borders of this state. We have proudly nurtured extraordinary business achievements, culture and tradition of this giant since our establishment up to today.

About ten years ago, our vision was to become international engineering electrical power company. I see accomplishment of this vision, as well as its permanent development, as our highest achievement. I would like to emphasize that this result was accomplished through good staff solutions and organization within the company.

Behests: continue the strengthening of the staff and professional relationship of company's employees for the end Investor.

Elnos Group is a family company, whose business and development started within a family. What has this support meant for you in the past two decades?

Once you start a family business, whose aim is business development and family welfare, then, as same as family, you cherish business with special responsibility. In relationship with business partners, at my start, I have always thought about making a wrong step and embarrass the family. We achieved today's results thanks to big support, understanding

and involvement of the family in the business. With such a support and joint plans made for the company, I would like to say that I am beyond satisfied and that this is the instrument to be used for development of the company.

In one hand, you successfully nurture tradition and in the other hand, you are successful in following in global trends. Which strategic partnerships would you set aside being the most significant for following in global trends?

Good relationship with partners is extremely important in all business spheres. Only the policy of good partner relationships, with planned access to the market, can function and have its future. In order to follow in global vision and improvement as well as survival at the market after all, I believe one need to cooperate with strong international companies. We are fully committed to creating and strengthening cooperation and strategic partnerships with companies that have the same or similar business policies to give long-term prospects for the business stability.

Let us have a look of regional market. You re-activated cooperation with Elektroprenos BiH in the reference of engineering, after many years without their investment period in the field of engineering.

The main business of our company is work with com-

panies dealing with electrical power transmission, regardless the fact they are regional or European ones. Cooperation with these companies is one of significant connections for stability and continuity of our business. We are more than pleased that conditions for re-activation of cooperation with Elektroprenos BiH have been met, especially due to the fact we started some of the first our projects with them, and, even today, they come to the first place.

What new solutions did you offer to the regional market?

We defined company's development, portfolio and staff structure through analyses of market demands and trends. I would like to emphasize renewable energy sources, being one the most attractive energetic fields, where we formed teams for mini hydro power plants, wind farms and solar power. I would also like to emphasize biomass heating plants, as a new segment of our business and a positive example of a heating form, which brings a series of benefits: stable supply, considerable decrease of CO₂ emission and independence in supplying source of energy.

Elnos Group is known of corporate social responsibility as well. You supported many cultural, educational, sports, professional activities and events. You were awarded with Sveti Sava and dr Nikodim Milaš orders for your donation

activities. What is your motive? What are you especially proud of?

Each individual, as a member of society one is living and working in, has to be responsible for their family, business and society as a whole. One has to behave accordingly, be responsible and willing to help in the frame of one's possibilities. Situation is the same in the spiritual sphere since one has to belong somewhere, and it is logical that one belongs to their people and faith. Normally, I am proud of all the results I achieved. They motivate me to work, create and help additionally.

You do not have a lot of spare time. What is your favorite pastime?

My favorite pastime is being with my closest family, and the most beautiful moments are spent with my grandchildren.

You are orientated for long-term growth and achieving economic, ecological and social improvement. What do you see as biggest challenges of the upcoming period?

Log-term plan is to continue following the path we chose. The biggest challenges are controlled international development, as well as political stability in region and actively following of economic conditions, and internally, company development in organizational, staff and market fields.



Sastanak u Upravi Elnos Grupe / Meeting in the Management of Elnos Group

STRATEŠKO JAČANJE

NA EVROPSKOM TRŽIŠTU

Strategic strengthening at European market

Novoosnovane članice i predstavništva težiće da postanu jedan od najpouzdanijih partnera vodećih evropskih kompanija iz oblasti energetike. Cilj nam je da zahvaljujući vrhunskoj profesionalnosti budemo sinonim za kompaniju sa najvišim nivoom standarda.



New-established Members and Representative Offices will strive to become one of the most reliable partners of leading European companies in the electric power field. With a help of our huge professionalism, we have a goal to be a synonym for a company with the highest level of standards.



"Razvoj Elnos Grupe je diktiran dugoročnom strategijom razvoja portfolija i razvoja internacionalnog tržišta, te strategijom razvoja naših resursa i pozicioniranjem kod strateških partnera koji su u velikoj međuzavisnosti"

Borko Torbica,

Izvršni potpredsjednik Elnos Grupe

SK Kontinuitet dobrih poslovnih rezultata i učešće u realizaciji kapitalnih projekata doveli su ne samo do jačanja, već i do značajnog rasta Elnos Grupe. Posebno smo ponosni što smo u 2015. godinu ušli sa dvije nove članice i dva nova predstavništva. Članice su Elnos Vienna i Elnos Croatia, a predstavništva Elnos Germany i Elnos Iceland, od kojih je predstavništvo na Islandu osnovano u prvom kvartalu 2015.

"Razvoj Elnos Grupe je diktiran dugoročnom strategijom razvoja portfolija i razvoja internacionalnog tržišta, te strategijom razvoja naših resursa i pozicioniranjem kod strateških partnera koji su u velikoj međuzavisnosti", izjavio je Borko Torbica, izvršni potpredsjednik Elnos Grupe. On je dodao da će u cilju jačanja i širenja tržišne pozicije novoosnovane članice i predstavništva težiti da postanu jedan od najpouzdanijih partnera vodećih evropskih kompanija iz oblasti energetike.

O ciljevima na novim tržištima Torbica ističe: "Mi želimo izgraditi status kompanije sa izuzetno visokim nivoom inženjerskih znanja, u koja intenzivno investiramo, status kompanije koja ima vrlo striktne procedure u projekt menadžmentu, kao i ekspertne planove tehnolo-

logije i metodologije, te procedure kontrole kvaliteta i bezbjednosti. Cilj nam je da zahvaljujući vrhunskoj profesionalnosti budemo sinonim za kompaniju koja svojim partnerima pruža najviši nivo standarda."

Elnos Grupa je svoj internacionalni razvoj zasnovala, prije svega, na profesionalnosti i kapacitetu inženjeringu, razvijajući dotadašnju i stvarajući novu saradnju sa svjetskim energetskim koncernima na internacionalnom tržištu. Jedan od ciljeva internacionalnog razvoja Grupe jeste dugoročna poslovna stabilnost. Prvi korak na internacionalnom tržištu napravljen je u Skandinaviji. Stvaranjem kompanije Elnos Nordic i realizacijom ne samo brojnih, već i strateških projekata, stvorili smo poziciju izuzetno kvalitetne inženjerijske kompanije.

Realizacijom strategije dugoročnog razvoja, od 2012. godine stvaramo poziciju kompanije u centralnoj Evropi, a izabrali smo Beč, kao izuzetno važan grad centralne i jugoistočne Evrope, za sjedište jedne od naših najvažnijih internacionalnih kompanija.

Otvaranjem predstavništva u Frankfurtu 2015. i pozicioniranjem u Njemačkoj, otvaramo novo, veliko, za nas izuzetno važno tržište.

O poglavlju strateškog jačanja Grupe Torbica zaključuje: „Internacionalizacija je veliki iskorak za Elnos Grupu, ali i za našu privredu uopšte.“

Potpuno novo iskustvo očekuje nas već u junu 2015. godine na Islandu. Pripreme za početak radova na novom projektu su u toku, a izvećemo montažu i podizanje stubova, elektromontažne radove na zamjeni provodnika i ovjesne opreme na dalekovodu 220 kV Sigöldulína 3.

EN Continuity of good business results and participation in realization of the major projects lead not only to strengthening, but also to significant growth of Elnos Group. We are especially proud to start 2015 with two new Members: Elnos Vienna and Elnos Croatia, as well as two new representative office Elnos Germany and Elnos Iceland. In the first quarter of this year, we have started establishment of representative office in Iceland.

"Development of the Elnos Group has been governed by long-term strategy of portfolio development and the development of international markets, as well as the strategy of developing new resources and positioning among the strategic partners who are in great interdependency", said Borko Torbica, Elnos Group Vice President. Mr. Torbica added, in the aim of strengthening and expansion of the market position, new-established Members and Representative Offices will strive to become one of the most reliable sub-contractors of leading European companies in the electric power field with clearly defined portfolio in the field of transmission lines ad substations up to 400 kV, electric power plants and renewable sources of energy.

As far as goals at new markets Torbica points out: "We want to build a status of a company with a very high level of engineering knowledge, in which we invest intensively, the status of the company which has very strict procedures in

„Mi želimo izgraditi status kompanije sa izuzetno visokim nivoom inženjerskih znanja, u koja intenzivno investiramo, status kompanije koja ima vrlo striktne procedure u projekt menadžmentu“

"Development of the Elnos Group has been governed by long-term strategy of portfolio development and the development of international markets, as well as the strategy of developing new resources and positioning among the strategic partners who are in great interdependency "

Borko Torbica,
Elnos Group Vice President



Sa potpisivanja ugovora za rehabilitaciju HE Zvornik / Contract signing for rehabilitation of HPP Zvornik

project management, as well as expert plans technologies and methodologies and quality control procedures and security. With a help of our huge professionalism, our goal is to be a synonym for a company with the highest level of standards.

Elnos Group its international development is conceived primarily on the professionalism and engineering capacity, developing its former and creating new cooperation with the global energy concerns in the international market. One of the goals of international development of the Group is long-term stability.

The first step in the EU market was made in Scandinavia. Creating company Elnos Nordic and implementation of not just numerous, but also strategic projects, we have created the position of extremely high quality engineering company.

The realization of long-term development strategy, from 2012 we create position of the company in Central Europe, and we chose Vienna as an extremely important city of central and southeastern Europe, headquarter of our one of the most important engineering international company.

With the opening of a representative office in Frankfurt in 2015 and positioning in Germany we open a new and extremely important market.

In terms of strategic strengthening of the Group Torbica added: "Internationalization is a major step forward for Elnos Group, but also for our economy in general."

Completely new experience expected us already in June, 2015 in Iceland. Preparations for the work on a new project are already ongoing, and we will perform the installation and erection of towers, electrical installation works on the replacement of conductors and suspension equipment on the 220 kV transmission line Sigöldulína 3.

"We want to build a status of a company with a very high level of engineering knowledge, in which we invest intensively, the status of the company which has very strict procedures in project management"

VELIKI JUBILEJ
GREAT JUBILEE

50
60

T R A D I C I J A D U G A

70

G O D I N A

70 years long tradition

1945

SR Godina 2015. je godina velikih jubileja za Elnos Grupu. Prošlo je 70 godina od osnivanja Agrovojvodine i 20 godina od osnivanja Elnosa BL u Banjaluci, prve Članice Elnos Grupe. Danas je Elnos Grupa internacionalni ugovorni koncern, odgovoran i značajan član zajednica u kojima posluje. A počelo je ovako... Elnos je nastao u Agrovojvodini, privrednom gigantu i lideru biznisa na prostoru bivše Jugoslavije. Agrovojvodina je decenijama bilježila impresivne poslovne rezultate ne samo u Jugoslaviji, već i u svojim predstavništvima u velikim evropskim centrima.

Kao istinski lider u mnogim privrednim oblastima, Agrovojvodina se bavila i elektroenergetikom. Intenzivan rast ove oblasti poslovanja praćen je i organizacionim promjenama, a najznačajnije su dvije. Riječ je o osnivanju specijalizovanih preduzeća, od kojih je prvo Metalektro, osnovano 1966, a drugo, Elnos, 1980. godine.

Elnos dostiže izuzetne poslovne domete, konstantno šireći mrežu predstavništava u zemlji i u inostranstvu. Godine 1995. osniva se ELNOS BL Banjaluka. Od osnivanja do danas, snage Elnosa BL koncentrisane

su na stvaranje i realizaciju svih dugoročnih prilika za rast i razvoj kompanije. Inventivnom, predanom i etičkom realizacijom ove poslovne strategije izgrađena je internacionalna elektroenergetska kompanija Elnos Grupa. Za nas "ništa što je bilo vrijedno u prošlosti ne odlazi", već predstavlja ponos, obavezu i podsticaj da nastavimo poslovanje sa još većom strašću i energijom.

Jubilej će se obilježavati tokom čitave godine, a centralna proslava će biti održana u decembru mjesecu u Beogradu.

EN Year 2015 is a year of great jubilees for Elnos Group. It has been 70 years since establishment of Agrovojvodina in Novi Sad and 20 years since establishment of Elnos BL in Banja Luka, the first Member of Elnos Group. Today, Elnos Group is an international contracting concern responsible and important member of communities where works. It all started like this...

Elnos was established in Agrovojvodina, economic giant and business leader in the area of former Yugoslavia. Agrovojvodina had impressive business results for years not only in Yugoslavia, but also in its

representative offices in big European centers. Being true leader in many economic areas, Agrovojvodina also dealt with electrical power. Intensive growth of this part of business also was accompanied by organizational changes. Two of them are the most significant. We are talking about establishment of specialized companies: Metalektro was established first in 1966, and Elnos was established in 1980.

Elnos achieves extraordinary business goals and spreads network of representative offices constantly, nationally and internationally. In 1995, ELNOS BL Banja Luka was established. Since establishment up

to now, powers of Elnos BL have been concentrated to creation and realization of all long-term opportunities for growth and development of the company. An international electrical power company Elnos Group, was created by inventive, devoted and ethical realization of this business strategy. To us "nothing that was worthy in the past departs", already is pride, responsibility and encouragement to continue business operations with even more passion and energy.

Jubilee shall be celebrated throughout the year, and the main celebration shall be organized in December in Belgrade.

2015

“Ništa što je bilo vrijedno u prošlosti ne odlazi”

Tomas Karlajl



1945-1958

1945. Osnovan Poljostroj Novi Sad, prvo spoljnotrgovinsko preduzeće u Vojvodini i treće u Jugoslaviji. Poljostroj je osnovan odlukom Ministarstva poljoprivrede FNRJ, 26. decembra.

1958. Osnovana je Agrovojvodina, spoljnotrgovinsko preduzeće, spajanjem dva najveća spoljnotrgovinska preduzeća u Vojvodini: Poljostroj i Ratar.

1945 Poljostroj Novi Sad established, the first foreign trade company in Vojvodina and third in Yugoslavia by Decision made by Federal People's Republic of Yugoslavia Ministry of Agriculture on December 26.

1958 Agrovojvodina, a foreign trade company established by merging two biggest foreign trade companies in Vojvodina: Poljostroj and Ratar.

1966-1975

1966. Osnovan je Metalektro, u prvim integracionim procesima u Agrovojvodini.

1975. Najveći integracioni procesi u Agrovojvodini.

1966 First integration processes in Agrovojvodina. Metalektro established.

1975 The biggest integration processes in Agrovojvodina.

1980-1990

1980. Nastao je Elnos Novi Sad, nastanjnjem nove organizacije u Metalektru.

1980-1990. Snažna ekspanzija Agrovojvodine formiranjem predstavništva u: Moskvi, Kijevu, Budimpešti, Pragu, Londonu i Minhenu.

1980 Elnos Novi Sad established by creation of new organization in Metalektro.

1980-1990 Strong expansion of Agrovojvodina by formation of representative offices in Moskva, Kiev, Budapest, Prague, London and Munich.

*"Nothing that was worthy in
the past departs"*

Thomas Carlyle

1995-2002



2009-2010



2012-2015



1995. Elnos Novi Sad otvara predstavništvo u Banjaluci.
1997. Elnos BL se potpuno privatizuje i transformiše u d.o.o.
1998. Formiran sektor inženjeringu.
2001. Elnos BL osniva preduzeće Elnos BL Srbija d.o.o. u Beogradu.
2002. Patentiran i plasiran prvi sopstveni proizvod: UNIPLOM.
1995 Elnos Novi Sad opens a representative office in Banja Luka.
1997 Elnos BL is completely privatized and transformed into Limited Liability Company.
1998 Engineering Sector formed.
2001 Elnos BL established company called Elnos BL Srbija d.o.o. (Elnos BL Serbia LLC) in Belgrade.
2002 UNIPLOM, the first own product patented and produced.

2009. Elnos BL u Podgorici osniva kompaniju Elnos inženjering d.o.o.
2010. Elnos BL širi regionalnu mrežu otvaranjem kompanije u Skoplju.
2010. Formirana Elnos Grupa.
2009 Elnos BL establishes company Elnos inženjering d.o.o. (Elnos Engineering LLC) in Podgorica.
2010 Elnos BL spreads regional network by establishing company in Skopje, FYR Macedonia.
2010 Elnos Group formed.

2012. Osnovan je Elnos Nordic AB u Švedskoj.
2014. Elnos Grupa dobija dvije nove članice u EU: Elnos Vienna i Elnos Croatia. Osnovan je i Elnos Germany, predstavništvo u Frankfurtu.
2015. Elnos Grupa osniva Elnos Iceland, predstavništvo na Islandu.
2012 Realization of first contracts in Nordic market. .
2014 Elnos Group gained two new EU members: Elnos Vienna and Elnos Croatia, Elnos Germany was founded as well, with its representative office in Frankfurt.
2015 Elnos Group establishes a representative office in Iceland, Elnos Iceland.

IZGRADNJA VJETROPARKOVA ojačaće energetski sektor

Construction of wind farms shall strengthen the energy sector



Ana Brnabić, direktorka Continental Wind Serbia / Ana Brnabić, Director of Continental Wind Serbia

Ako Ministarstvo energetike Srbije u prvoj polovini godine usvoji model ugovora o otkupu električne energije u formi koja je prihvatljiva međunarodnim finansijskim institucijama i komercijalnim bankama, započećemo izgradnju vjetroparka Čibuk 1 krajem godine.

If the Serbian Ministry of Energy adopts the model of Purchase Agreement for Electrical Power in a form acceptable to international financial institutions and commercial banks, during the first half of the year, we will start construction of "Čibuk 1" wind farm at the end of the year.



"Najveći problem energetskog sektora Srbije i zemalja regiona je ogromna zavisnost od uvoza. Ova situacija drastično se pogoršala tokom poplava prošle godine, kada praktično nismo imali sopstvenu proizvodnju (velike hidroelektrane nisu mogle da rade, termoelektrane i kopovi uglja su bili poplavljeni) i bili smo primorani da trošimo oko milion evra dnevno na uvoz struje. Iako se ta situacija sada stabilizovala, tokom zime bio je aktuelan uvoz i struje i uglja."

SR Ovo je u intervjuu za naš časopis rekla direktorka Continental Wind Serbia Ana Brnabić, sa kojom smo razgovarali o reformama energetskog sektora, izgradnji dugo najavljivanog vjetroparka Čibuk 1, obnovljivim izvorima energije i pozitivnim primjerima korišćenja ovih oblika energije u Republici Srpskoj.

Projekat izgradnje vjetroparka Čibuk 1, iako započet prije nekoliko godina, još uvijek nije realizovan. Da li ste optimista i mislite li da će i pored brojnih problema ovaj projekat biti završen?

Reforme u energetskom sektoru se dešavaju sporo, ali se bez sumnje dešavaju. Veliki pomaci su se dogodili krajem 2014. godine usvajanjem dva važna zakona koji direktno utiču na razvoj vjetroparkova u Srbiji: Zakona o planiranju i izgradnji i Zakona o energetici. Oba zakonska rješenja su pozitivna za investitore i optimisti smo u odnosu na početak radova, odnosno realizaciju našeg projekta. Očekivanja su da će nadležna ministarstva u najkraćem roku donijeti i podzakonske akte, kako bi se ova oblast do kraja uredila. Mi smo početkom godine potpisali i naš prvi ugovor sa Elektromrežama Srbije – Ugovor o izradi Studije stabilnosti, što je veliki pomak u procesu dobijanja dozvola za priključnu infrastrukturu. Ako Ministarstvo energetike Srbije u prvoj polovini ove godine usvoji model ugovora o otkupu električne energije u formi koja je prihvatljiva međunarodnim finansijskim institucijama, kao što su EBRD, IFC, KfW, OPIC i komercijalnim bankama, mi ćemo početi sa realizacijom našeg projekta krajem godine.

Naš region je najveći zagađivač vazduha u Evropi. Koliki je značaj i dobit od izgradnje vjetroparkova i korišćenja obnovljivih izvora energije i koliko je njihova važnost uopšte prepoznata na našim prostorima?

Izgradnja vjetroparkova će u velikoj mjeri ojačati srpski energetski sektor, doprinijeti ukupnoj energetskoj sigurnosti i znatno umanjiti potrebe za uvozom struje, jer se 70 odsto proizvodnje struje dobija tokom zimskih mjeseci. Procijenjeno je da bi 500 MW instalirane snage vjetroparkova moglo

da zamjeni 90 odsto srpskih potreba za zimskim uvozom struje. S druge strane, Srbija je preuzeo obavezu da do 2020. godine 27 odsto ukupno potrošene energije dolazi iz obnovljivih izvora. Ukoliko ne uspijemo da dostignemo ovaj cilj, postoji vjerovalnoca da ćemo biti prinuđeni da uvozimo zelenu energiju, jer je naša obaveza u vezi sa „potrošnjom“ iz obnovljivih izvora energije, a ne u vezi sa „proizvodnjom“. Na nama je da li mi tu potrošnju hoćemo da postignemo iz domaće proizvodnje ili želimo da je uvezemo. Ukoliko ne dostignemo ovu obavezu ni iz uvoza, sigurno je da ćemo plaćati penale i da će nam to usporiti pristup Evropskoj uniji. U smislu životne sredine, vjetroparkovi će doprinijeti čistoj i zdravoj Srbiji. Vjetroparkovi kapaciteta 1000 MW bi smanjili emisiju ugljen-dioksida za 2,75 miliona tona godišnje. Samo naš projekat Čibuk 1, zamjeniće 350.000 tona ugljen-dioksida, što je oko 152.000 tona benzina godišnje.

Prema informacijama, u Srbiji je do sada izdato 14 građevinskih dozvola za izgradnju vjetroparkova, međutim, još nijedan nije sagraden. Zašto?

Od 2008. do 2009. godine, kada su krenule prve investicije u ove projekte, bila je neophodna ogromna reforma pravnog okvira, a ona je teška sporu. Tek 2011. godine je usvojen prvi zakon o energetici koji je dao okvir za obnovljive izvore energije, ali su podzakonski akti usvojeni sa velikim zakašnjenjem, u januaru 2013. godine. U decembru prošle godine usvojen je novi zakon o energetici, i sada je potrebno brzo usvojiti podzakonske akte, prevashodno model ugovora o otkupu električne energije, kako bi izgradnja konačno mogla da počne. Dakle, bio je to dug i komplikovan proces u toku koga su investitori, članovi Srpskog udruženja za energiju vjetra (SEWEA), do danas u Srbiji investirali oko 30 miliona evra. U narednih tri do pet godina, članice SEWEA su spremne da izgrade vjetroparkove kapaciteta oko 700 MW, što predstavlja ukupnu investiciju od približno milijardu evra.

Prema procjenama, ukupan ekonomski benefit od vjetroparka Čibuk 1 će prevazići troškove (naknadu

za povlašćenu otkupnu cijenu električne energije) za oko 65 odsto. Ukupna direktna finansijska korist za Srbiju tokom 25 godina rada vjetroparka biće oko 260 miliona evra. Od ovoga će oko 130 miliona evra ići direktno u budžet Republike Srbije kroz poreze, oko 55 miliona će biti uloženo u domaće kompanije koje će biti angažovane na izgradnji vjetroparka, između 7 i 10 miliona evra će ići u budžet Opštine Kovin – dva odsto godišnjeg neto profita vjetroparka, oko 15 miliona je za lokalne firme koje će raditi održavanje građevinskih objekata i infrastrukture, itd.

Što se tiče troškova, zbog garantovanih otkupnih cijena, ukoliko se do 2020. godine izgrade vjetroparkovi kapaciteta 500 MW, to će podići finalnu cijenu električne energije te godine za 2,4 odsto, što je 0,2 evrocenta po kWh. Za vjetropark Čibuk 1, ukupni procijenjeni troškovi za državu Srbiju tokom radnog vijeka vjetroparka bi trebalo da iznose oko 165 miliona evra. Direktna finansijska korist daleko prevazilazi troškove. Jednako važno je naglasiti i druge benefite od izgradnje ovog vjetroparka. Na prvom mjestu, to je svakako povratak investicione banke Vlade SAD (OPIC) u Srbiju. Povratak OPIC-a će doprinijeti ekspanziji američkih investicija i pozicionirati Srbiju kao regionalni centar, jer OPIC nije u ovom trenutku prisutan ni u jednoj zemlji u regionu. General Electric (GE) je takođe zainteresovan za veće prisustvo u Srbiji. Ovaj projekat biće korak u tom smjeru.

U javnim nastupima često ističete sve manjkavosti energetskog sistema Srbije, poput neodrživosti, zavisnosti od uvoza, ranjivosti, a povrh svega činjenicu u kojoj mjeri zagađuje vazduh. Očekujete li veće promjene u bliskoj budućnosti?

Održivo rješenje za naš energetski sistem je mnogo veći fokus na energetskoj efikasnosti, kako bismo manje trošili energiju i samim tim smanjili zavisnost od uvoza i okretanje obnovljivim izvorima energije. Ako ovo ne bude naša želja, na takve odluke primoraće nas regulativa na koju smo se obavezali da ćemo je poštovati. Vlada Srbije radi na rješavanju ovih pitanja i treba je podržati da istraje na tom putu.

Kako komentarišete pozitivan primjer koji dolazi iz Gradiške, projekat Toplana na biomasu?

Zelena ekonomija, baš kao i javno-privatna partnerstva su u Srbiji i zemljama regiona još uvijek u povoju i javni sektor se teško odlučuje za ovaj korak. Sve što vodi smanjenju trošenja fosilnog goriva i njegove zamjene izvorima koji su održivi treba pozdraviti i podržati. Srbija treba da uči iz primjera javno-privatnog partnerstva u Opštini Gradiška, jer je model finansiranja velikih infrastrukturnih projekata na bazi javno-privatnih partnerstava budućnost.

Još jedan projekat realizuje se u BiH, a riječ je o TE Stanari, koja će, prema najavama, biti u skladu sa svim evropskim propisima. Da li smatrate da su ovi projekti uvertira u izmjene energetskog sektora ili samo usamljeni pokušaji da se dogode promjene?

Energetski sektor kako Srbije tako i zemalja regiona mora da prestane da zavisi od jednog izvora, odnosno mora da diversifikuje svoju proizvodnju, prije svega, električne energije. Samim tim smanjiće se i problem uvozne zavisnosti, odnosno izaći ćemo iz začaranog kruga u kome se nalazimo decenijama. U zavisnosti od svijesti ljudi, te promjene su brže ili sporije. Nadam se da će cijeli region krenuti brže u tom pravcu, s obzirom na to da su prirodne predispozicije tu, a benefit je jasan.

PISALI STE O JEDNOJ ANKETI U KOJOJ 83 OD-
STO GRADANA NE DOVODI U VEZU ZAGADENJE
VAZDUHA OD TERMOELEKTRANA KOJE LOŽE
UGALJ SA ZDRAVSTVENIM PROBLEMIMA LJUDI,
ALI 92 ODSTO ISPITANIH SMATRA DA SRBIJA
TREBA DA INVESTIRA U OIE. KAKO KOMENTA-
RIŠETE OVE, U NAJMANJU RUKU, APSURDNE
REZULTATE I OVAKAV NAČIN RAZMIŠLJANJA
GRABANA?

ENERGETIKA JE SEKTOR KOJI JE KOMPLEKSAN, A TEK U POSLJEDNJE VRIJEME DOŠAO JE POD LUPU JAVNOSTI, POSEBNO OBOVLJIVI IZVORI O KOJIMA SE PRICA. ČINI SE DA JE TO SVE JOŠ APSTRAKTNO GRADANIMA U SRBIJI. NAŠ ZAJEDNIČKI ZADATAK SA PREDSTAVNICIMA MEDIJA JE DA LJUDIMA PРИБЛИЖИМО ОВЕ RELATIVNO NOVE POJMOVE. POSEBNO TREBA OBJASNITI KOJE SU TO POZITIVNE STRANE OVOG NAČINA PROIZVODNJE ENERGIJE U ODNOSU NA IZVORE KOJI SE NE ODNOSE POZITIVNO NA OKOLINU. IAKO NE POSTOJI DOVOLJNO SVIJESTI O TOME, VAŽNO JE DA POSTOJI TREND KOJI JE POZITIVAN, JER U POSLJEDNJE VRIJEME GRADANI SVE VIŠE PAŽNJE POSVEĆUJU NE SAMO CIJENI, KOJA SVAKAKO JEŠTE PRIMARNA, VEĆ I SAMOM NAČINU NA KOJI JE DOBJENA ENERGIJA. POMACI SU U OVMOGLEDU MALI, ALI OHRAJUJUĆI.

EN This is what Director of Continental Wind Serbia, Ana Brnabić, said during the interview for our magazine, when we spoke about reforms in the energy sector, construction of the long announced wind farm "Čibuk 1", renewable energy sources and positive examples of using this type of energy in Republic of Srpska.

Wind farm Čibuk 1 construction project, although initiated several years ago, has still not been realized. Are you optimistic and do you believe that this project will be completed despite numerous problems?

Reforms have been happening slowly in the energy sector, but there is no doubt that they are happening. There had been large steps forward at the end of 2014 through adoption of two important laws directly influencing development of wind farms in Serbia: Law on Planning and Construction and the Law on Energy. Both legal solutions are positive for investors and we are optimistic concerning the starting of works, i.e. realization of our project. It is expected that the competent ministries will also pass the subordinate legislations in the shortest period possible in order to fully define this field. We also signed our first agreement with Elektromreža Srbije – Agreement on Stability Study Drafting – and this is a major breakthrough in the process of obtaining licenses for connection infrastructure. If the Serbian Ministry of Energy adopts the model of Purchase Agreement for Electrical Power by the end of the year, in a form acceptable to international financial institutions, such as EBRD, IFC, KfW, OPIC and commercial banks, we will start the construction of our project at the end of the year.

This region is the biggest air polluter in Europe. What is the significance and profit from construction of wind farms and use of renewable energy sources, and how much is their importance even recognized in our area?

WWW

"The biggest problem of the energy sector in Serbia and countries of the region is huge dependence on import. This situation has worsened drastically during the last year's floods when we practically had no production of our own (large power plants could not operate, thermal power plants and coal mines were flooded) so we were forced to spend about a million Euro per day on importing electricity. Although this situation has been stabilized, both electricity and coal were imported during the winter."

Construction of wind farms shall greatly strengthen the Serbian energy sector, contribute to overall energy safety and significantly decrease the needs for electricity import, since 70 percent of electricity production is realized during the winter months. The estimate is that 500 MW of installed power of wind farms could replace 90 percent of Serbian needs for winter electricity import. On the other hand, Serbia obliged itself to have 27 percent of the total consumed energy coming from renewable energy sources by 2020. If we fail in reaching this aim, there is a probability that we will have to import green energy – as our obligation is connected with consumption from renewable energy sources, rather than “production”. It is up to us whether we want to reach this consumption from domestic production or we want to import it. If we do not fulfill this obligation from either source, we will certainly pay some penalties and it will slow down our accessing to EU. In the sense of environment, the wind farms will contribute to cleaner and healthier Serbia. The wind farms with 1000 MW capacity would reduce emission of carbon dioxide for 2.74 million tons annually. Our project “Čibuk 1” alone will replace 350,000 tons of carbon dioxide, which is about 152,000 tons of gasoline annually.

According to information, 14 construction permits for construction of wind farms have been issued so far in Serbia, however not even one has been built yet. Why?

Huge reform of legal framework has been required since 2008/2009 when the first investments in these projects started, and the reform was really slow. The first Law on Energy which provided the frame for renewable energy sources was adopted only in 2011, but the subordinate legislations were adopted with great delay, in January 2013. New Law on Energy was adopted in December last year and now the subordinate legal acts need to be adopted fast, primarily the

model of Purchase Agreement for electrical power, in order for construction to start finally. Therefore, this has been a long and complicated process during which the investors, members of the Serbian Wind Energy Association (SEWEA), have invested about 30 million Euros. During the coming three to five years SEWEA members are prepared to construct wind farms with capacity of about 700 MW, which represents a total investment of approximately one billion Euros in Serbia.

According to assessments, the total economy benefit from wind farm "Čibuk 1" will exceed the cost (fee for beneficial purchase price of electrical power) for app. 65 percent.

The total financial benefit to Serbia during 25 years of wind farm operation will amount to app. 260 million Euro. Out of this amount about 130 million Euro will go directly into the Republic of Serbia budget through taxes, about 55 million will be invested in local companies to be engaged in construction of the wind farm, between 7 and 10 million Euro will go to the Kovin Municipality budget, which will be receiving 2 percent of the wind farm total net profit, about 15 million is for the local companies which will work on maintenance of building facilities and infrastructure, etc.

As for the costs, due to guaranteed purchase prices, if wind farms with 500 MW capacity are built by 2020, this will raise the final price of electrical power for that year by 2.4 percent, which represents 0.2 Euromcents per kWh. The total estimated costs to the

state of Serbia for wind farm "Čibuk 1" during the operational life of the wind farm should amount to about 165 million Euro. It is equally important to emphasize the other benefits from construction of "Čibuk 1" wind farm. Firstly, this is certainly the return of USA Government Investment Bank (OPIC) to Serbia. The return of OPIC shall contribute to expansion of American investments and position Serbia as a regional center, since OPIC is currently not present in any of the countries in the region.

General Electric (GE) is also interested in larger presence in Serbia. This project will be a step in that direction.

In public appearances you often emphasize all the shortcomings of the Serbian energy system, such as unsustainability, dependence on import, vulnerability, and on top of all the fact of how much it pollutes the air. Do you expect any major changes in the near future?

A sustainable solution to our energy system is much larger focus on energy efficiency, in order to spend less energy and thereby reduce the dependence on import, as well as turning towards renewable energy sources. If this is not our desire, we will be forced to make such decisions by the regulations which we committed ourselves to comply with. The Serbian Government is working on solving these issues and it should be supported to maintain that course.

How do you comment on the positive example

coming from Gradiška, the project of Thermal Power plant running on biomass?

The green economy, just like public-private partnerships, are still in their infancy and the public sector still has a hard time making this step. Anything that leads to reduction in spending of fossil fuel and its replacement by sustainable sources should be welcomed and supported. Serbia should learn from the example of public-private partnership in the Gradiška Municipality, since the model of financing of large infrastructure projects on the basis of public-private partnerships is the future.

Another project is being realized in BiH, thermal power plant Stanari, which will, according to announcements, be in line with all European regulations. Do you believe that these projects are an introduction in the changes in the energy sector or just lonely attempts for changes to happen?

The energy sector both in Serbia and in countries of the region must cease dependence from a single source, i.e. it must diversify its production of, primarily, electric energy. By doing so, the problem of import dependence will also be reduced, i.e. we will leave the vicious circle in which we have been locked for decades. These changes may be faster or slower, depending on the awareness of the people. I hope that the entire region shall move faster in that direction, considering that the natural predispositions are in place, and the benefits are obvious.



YOU WROTE ABOUT A POLL IN WHICH 83 PERCENT OF CITIZENS DOES NOT ASSOCIATE AIR POLLUTION CREATED BY THERMAL POWER PLANTS USING COAL WITH HEALTH PROBLEMS OF CITIZENS, BUT 92 PERCENT OF THE POLL PARTICIPANTS CONSIDERS THAT SERBIA SHOULD INVEST IN RES (RENEWABLE ENERGY SOURCES). WHAT IS YOUR COMMENT TO THESE, TO PUT IT MILDLY, ABSURD RESULTS AND THIS COURSE OF DELIBERATION BY THE CITIZENS?

ENERGY IS A COMPLEX SECTOR, AND IT HAS COME INTO CITIZEN'S FOCUS JUST LATELY, ESPECIALLY THE RENEWABLE SOURCES CURRENTLY BEING DISCUSSED, BUT IT SEEMS THAT IT IS STILL ALL ABSTRACT TO THE CITIZENS IN SERBIA. OUR JOINT TASK WITH THE MEDIA REPRESENTATIVES IS TO MAKE THESE RELATIVELY NEW TERMS CLOSER TO THE PEOPLE. THE POSITIVE SIDES OF THIS MANNER OF ENERGY PRODUCTION IN RELATION TO SOURCES WHICH DO NOT HAVE POSITIVE EFFECTS ON THE ENVIRONMENT SHOULD BE ESPECIALLY EXPLAINED. ALTHOUGH THERE IS INSUFFICIENT AWARENESS IT IS IMPORTANT THAT THERE IS A POSITIVE TREND, AS MORE CITIZENS HAVE BEEN PAYING ATTENTION LATELY NOT ONLY TO THE PRICE, WHICH OF COURSE IS THE PRIMARY INTEREST, BUT ALSO TO THE MANNER OF PRODUCING THE ENERGY. STEPS IN THIS DIRECTION ARE SMALL, BUT ENCOURAGING.

NOVI PROJEKTI

ELNOS GRUPE

New projects of Elnos Group

SR

INVESTITOR ELEKTROPRENOS BIH:

- Izgradnja DV 110 kV Kotor Varoš-Ukrina, ugradnja opreme i građevinski radovi;
- DV 35/110 kV Mrkonjić Grad-Šipovo, projektovanje, ugradnja opreme i građevinski radovi na rekonstrukciji;
- DV 220 kV Kakanj-Prijedor, zamjena izolacije na dalekovodu;
- TS 110/x kV Ukrina, projektovanje i izvođenje radova na izgradnji dalekovodnog polja 110 kV za Kotor Varoš;
- TS Trebinje, nabavka i ugradnja ormara zaštite i upravljanja i ostale nedostajuće opreme za trafo polja transformatora 220/100 kV, 150 MVA.

EN

INVESTITOR ELEKTROPRENOS BIH:

- Construction of TL 110 kV Kotor Varoš-Ukrina, equipment installation and construction works;
- TL 35/110 kV Mrkonjić Grad-Šipovo, design, equipment installation and construction works;
- TL 220 kV Kakanj-Prijedor, isolation replacement;
- SS 110/x kV Ukrina, projecting and execution of the works on construction of TL bay 110 kV Kotor Varoš;
- SS Trebinje, supply and installation of cabinets for protection and control, and other equipment for transformer bay 220/100 kV, 150 MVA.



SR

- Nova TS 110/20 kV Krnješevci, izrada tehničke dokumentacije i izgradnja po sistemu 'ključ u ruke';
- Izgradnja novog DV 35 kV u HE Elektromorava Ovčar Banja-Međuvršje;
- Termoelektrana Kostolac, rekonstrukcija RP 110 kV;
- TS 35/10 kV Jug Novi Pazar, rekonstrukcija reljene zaštite i daljinskog upravljanja;
- Kompletni radovi na održavanju trafostanica 110/x kV za Elektrovojvodinu;
- Izmještanje i održavanje DV 400, 110, 35 i 10 kV u TE Kostolac;
- DV 400 kV (br. 453) Beograd 8-Pančeva 2, uvođenje u TS Beograd 20.

EN

- New SS 110/20 kV Krnješevci, making of technical documentation and construction per "turn-key" principle;
- Construction of new TL 35 kV in HPP Elektromorava Ovčar Banja-Međuvršje;
- Thermal Power Plant Kostolac, upgrade of SS 110 kV;
- SS 35/10 kV Jug Novi Pazar, upgrade of relay protection and remote control;
- Entire works of maintenance of substation 110/x kV for Elektrovojvodina;
- Relocation and maintenance of TL 400, 110, 35 and 10 kV in Thermal Power Plant Kostolac;
- TL 400 kV (no. 453) Belgrade 8 -Pančeva 2, induction into the SS Belgrade 20.

SR

- > TS Pljevlja i TS Ribarevina, zamjena postojeće zaštite;
- > Izgradnja nove TS 35/10 kV Popovići;
- > TS 400/220/110 kV Pljevlja 2, rekonstrukcija sistema sopstvene potrošnje;
- > TS 110/35 kV Nikšić, zamjena transformatora 110/35 kV, 32 MVA;
- > DV Kotor-Tivat, izgradnja novog dalekovoda;
- > DV Budva-Tivat, zamjena provodnika.

EN

- > SS Pljevlja and SS Ribarevina, replacement of the existing protection;
- > Construction of new SS 35/10 kV Popovići;
- > SS 400/220/110 kV Pljevlja 2, system reconstruction of own consumption;
- > SS 10/35 kV Nikšić, transformer replacement 110/35 kV, 32 MVA;
- > TL Kotor-Tivat, construction of new transmission line;
- > TL Budva-Tivat, conductors replacement.

**SR**

- > DV 400 kV Hjalta-Vittersjo, zamjena električnih instalacija;
- > Novi DV 130 kV Korsberga-TS Tappan, kompletna elektroinstalacija;
- > Novi DV 130 kV Djuptjarn-Nederkalix, montaža čeličnih stubova i kompletna elektroinstalacija;
- > DV 130 kV Lärkeröd-Mörarp i DV 2x130 kV Mörarp-Landskrona, izvođenje radova na zamjeni postojećeg užeta OPGW-om;
- > TS Vietas, montaža VN opreme i sabirnica 400 kV, rekonstrukcija ulaza i izlaza DV 400 kV, polaganje 20 kV kabla za vezu generatora sa transformatorom, polaganje komandno signalnih kablova i ormara zaštite.

**EN**

- > TL 400 kV Hjalta-Vittersjo, replacement of electrical installations;
- > New TL 130 kV Korsberga-SS Tappan, entire electrical installations;
- > New TL 130 kV Djuptjarn-Nederkalix, erecting steel towers and entire electrical installations;
- > TL 130 kV Lärkeröd-Mörarp and TL 2x130 kV Mörarp-Landskrona, works execution on replacement of the existing OPGW rope;
- > SS Vietas, installation of high voltage equipment and busbars 400 kV, reconstruction of the inputs and outputs of TL 400 kV, 20 kV of cable imposition for the connection of generator to the transformer, taking the command signal cables and cabinets for protection.

**SR**

- > DV 220 kV Sigöldulína 3, montaža i podizanje stubova, elektromontažni radovi na zamjeni provodnika i ovjesne opreme.

EN

- > TL 220 kV Sigöldulína 3, assembly and erection of towers, electrical installation works- conductors replacement and suspension equipment.



REVITALIZACIJA HE ZVORNIK

Revitalization of HPP Zvornik



Projekat podrazumijeva kompletну rehabilitaciju četiri agregata i transformatorske stanice 110 kV, projektovanje i izvođenje elektromontaškog dijela, isporuku i puštanje u rad zaštitno-upravljačkih uređaja i isporuku i puštanje u rad upravljačkog sistema elektrane.

Project includes complete upgrade of four generators and 110 kV substation, designing and performance of electric-mechanical phase, delivery and commissioning of protection and control devices as well as power plant control system delivery and commissioning.





HE Zvornik - aneks i plato sa novim 110 kV postrojenjem / HPP Zvornik - annex and the plateau with a new 110 kV plant

POSLJE DRUGOG SVJETSKOG RATA, POTREBA ZA INDUSTRIJSKIM RAZVOJEM ZEMLJE PODRZUMIJEVALA JE, IZMEDU OSTALOG, I DALJU IZGRADNJU HIDROELEKTRANA. PRVA U NIZU BILA JE HE ZVORNIK. NA DEVEDESET TREĆEM KILOMETRU OD UŠĆA DRINE U SAVU, A ZBOG POVOLJNOG PADA, BLIZINE NASELJA I POVEZANOSTI BITNE ZA TRANSPORT GRAĐEVINSKOG MATERIJALA, 1948. GODINE ZAPOČELA JE IZGRADNJA KOLOSA. ZA 60 GODINA RADA, HIDROELEKTRA NA ZVORNIK PROIZVELA JE PREKO 25 MILIJARDI KILOVAT ČASOVA ELEKTRIČNE ENERGIJE, PREBACUJUĆI PLAN PROIZVODNJE SKORO SVAKE GODINE, ČIME JE U POTPUNosti OPRAVDALA UЛОZENE NAPORE I SREDSTVA U NJENU IZGRADNJU.

SR Sa ponosom možemo najaviti da će naša kompanija u predstojećem periodu biti dio velikog projekta revitalizacije Hidroelektrane Zvornik. Po ugovoru, zaduženi smo za projektovanje, nabavku, ugradnju i puštanje u rad elektronačinske opreme.

Glavni izvođač radova je Voith Hydro, a investitor Elektroprivreda Srbije.

Do sada je završen glavni projekat, dok je u planu da izvođački bude finalizovan do okto-

bra ove godine, poslije čega se očekuje početak radova.

Potpisan je i aneks ugovora za harmonizaciju i nostrifikaciju kompletног projekta revitalizacije HE Zvornik, što predstavlja dodatni segment ovog ugovora.

Prilikom izrade projektne dokumentacije saradivali smo sa partnerima, Institutom Mihajlo Pupin Automatika i Projekt inženjering i preduzećem IEE.

Projekat podrazumijeva kompletну rehabilitaciju četiri agregata i transformatorske stанице 110 kV, projektovanje i izvođenje elektromontažinskog dijela, isporuku i puštanje u rad zaštитno-upravljačkih uređaja i isporuku i puštanje u rad upravljačkog sistema elektrane.

Nostrifikacija i harmonizacija odnose se na mašinski dio projekta, za koji su zaduženi naši partneri iz Voith-a, dok je naše zaduženje u ovom dijelu usklajivanje sa standardima Republike Srbije i kompletiranje glavnog projekta revitalizacije HE Zvornik.

Početak radova za sada je planiran za oktobar ove godine, nakon čega će se raditi sukcesivno, na četiri agregata. Krajnji rok za završetak radova je kraj 2019. godine.

Hidroelektrana Zvornik, jedna je od najstarijih u sastavu Elektroprivreda Srbije, izgrađena i puštena u rad prije šest decenija.

Prvi agregat u ovoj hidroelektrani pušten je u rad 1955. godine i HE je do danas radila bez

većih problema, međutim, došlo je vrijeme kada je potrebno da se uradi revitalizacija.

Ugovor za rehabilitaciju HE Zvornik, vrijedan 63,7 miliona evra, još u julu 2013. godine potpisali su predstavnici Elektroprivreda Srbije, Privrednog društva Drinsko-Limske Hidroelektrane i kompanije Voith Hydro.

„HE Zvornik je jedna od najstarijih hidroelektrana, radi od 1955. godine i već dugo čeka na modernizaciju, a podmlađivanje ove hidroelektrane veoma je značajno za energetski sistem“, istakao je generalni direktor Elektroprivreda Srbije Aleksandar Obradović, koji je u to vrijeme bio vršilac dužnosti generalnog direktora.

Poslije potpisivanja ugovora, održan je sastanak sa svim izvođačima, isporučiocima opreme, stručnim timom i konsultantima, a dogovoren su osnovni principi funkcionisanja realizacije projekta.

Očekuje se da će revitalizacijom Hidroelektrane Zvornik, njen radni vijek biti produžen za dodatnih 30 godina, a ugradnjom potpuno nove elektro i mašinske opreme, biće povećan stepen korisnosti i efikasnosti.

Osim toga, troškovi održavanja će se smanjiti, jer će biti instalirana nova oprema sa boljim tehničkim karakteristikama, materijalima i tehnologijom.

EN We are proud to announce that our company is going to be a part of this big Hydro Power Plant



Trafostanica 110/35 kV u HE Zvornik / Substation 110/35 kV in HPP Zvornik

Zvornik revitalization project in the upcoming period. In accordance with the contract, we are in charge of design, purchase, installation and commissioning of electric-mechanical equipment.

The main Contractor is Voith Hydro, and the Electric Power Industry of Serbia is the Investor.

The main design has been completed so far, and there is a plan to complete the executive design by October of the following year, and work performance start is expected afterwards. Annex to the contract for adjustment and validation of entire HPP Zvornik revitalization project was also signed, which is additional segment of this contract.

While making project documentation, we cooperated with partners - Institute Mihajlo Pupin Automation, Project Engineering and IEE.

Project includes complete upgrade of four generators and 110 kV substation, designing and performance of electric-mechanical phase, delivery and commissioning of protection and control devices as well as power plant control system delivery and commissioning.

Validation and adjustment refer to mechanical part of the project, which is in charge of our Voith partners, whereas, in this part, we are in charge of adjustment with standards of Republic of Serbia and completing the HPP Zvornik revitalization main design.

For now, it is planned to start work perfor-

mance in October this year, and works are going to be performed on four generators consecutively. Work performance deadline is the end of 2019.

Hydro Power Plant Zvornik, is one of the oldest in the Electric Power Industry of Serbia, and it was constructed and commissioned six decades ago.

The first generator of this hydro power plant was commissioned in 1955 and HPP has worked with no significant problems up to now, however, it is time for revitalization.

HPP Zvornik revitalization contract, amounting to EUR 63.7 mil, was signed in July 2013 by representatives of Electric Power Industry of Serbia, Company Drina-Lim Power plants and company Voith Hydro.

"HPP Zvornik, one of the oldest ones, has been working since 1955 and has been waiting for modernization for long time. Renewal of this hydro power plant is very important for electrical power system", said Aleksandar Obrađović, the General Manager of the Electric Power Industry of Serbia, who was acting Manager at the time.

After contract signing, there was a meeting held with all the contractors, equipment suppliers, team of experts and consultants, where basic principles of project realization were established.

It is expected that revitalization of the hydro

power plant Zvornik shall exceed its operation time for another 30 years and its efficiency and benefit shall be upgraded by installation of new electric and mechanical equipment.

Besides, maintenance costs shall be decreased since new better equipment of better technical characteristics, materials and technology shall be installed.

AFTER THE WORLD WAR II, NEEDS FOR COUNTRY'S INDUSTRIAL DEVELOPMENT INCLUDED, AMONG OTHER TASKS, FURTHER HYDRO POWER PLANT CONSTRUCTION. HPP ZVORNIK WAS THE FIRST IN A LINE. THE CONSTRUCTION OF COLOSSUS BEGAN IN 1948 AT THE NINETY-THIRD KILOMETER FROM THE RIVER DRINA'S DELTA TO THE RIVER SAVA, DUE TO APPROPRIATE SLOPE, VICINITY OF SETTLEMENT AND COMMUNICATION SIGNIFICANT FOR TRANSPORT OF CONSTRUCTION MATERIALS. IN 60 YEARS OF OPERATION, HPP ZVORNIK PRODUCED OVER 25 BILLION kWh OF ELECTRICITY, EXCEEDING THE PRODUCTION PLAN IN ALMOST EVERY YEAR, WHICH COMPLETELY JUSTIFIED EFFORTS AND INVESTMENTS IN ITS CONSTRUCTION.

Izgradnja „Kućne turbine” za HE Bočac

Construction of “Auxiliary turbine” of HPP Bočac



Ugovor za rekonstrukciju sopstvene potrošnje, odnosno izgradnju pomenute turbine je obuhvatio izradu projektne dokumentacije građevinske, mašinske i elektro faze, te izvođenje radova po pojedinim fazama, i predstavlja prvi projekat ovakve vrste za našu kompaniju.

Contract for local consumption upgrade, i.e. construction of mentioned turbine, included making project documentation for construction, mechanical and electrical phase, work performance within individual phases, and this represents the first project of this kind for our company.



Hidroagregat – Kućna turbina / Hydro generator – Auxiliary turbine

U okviru projekta Rekonstrukcija sopstvene potrošnje HE Bočac, planirana je izgradnja Kućne turbine (hidroagregata) snage 710 kVA, koja će proizvesti energiju putem 35 kV dalekovoda, koji u potpunosti pripada HE Bočac, plasirati na 35 kV sabirnice rasklopog postrojenja, a zatim preko kućnih transformatora 35/0.4 kV distribuirati na sopstvenu potrošnju. Izgradnja predmetnog objekta planirana je u okviru postojeće hidroelektrane Bočac, a investitor je ZP Hidroelektrane na Vrbasu a.d. Mrkonjić Grad.

Osim uloge napajanja i eventualne rezerve vlastite potrošnje, u periodu malih voda, kućni agregat treba da smanji rad agregata HE Bočac u pogledu obezbeđenja biološkog minimuma, odnosno dopunjavanja kompenzacionog bazena. U periodu velikih voda, kućna turbina bi energetski iskoristila dio suvišnog protoka koji bi se morao regulisati prelivom.

Ugovor za rekonstrukciju sopstvene potrošnje, odnosno izgradnju pomenute turbine je obuhvatio izradu projektne dokumentacije građevinske, mašinske i elektro faze, te izvođenje radova po pojedinim fazama, i predstavlja prvi projekat ovakve vrste za našu kompaniju.

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Ovaj objekat se sastoji iz vodozahvata, cjevovoda i mašinske prostorije sa hidroagregatom i trafostanicom. Konceptom je predvideno da se voda zahvata na samom izvodu iz postojeće brane na koti 249,7 m i cjevovodom koji će biti postavljen pored lokalnog puta koji vodi do mašinske hale, koja se nalazi na lijevoj obali Vrbasa, 150 m nizvodno od brane.

Građevinski objekat se sastoji od podzemne mašinske prostorije u kojoj je smještena upravljačka oprema i nadzemne trafostanice sa transformatorom 35/0.4 kV i srednjenačnim 35 kV rasklopnim postrojenjem. Povezivanje na postojeću 35 kV mrežu je predviđeno kablovskom vezom do novoprojektovane TS 35/0.4 kV Penića kuće.

U mašinskoj hali je instaliran hidroagregat

snage 710 kVA, koji se sastoji od Fransis turbine i trofaznog sinhronog generatora. Za montažu i održavanje opreme je ugrađen portalni kran nosivosti 63 kN. Na uzdignutom platou unutar mašinske hale smješteni su upravljački ormari i ormari sopstvene potrošnje, sa sistemom rezervnog napajanja.

Kućna turbina je u potpunosti automatizovana i predviđena za rad bez posade, a koncept upravljanja turbinom zasnovan je na SCADA hardveru i softveru, koji omogućava praćenje stanja pojedinih elemenata, kao i upravljanje pojedinih elementima hidroelektrane. Hidroelektrana je projektovana za rad paralelno u mreži i za izolovani (ostrvski) rad u slučaju ograničenog i kontrolisanog opterećenja. U slučaju ispadanja mreže, hidroelektrana kontrolisano prelazi na izolovani rad, a kada se na mreži ponovo uspostavi nominalni napon, mašinski agregat automatski sekvencialno nastavlja sa radom paralelno s mrežom.

Mašinski agregat može po izboru da se pogoni ručno ili automatski. U automatskom pogonu mašinskim agregatom upravlja regulator po algoritmu da se protok vode održava konstantnim.

Automatizacija rada se obavlja pomoću mjerne-senzorskih i izvršnih elemenata razmještenih po mašinskom agregatu, cjevovodu i vodozahvatu, a povezani su na programabilni kontroler koji prema zadatom algoritmu prikuplja informacije i izdaje upravljačke naredbe. Kompletna slika upravljanja, kao i pogonsko stanje opreme mogu se pratiti lokalno i daljinski kroz HMI postavljen lokalno, na vrata upravljačkog ormara i daljinski kroz SCADA aplikaciju.

EN In the frame of the project Upgrade of local consumption within the HPP Bočac, it was planned to construct auxiliary turbine (hydro generator) of 710 kVA, which would transfer produced energy through 35 kV transmission line, which is property of the HPP Bočac, to 35 kV switchgear bus bars and distribute it for local consumption through 35/0.4 kV auxiliary transformers afterwards. Construction of the subject facility is planned in the area of the existing hydro power plant Bočac, and Investor is ZP Hidroelektrane na Vrbasu a.d. Mrkonjić Grad (Vrbas Hydro Power Plants).

Apart from the supply role and possible local consumption reserve, in the period of low water levels, this auxiliary generator should decrease the work of HPP Bočac generator in the sense of

providing biological minimum, i.e. compensation basin charging. In the period of high water levels, auxiliary turbine would energetically use a part of extra flow, which had to be controlled through overflow.

Contract for local consumption upgrade, i.e. construction of mentioned turbine, included making project documentation for construction, mechanical and electrical phase, work performance within individual phases, and this represents the first project of this kind for our company.

This facility consists of water intake, pipeline and engine room with hydro generator and substation. The concept envisions to take water at the outtake itself from the existing dam at the elevation 249.7 m through pipeline that is to be installed next to local road leading to the engine room at the left bank of the River Vrbas, i.e. 150 m downstream the dam.

Construction structure consists of underground engine room containing control equipment and surface substation with 35/0.4 kV transformer and medium voltage 35 kV switchgear. Connection to the existing 35 kV power line is planned through cable connection up to newly designed SS 35/0.4 kV Penića kuća.

The engine hall contains installed 710 kVA hydro generator, which consists of Francis turbine and three-phase synchronous generator. 63 kN portal crane is installed for equipment mounting and maintenance. Control cabinet and local consumption cabinet with back-up supply

system are located at the elevated plateau inside the engine room.

Auxiliary turbine is completely automatic and planned for operation without staff, and turbine control concept is based on SCADA hardware and software, which provides possibility to monitor the situation of certain segments, as well as control over certain segments within the hydro power plant. Hydro power plant was designed for parallel and isolated (island) operation in case of limited and controlled load. In case of power line cut off, hydro power plant is controlled to switch to isolated operation, and once the power line achieves the rated voltage, mechanical generator continues the parallel work with power line automatically and sequentially.

Mechanical generator can be manually or automatically driven. In automatic drive, regulator controls the mechanical generator in the line with algorithm to keep the water flow constant.

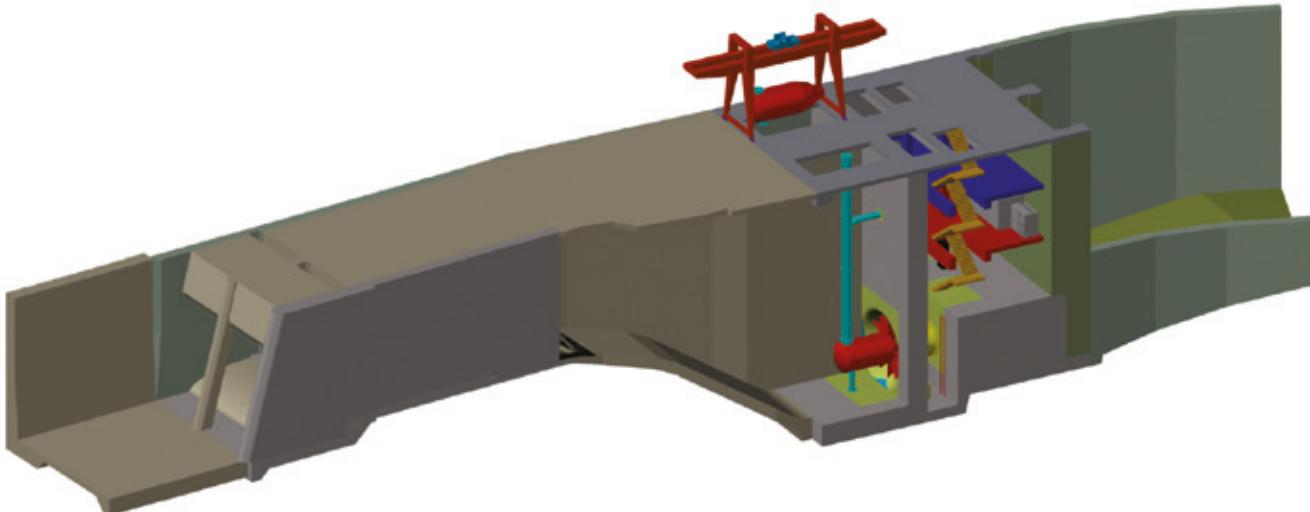
Automatic operation is performed through measuring-sensor and executive elements located within the mechanical generator, pipeline and water intake, and are connected to programmable controller, which collects information and sets control orders in line with the set algorithm. Entire control image, as well as equipment drive condition could be followed locally and remotely - through HMI installed locally at the control cabinet door, and remotely through Supervisory Control And Data Acquisition application.



Pristupni plato Kućne turbine / Access plateau of Home turbine

Izgradnja mini-hidroelektrane Bočac 2

Building of mini hydro power plant Bočac 2



3D model MHE Bočac 2 / 3D model MHPP Bočac 2



MHE Bočac 2 prvi je projekat izgradnje nove hidroelektrane na kojem naša kompanija predvodi kompletну elektromehaničku fazu i predstavlja jedan od najzahtjevnijih i najatraktivnijih projekata.

MHPP Bočac 2 is the first project of construction new hydro power plant where our company is the leader of entire electromechanical and hydro mechanical phase and it represents one of the most demanding and most attractive projects.

Sr Ugovor za isporuku i ugradnju elektromehaničke opreme za MHE Bočac 2, koji smo potpisali prošle godine, obuhvatuje izradu proizvodne tehničke dokumentacije, isporuku i montažu opreme i funkcionalno ispitivanje i puštanje elektrane u rad.

Ovaj projekat ostvarujemo kao glavni ugovarač u saradnji sa investitorom ZP Hidroelektrane na Vrbasu a. d. Mrkonjić Grad i našim konzorcijalnim partnerom Andritz Hydro S.A.S, dok je dio projekta još jedan član Elnos Grupe, Elnos BL Beograd.

Mini-hidroelektrana Bočac 2 prvi je projekat izgradnje nove hidroelektrane, u okviru koga naša kompanija predvodi kompletну elektromehaničku fazu, a predstavlja jedan od najzahtjevnijih i najatraktivnijih projekata. Predviđeni rok za završetak projekta je 2016. godina.

„Realizacija ovog projekta ima značaj kako sa ekonomskog, tako i sa energetskog stanovišta. Osim toga, izgradnjom novih objekata povećala

bi se mogućnost izvoza električne energije, a zapadni dio Republike Srpske bi bio pouzdaniji u snabdijevanju električnom energijom“, naglasio je direktor HE na Vrbasu Nedeljko Kesić.

Realizacija izgradnje MHE Bočac 2 planira se proširenjem postojeće brane kompenzacionog bazena HE Bočac. U MHE Bočac 2 ugradit će se dva proizvodna agregata sa horizontalnim kapsulnim turbinama tipa Kaplan – dvostruko regulisane i sinhronim generatorima čiji su rotori sa stalnim magnetima. Instalirani protok HE je 110 m³/s, a nominalni pad HE je 10 m. Turbinski agregati imaju instalirani protok od 55 m³/s, dok je minimalni protok 15 m³/s, s tim što agregati neće raditi sa protokom manjim od 20 m³/s, koliko iznosi garantovani proticaj rijeke Vrbas.

Elektrana će tokom eksploracionog perioda raditi sa čestim promjenama protoka i pada. Uloga kompenzacionog bazena HE Bočac mora se zadržati i nakon izgradnje MHE Bočac 2. Njezina uloga je da kompenzacioni bazen svojom

zapreminom omogućuje vršni rad HE Bočac, što znači da će rad MHE Bočac 2 biti uslovjen omogućavanjem pravovremenog pražnjenja kompenzacionog bazena.

Specifičnost MHE Bočac 2 jeste izvedba hidroagregata koji će u potpunosti biti potopljen u vodu, te montaža hidromašinske opreme na koti koja je 21 m ispod kote puta i pristupnog platooa na kojem su planirani otvori za montažu opreme. Montaža elektro-mašinske i hidromehaničke opreme biće izuzetno zahtjevna i praćena elaboratima i detaljnim planiranjem pojedinih faza.

EN Contract for delivery and installation of electromechanical and hydro mechanical equipment for the MHPP Bočac 2, which we signed last year, included making production technical documentation, equipment delivery and installation as well as functional testing and commissioning of the power plant.

We perform this Project as the main contractor cooperating with the ZP Hidroelektrane na Vrbasu a. d. Mrkonjić Grad and our joint venture partner Andritz Hydro S.A.S., whereas a part of the Project is another member of the Elnos Group - Elnos BL Beograd.

MHPP Bočac 2 is the first project of building new hydro power plant where our company is the leader of entire electromechanical and hydro mechanical phase and it represents one of the most demanding and most attractive projects. Planned deadline for the Project is 2016.

“Realization of this project has both economic and electric power significance. Besides, construction of these facilities would increase possibility of electrical power export, and west part

of the Republic of Srpska would be more reliable electrical power supply”, added Nedeljko Kesić, the Director of the company Vrbas HPP.

Construction realization for the MHPP Bočac 2 is planned through expansion of the existing dam of the HPP Bočac compensation basin. Two Kaplan production generators with horizontal capsule turbines – double controlled with synchronized generators and permanent magnet rotors shall be installed in the MHPP Bočac 2. Installed discharge of the HPP is 110 m³/s and rated head of the HPP is 10 m. Turbine discharge is 55 m³/s, whereas minimum discharge is 15 m³/s, providing the fact that generators shall not function with discharge under 20 m³/s, which represents guaranteed flow of the River Vrbas.

During exploitation period, the power plant shall operate with frequent changes in flow and head. Role of the HPP Bočac compensation basin must be kept after construction of the MHPP Bočac 2. Its role is that compensation basin provides peak operation of the HPP Bočac by its volume, which means operation of the MHPP Bočac 2 shall be conditioned by provision of compensation basin's timely discharge.

Characteristic of the MHPP Bočac 2 is such that the hydro generators are completely submerged, as well as installation of hydro mechanical equipment at the elevation that is 21 m under the road and access plateau elevation, where openings for equipment installation are planned. Installation of electromechanical and hydro mechanical equipment shall be extremely demanding and followed by elaborates and detailed planning of individual phases.

RIJEKA VRBAS JEDAN JE OD NAJVAŽNIJIH VODNIH RESURSA U REPUBLICI SRPSKOJ, ČJI HIDROENERGETSKI POTENCIJAL NIJE U POTPUNOSTI ISKORIŠTEN. NA SLIVU VRBASA DO SADA SU IZGRADENE TRI HIDROELEKTRANE, OD KOJIH JE SAMO JEDNA NA TERITORIJI REPUBLIKE SRPSKE, HE BOČAC. KAKO BI ENERGETSKI POTENCIJAL OVOG SLIVA BIO ŠTO BOLJE ISKORIŠTEN, PREDUZEĆE HIDROELEKTRANE NA VRBASU A.D. MRKONJIĆ GRAD, POSTAVLIO JE SEBI CILJ DA U NARENDOM PERIODU PROŠIRI PROIZVODNE KAPACITETE IZGRADNJOM NOVIH HIDROELEKTRANA, ŠTO JE REZULTIRALO IZRADOM STUDIJE O MOGUĆNOSTI IZGRADNJE HIDROELEKTRANA NA DIJELU SLIVA RIJEKE VRBAS U REPUBLICI SRPSKOJ. NA OSNOVU SAGLEDAVANJA RESURSNIH I PROSTORNIH MOGUĆNOSTI I OGRANIČENJA IZGRADNJE HIDROELEKTRANA, IDENTIFIKOVANE SU MOGUĆE LOKACIJE ZA NJIHOVU IZGRADNU I FORMULISANE ODGOVARAJUĆE PREPORUKE. PREMA ZAKLJUČKU IZ STUDIJE, PROJEKAT MHE BOČAC 2 JE POJEDINAČNO NAJISPLATIVIJA I NAJIZVODLJIVIJA INVESTICIJA.

THE RIVER VRBAS IS ONE OF THE MOST IMPORTANT WATER RESOURCES IN THE REPUBLIC OF SRPSKA, WHOSE WATERPOWER CAPACITY HAS NOT BEEN FULLY USED. THERE HAVE BEEN THREE HYDRO POWER PLANTS BUILT ON THE VRBAS BASIN SO FAR AND ONLY ONE HAS BEEN BUILT ON THE TERRITORY OF THE REPUBLIC OF SRPSKA, I.E. HPP BOČAC. IN ORDER TO USE ENERGETIC POTENTIAL OF THIS BASIN IN THE BEST POSSIBLE WAY, COMPANY HIDROELEKTRANE NA VRBASU A.D. MRKONJIĆ GRAD (VRBAS HYDRO POWER PLANTS), HAS SET ITS GOAL TO EXPAND PRODUCTION CAPACITIES IN THE UPCOMING PERIOD BY CONSTRUCTING NEW HYDRO POWER PLANTS, WHICH RESULTED IN MAKING THE STUDY ON POSSIBILITY OF BUILDING HYDRO POWER PLANTS ON A PART OF THE RIVER VRBAS BASIN LOCATED IN THE REPUBLIC OF SRPSKA. AFTER HAVING AN INSIGHT IN RESOURCES AND SPATIAL CAPACITIES AND LIMITATIONS OF BUILDING HYDRO POWER PLANTS, POSSIBLE LOCATIONS FOR THEIR CONSTRUCTION HAVE BEEN IDENTIFIED AND APPROPRIATE RECOMMENDATIONS HAVE BEEN FORMED. IN ACCORDANCE WITH CONCLUSION FROM THE STUDY, THE PROJECT MHPP BOČAC 2 IS THE BEST PAYABLE AND THE MOST FEASIBLE INDIVIDUAL INVESTMENT.



Kompenzaciona brana – HE Bočac / Compensatory Dam - HPP Bočac



DOKAPITALIZACIJA 400 kV POLJA GENERATORA

Capital investment in 400 kV
generator bay

Projekat je obuhvatao uklapanje u novi sistem upravljanja - SCADA, sa isporukom i ugradnjom neophodne komunikacione i upravljačke opreme i doradu postojećeg sistema upravljanja...

Project covered adjustment to a new control system - SCADA, with delivery and installation of necessary communication and control equipment as well as upgrade of the current control system....



Upravljački panel – prije modernizacije
Control panel - before modernization



Upravljački panel – nakon modernizacije
Control panel – after modernization

SR Kompanija Elnos BL završila je projekat doka-pitalizacije 400 kV polja generatora u Termoelektrani Ugljevik, na proljeće prošle godine.

Ugovor je obuhvatao izradu projektne dokumentacije građevinske i elektro faze, demontažu stare opreme i ugradnju nove opreme za upravljanje i zaštitu generatorskog polja. Takođe, ovaj projekat je obuhvatao i uklapanje u novi sistem upravljanja – SCADA sistem, sa isporukom i ugradnjom neophodne komunikacione i upravljačke opreme i doradu postojećeg sistema upravljanja.

Termoelektrana Ugljevik ima vrlo kvalitetnu vezu sa prenosnom mrežom, tako što je preko blok-generatorskog transformatora 20/400 kV i razvodnog postrojenja, smještenog neposredno uz objekat, spojena na elektroenergetski sistem preko tri 400 kV dalekovoda, i to prema Tuzli, Ernestinovu u Hrvatskoj i Sremskoj Mitrovici u Srbiji, koji pojedinačno imaju propusnu moć od 1260 MVA.

Osim ova tri 400 kV dalekovoda, preko transformatora 400/115 kV, Termoelektrana Ugljevik spojena je i sa tri dalekovoda 110 kV na mrežu Republike Srpske, a to su dalekovodi ka Zvorniku, Bijeljini i Loparama.

Projekat je izvođen u izuzetno kompleksnim uslovima, uslijed potrebe da 400 kV sabirnice budu pod naponom tokom izvođenja radova. Ovakav način rada zahtijevao je izuzetan oprez prilikom izvođenja korekcija na postojećem sistemu, planiranja uticaja pojedinih korekcija generatorskog polja na ostatak 400 kV

rasklopног postrojenja i simuliranja neophodnih signala i informacija 400 kV generatorskog polja, kako bi ostatak sistema nesmetano funkcioniоao tokom izvođenja radova.

Radovi su izvođeni u toku planskog remonta bloka termoelektrane, uz kvalitetnu organizaciju i planiranje tokom realizacije projekta.

Imali smo odličnu komunikaciju sa investitorom, a zahvaljujući maksimalnom zalaganju našeg tehničkog kadra, radovi su završeni u predviđenom roku. Takođe, uradili smo funkcionalno ispitivanje i puštanje u rad generatorskog polja, kako bi po završetku remonta Termoelektrana Ugljevik bila spremna za povezivanje na 400 kV mrežu i plasiranje električne energije.

EN Company Elnos BL completed the project of capital investment in 400 kV generator bay in Thermal Power Plant Ugljevik last spring.

Contract included making project documentation for construction and electrical phase, old equipment dismantling and installation of new equipment for control and protection of generator. Likewise, this project also covered adjustment to a new control system – SCADA, with delivery and installation of necessary communication and control equipment as well as upgrade of the current control system.

Thermal Power Plant Ugljevik has very good connection to the transmission grid - through block generator transformer 20/400 kV and distribution plant, located close to the facility, con-

nected to electric power system by three 400 kV transmission lines to Tuzla, Ernestinovo in Croatia and Sremska Mitrovica in Serbia, with individual capacity of 1260 MVA.

Apart from these three 400 kV transmission lines, through transformer 400/115 kV, Thermal Power Plant Ugljevik is also connected to three transmission lines 110 kV to the Republic of Srpska power line, toward Zvornik, Bijeljina and Lopare.

Project was performed in very complex conditions due to the need for 400 kV bus bars to be energized during work performance. This form of work demanded extreme caution in performing corrections of the existing system, in planning effects of certain corrections of the generator bay to the rest of 400 kV distribution plant and simulation of necessary signals and data of 400 kV generator bay, so that the rest of the system could function uninterrupted during work performance.

Works were performed in the frame of planned overhaul of the thermal power plant block along with good organization and planning during project realization.

We had an excellent communication with the Investor and works were performed timely thanks to maximum efforts of our technical staff. Likewise, we performed generator bay functional testing and commissioning, so that the Thermal Power Plant Ugljevik would be ready for connection to 400 kV power line and transfer of electricity after overhaul.

Rekonstrukcija trafostanice Penića kuća

Upgrade of substation Penića kuća



Funkcionalno ispitivanje i puštanje u rad MBTS / Functional testing and commissioning of PCSS



Osnovni cilj rekonstrukcije trafostanice je zamjena postojeće opreme koja je u funkciji od početka rada elektrane, kao i njeno proširenje i adaptacija.

Basic aim of substation upgrade is to replace the existing equipment, which has been used ever since the electric power plant started with operation, as well as to extend and adapt it.

SR Dugogodišnju saradnju sa „Hidroelektranama na Vrbasu“ nastavili smo još jednim u nizu projekata realizovanih prošle godine u Hidroelektrani Bočac. Učestvovali smo u rekonstrukciji trafostanice Penića kuća, koja je obuhvatala izgradnju potpuno nove montažno-betonске trafostanice za napajanje pumpne stанице pitke vode.

„Saradnja naših kompanija ostvarena je na više značajnih projekata koji su uspješno okončani i gdje se vaša kompanija dokazala kao dobar poslovni partner“, rekao je Nedeljko Kesić, direktor preduzeća ZP Hidroelektrane na Vrbasu, a.d. Mrkonjić Grad.

Hidroelektrana Bočac predstavlja jedan od najvažnijih energetskih objekata u sливу rijeke Vrbas u Republici Srpskoj. Koristi 16,2 odsto ukupnog hidropotencijala Vrbasa sa pritokama

i kao takva radi kao vršna elektrana sa sedmičnim izravnavanjem.

U cilju zadovoljavanja potreba za pitkom vodom u fazi izgradnje HE Bočac, izgrađena je i trafostanica sa koje se električnom energijom napajaju pumpne stанице pitke vode.

Uzimajući u obzir neophodnost proširenja kapaciteta trafostanice, kao i dotrajalost opreme, uprava preduzeća Hidroelektrane na Vrbasu je odlučila da uradi rekonstrukciju kompletne trafostanice.

Osnovni cilj rekonstrukcije trafostanice bila je zamjena postojeće opreme koja je u funkciji od početka rada elektrane. Osim toga, trafostanica je proširena i adaptirana, a posebnim prekidačem omogućeno je i povezivanje „Kućne turbine“ na postojeći dalekovod HE Bočac-Kompenzacioni bazen, time i na vlastitu potrošnju

elektrane, kao i proširenje kapaciteta trafostанице zbog dogradnje vodovoda, rasvjete pristupnih puteva elektrani, bazne stanice mobilne telefonije...

Rekonstrukcija stare stubne trafostanice, osim izgradnje nove montažno-betonske TS 35/0,4 kV, obuhvatala je ugradnju transformatora snage 400 kVA, SN bloka sa četiri ćelije 35 kV i niskonaponskog razvodnog postrojenja 0,4 kV, te izradu uzemljenja i opštih instalacija trafostanice.

Ugrađena je oprema dobro poznatih evropskih proizvođača u oblasti elektroenergetike, kao što su Schneider Electric i Makitel Dooel.

Rekonstrukcijom su ostvareni uslovi za bezbjedan i pouzdan rad kako kompenzacijonog bazena, tako i čitave elektrane.

„Zahvaljujući visokostručnom kadru i tehničkoj opremljenosti, kompanija Elnos je na svim projektima na kojima je učestvovala pružila najkvalitetnije usluge i ispoštovala sve svoje obaveze. Realizacijom tih projekata obezbijedena je veća pouzdanost rada i modernizacija HE Bočac“, zaključio je Kesić.

EN Our long-term cooperation with “Hidroelektrane na Vrbasu” (Eng. Vrbas Hydro Power Plants) was continued with another in a series of projects realized in last year within the Hydro Power Plant Bočac. We took part in upgrade of substation Penića kuća, which covered construction of completely new prefabricated concrete substation for supplying drinking water pump station.

“Cooperation of our companies has been

accomplished in many significant projects, which ended successfully. Here, your company proved to be a good business partner”, said Nedeljko Kesić, the Director of the company Vrbas Hydro Power Plants.

Hydro Power Plant Bočac represents one of the most important energy facilities in the Vrbas basin in Republic of Srpska. It uses 16.2 per cent of total hydro capacity of the Vrbas with its tributaries and, being like this, it functions as peak electric plant with weekly settlement.

In the aim of meeting needs for drinking water, during HPP Bočac construction phase, substation supplying drinking water pump stations with electric power was built too.

Considering necessity to extend capacity of the substation, as well as worn-out equipment, management of the Hidroelektrane na Vrbasu decided to upgrade the substation completely.

Basic aim of substation upgrade was to replace the existing equipment, which has been used ever since the electric power plant started with operation. Besides, substation was extended and adapted and connection of House turbine to the existing transmission line HPP Bočac-Compensation basin as well as to the local consumption of the power plant has been provided. Likewise, the upgrade provided substation capacity increase due to upgrade of water supply system, lighting of power plant access roads, mobile telephony base station...

Upgrade of old pole mounted substation, apart from construction of new prefabricated concrete SS 35/0,4 kV, included installation of 400 kVA transformer, MV switchgear with 4 cubi-

cles 35 kV and 0,4 kV low-voltage distribution switchgear as well as construction of earthing and general installations of the substation.

Equipment of well known European producers of electrical energy equipment, such as Schneider Electric and Makitel Dooel, was installed.

Upgrade provided conditions for safe and reliable operation of both compensation basin and entire electric power plant.

“Thanks to high skills level of staff and technical equipment, Elnos company provided the best quality services and respected all its obligations at all the projects it took part in. Realization of these projects provided better operation reliability and modernization of HPP Bočac”, concluded Kesić.

POUZADNOST U RADU

S OBZIROM NA TO DA JE ULOGA DALEKOVODA HE BOČAC-KOMPENZACIONI BAZEN SNABDJEVANJE ELEKTRIČNOM ENERGIJOM POSTROJENJA ZA REGULACIJU PROTOKA VRBASA NIZVODNO OD BRANE, SISTEM JE KONCIPIRAN TAKO DA JE OBEZBIJEDENA MAKSIMALNA POUZDANOST U RADU, KAKO BI SE IZBJEGLO NEPOTREBNO ISKLJUČENJE CIJELOG DALEKOVODA. ZA VRIJEME IZGRADNJE NOVE TRAFOSTANICE, POSTOJEĆA JE SVE VRIJEME BILA U POGONU, KAKO BI SE OBEZBIJEDILO NESMETANO FUNKCIJSANJE KOMPENZACIONOG BAZENA I SAME ELEKTRANE.

RELIABILITY IN OPERATION

CONSIDERING THE FACT THAT A ROLE OF TRANSMISSION LINE HPP BOČAC-KOMPENZACIONI BAZEN (ENG. COMPENSATION BASIN) IS TO PROVIDE ELECTRICAL POWER TO A PLANT USED FOR CONTROL OF THE VRBAS DISCHARGE DOWNSTREAM THE DAM, SYSTEM HAS BEEN DESIGNED TO ENSURE MAXIMUM OF RELIABILITY IN OPERATION IN ORDER TO AVOID UNNECESSARY SWITCHING OFF OF ENTIRE TRANSMISSION LINE. DURING CONSTRUCTION OF THIS SUBSTATION, THE EXISTING ONE WAS IN OPERATION ALL THE TIME IN ORDER TO PROVIDE UNINTERRUPTED OPERATION OF THE COMPENSATION BASIN AND ELECTRIC POWER PLANT ITSELF.



Nova montažno-betonska TS 35/0,4 kV / New prefabricated concrete SS 35/0,4 kV

Dodatno napajanje u HE Bočac

Additional power supply at HPP Bočac



Projekat je obuhvatao ugradnju dodatnog 35 kV rasklopnog postrojenja, 35/0.4 kV transformatora, ormara sa niskonaponskom rasklopnom opremom i pripadajućom kablovskom energetskom i komandno-upravljačkom vezom.

Project covered installation of additional 35 kV switchyard, 35/0.4 kV transformers, distribution cabinet with low voltage switchgear and related power and control cables.



Parametrisiranje i ispitivanje 35 kV postrojenja sopstvene potrošnje HE Bočac
Configuration and testing of 35 kV plant of own consumption at HPP Bočac

SR Modernizacija i adaptacija Hidroelektrane Bočac nastavljena je i prošle godine, a izvođenje radova na dodatnom napajanju vlastite potrošnje ove elektrane, još jedan je u nizu projekata koje je realizovala naša kompanija u ovom objektu u marta 2014. godine.

Ovaj projekat obuhvatao je ugradnju dodatnog 35 kV rasklopnog postrojenja, 35/0.4 kV transformatora, ormara sa niskonaponskom rasklopnom opremom i pripadajućom kablovskom energetskom i komandno-upravljačkom vezom.

Posao u HE Bočac smo realizovali u saradnji sa investitorom ZP Hidroelektrane na Vrbasu, a.d. Mrkonjić Grad.

Imperativ prilikom izvođenja radova nam je bio da beznaponsko stanje 35 kV postrojenja ove hidroelektrane svedemo na minimum.

Kao privremeno rješenje iskorišten je transformator 35/0.4 kV, 630 kVA, koji služi kao stopostotna rezerva transformatoru sopstvene potrošnje za HE Bočac.

S obzirom na to da elektrana ne može da funkcioniše bez sopstvene potrošnje, u slučaju kvara iskorišteni transformator trebalo bi da se vrati svojoj namjeni, dok bi dograđeni aneks ostao bez napajanja. Kao trajno rješenje dograđenog

aneksa bilo je neophodno obezbijediti dodatno napajanje iz postrojenja 35 kV.

Izgradnjom novog aneksa i proširenjem objekta hidroelektrane premašena je rezerva u snazi na niskonaponskim sabirnicama elektrane.

Uz uspješnu saradnju i koordinaciju sa predstavnicima HE Bočac, projekat dodatnog napajanja vlastite potrošnje elektrane je završen, oprema je funkcionalno ispitana i puštena u rad u predviđenom roku, uz minimalno remećenje svakodnevnih aktivnosti osoblja i rada Hidroelektrane Bočac.

EN Modernization and adaptation of the Hydro Power Plant Bočac was also continued last year. Performance of additional power supply works for local consumption within this power plant is yet another project realized by our company in this plant in March 2014.

Above mentioned project covered installation of additional 35 kV switchyard, 35/0.4 kV transformers, distribution cabinet with low voltage switch gear and related power and control cables.

We performed works at the HPP Bočac in cooperation with the Investor ZP Hidroele-

ktrane na Vrbasu, a.d. Mrkonjić Grad (Vrbas Hydro Power Plants).

During works performance, our imperative was to get off-line condition of the 35 kV plant within this hydro power plant to the minimum.

Temporary solution was transformer 35/0.4 kV, 630 kVA, used as one hundred percent reserve to the transformer of local consumption within the HPP Bočac.

Considering the fact that the power plant cannot operate without local consumption, used transformer should again get its purpose in case of failure, and upgraded annex would be left with no power supply. Additional power supply from 35 kV plant was necessary as a permanent solution of the upgraded annex.

By building a new annex and expanding the facility within the HPP, the power reserve at the power plant's LV bus bars was exceeded.

With successful cooperation and coordination with HPP Bočac representatives, additional power supply project within the local consumption of the power plant was completed. Equipment functionally tested and commissioned in planned deadline, with minimum interruptions of everyday activities of HPP Bočac staff and its operation.

Mjerenje kvaliteta električne energije

Measuring electrical power quality

Uprava mljekare u Kozarskoj Dubici angažovala nas je da ispitamo kvalitet električne energije u mljekari i da izradimo elaborat o kvalitetu i eventualnim mjerama za njegovo poboljšanje.

Management of dairy in Kozarska Dubica hired us to test the quality of electrical power in the dairy, to make a study on its quality and possible measures for its improvement.



Instrument Fluke 435 Power Quality Analyzer / Instrument Fluke 435 Power Quality Analyzer

SR Mjerenje kvaliteta električne energije nova je usluga u ponudi naše kompanije, a primjenili smo je prošle godine u „Mlijekoproduktu“ Kozarska Dubica.

Ova mljekara je jedan od najvećih proizvođača mliječnih proizvoda na prostoru Republike Srbije, koja teži da obezbijedi pouzdanu i sigurnu proizvodnju, kako bi kvalitetno snabdjela sve veće tržište.

U posljednje vrijeme, u proizvodne pogone sve se više uvodi automatika i proizvodnja se oslanja na elektronske komponente, čiji vijek trajanja mnogo zavisi od kvaliteta električne energije u proizvodnim pogonima. S obzirom na sve češće kvarove na skupoj elektroničkoj opremi i uređajima u proizvodnim pogonima „Mlijekoprodukta“, uprava ovog preduzeća odlučila je da istraže u pronaalaženju problema koji dovodi do sve češćih kvarova.

Zbog toga je angažovana kompanija Elnos BL, kako bi ispitala kvalitet električne energije na pojedinim kritičnim potrošačima u mljekari, te kako bi na osnovu dobijenih rezultata izradila elaborat o kvalitetu električne energije i eventualnim mjerama za njegovo poboljšanje.

Naša kompanija posjeduje kvalitetan mjerni instrument za ispitivanje kvaliteta električne energije, Fluke 435 Power Quality Analyzer, koji je, uz obučeno osoblje, preduslov za ovu vrstu ispitivanja.

Upoređujući izmjerene rezultate sa dopuštenim vrijednostima pojedinih veličina koje su definisane Evropskim normama i direktivama Evropske komisije, izrađuje se elaborat koji sadrži pregled rezultata mjerenja i prijedlog mjera za poboljšanje kvaliteta električne energije.

EN Measuring electrical power quality is a new service offered by our company and we provided it in the dairy Mlijekoprodukt in Kozarska Dubica last year.

This dairy is one of the biggest producers of dairy products in the area of Republic of Srpska and it tries to provide reliable and safe production in the aim of quality supply of market in expansion.

Recently, production plants are equipped more and more by automation devices, so production relies on electronic components,

whose life greatly depends on quality of electrical energy in the plants. Considering more frequent failures of expensive electronic equipment and devices in the production plants of Mlijekoprodukt, the management of this company was determined to find the problem causing these failures.

Due to this, company Elnos BL Banja Luka was hired to test the electric power quality of certain critical load at the dairy and to make a study on electric power quality and possible measures for its improvement based on acquired results.

Our company has a qualitative measuring instrument, Fluke 435 Power Quality Analyzer, used for testing quality of electrical power, which is, along with trained staff, prerequisite for this type of testing.

After the measured results are compared with allowed tolerances of certain measures defined by European norms and European Commission directives, we made a study covering overview of measured results and proposed measures for improvement of electric power quality.

Završena izgradnja TS Stanari

Construction of SS Stanari completed

SR Jedan od projekata o kojem smo pisali već nekoliko puta u našem godišnjem biltenu, zahvaljujući njegovom značaju i obimu, jeste aktuelna izgradnja Termoelektrane Stanari u Opštini Stanari.

Naša kompanija je i prošle godine bila angažovana na ovom kapitalnom projektu koji predstavlja jednu od najvećih investicija u energetskom sektoru Bosne i Hercegovine.

Konzorcijum Elnos BL-Tekton u saradnji sa podizvođačem ARS Inženjeringom, imao je zadatak da izgradi trafostanicu naponskog nivoa 400/110/35/10 kV, koja će poslužiti kao spona termoelektrane i postojeće elektroenergetske mreže Bosne i Hercegovine.

Trafostanica ima ukupno 11 polja, od kojih



Komandna prostorija sa SCADA sistemom u TS Stanari / Control room with a SCADA system in SS Stanari

su četiri dalekovodna, koja obezbeđuju vezu sa postojećim prenosnim sistemom BiH. Pored njih, postoje dva transformatorska polja, dva spojna, dva mjerna polja i jedno generatorsko polje, koje preko Step-Up transformatora obezbeđuje vezu sa generatorom termoelektrane.

Osim objekta trafostanice, izgrađena su paralelno i dva dalekovoda, 400 i 110 kV ulaz-izlaz, preko kojih će se termoelektrana napajati i snabdijevati mrežu BiH.

Jedna od bitnih karakteristika 400 kV dalekovoda su dvosistemski stubovi, koji objedinjuju ulaz i izlaz dalekovoda na istom stubu, sa šest provodnika, prvi ovog tipa u Bosni i Hercegovini.

EN One of the projects we were writing about

several times in our annual bulletin, thanks to its importance and volume, is the current construction of Thermal Power Plant Stanari in Stanari Municipality.

Last year, our company was engaged in this huge project, which is one of the biggest investments of the energy sector in Bosnia and Herzegovina.

Consortium Elnos BL – Tekton cooperating with ARS Inženjering, the Sub-Contractor, was to build 400/110/35/10 kV substation, which would serve as connection of the thermal power plant with the existing electric power system of Bosnia and Herzegovina.

Substation has 11 bays in total, four are transmission ones, which provide connection to the

existing transmission electrical system of Bosnia and Herzegovina. Apart from these, there are two transformer bays, two connection bays, two measuring bays and one generator bay, which provides connection with thermal power plant generator through Step-Up transformer.

Apart from the SS facility, two parallel transmission lines 400 and 110 kV input-output, were built, which would supply thermal power plant and BiH transmission system.

One of important features of 400 kV TL are two-system towers, which integrate input and output of the transmission line on the same tower through six conductors, which is the first of this kind in Bosnia and Herzegovina.



TS STANARI 400/110/35/10 kV IMA 11 POLJA SS STANARI 400/110/35/10 kV HAS 11 BAYS

SR Prva termoelektrana koja će funkcionisati u skladu sa direktivama EU o zaštiti životne sredine

EN The first TPP in this country to operate according to European Union Directives on environment protection

KARAKTERISTIKE TE STANARI

- > Prva privatna TE na Balkanu
- > Prva TE ove vrste na području bivše Jugoslavije poslije 30 godina
- > Imaće instaliranu snagu od 300 MW
- > Koristiće najsavremenije tehnologije
- > Procjena godišnje proizvodnje električne energije: oko 2 000 000 MWh

CHARACTERISTICS OF TPP STANARI

- > The first privately owned TPP on Balkans
- > The first TPP of this kind in the area of former Yugoslavia after 30 years
- > It shall have installed 300 MW power
- > It shall use the latest technologies
- > Estimation of annual electricity production: about 2,000,000 MWh

KOMANDNO-POGONSKA ZGRADA

Komandni dio

Glavni naizmjenični podrazvod, DC razvod sa agregatima za nužnu potrošnju, DC baterije i ostale pomoćne prostorije.

Pogonski dio

ABB-ovo SN postrojenje za potrebe elektrane, rudnika i snabdijevanje Stanara električnom energijom.

CONTROLLING BUILDING

Controlling part

main AC sub-distribution, DC distribution with generators for emergency power supply, DC batteries and other auxiliary rooms.

Drive part

ABB's MV plant, which would serve for thermal power plant needs, mine needs and to supply SS Stanari with electrical power.

Izgradnja TS Bjelajce

Construction of SS Bjelajce

Nova oprema obezbjeđuje potrošačima znatno veći stepen kvaliteta u napajanju električnom energijom i pouzdanu infrastrukturu, kao preduslov daljeg razvoja elektroenergetskog sistema.

New equipment provides consumers with significantly higher level of quality in power supply as well as with reliable infrastructure, being a prerequisite for further development of electric power system.



Trafostanica 110/20 kV Bjelajce / Substation 110/20 kV Bjelajce

SR Italijanska grupacija "Metalleghé", koja u Jajcu ima fabriku za proizvodnju silicijum metalja, širi svoje poslovanje i otvara još jednu u Bjelaju kod Mrkonjić Grada - R-S Silicon, čiji smo i mi dio.

Na osnovu ugovora koji smo potpisali sa ovom kompanijom za izgradnju trafostanice po sistemu „ključ u ruke“, Elnos BL, osim kompletног projektovanja građevinske i elektro faze, obavlja i elektromontažne radove.

Trafostanica 110/20 kV Bjelajce manjeg je kapaciteta i sastoji se od dva dalekovodna i jednog trafo polja. Dalekovodna polja obezbijediće ulaz i izlaz postojećeg dalekovoda Jajce–Mrkonjić Grad, koji se raskida i uvodi u našu 110-kilovoltну trafostanicu.

Sve trafostanice tog naponskog nivoa pripadaju Elektroprenosu BiH, tako da je i u ovom slučaju krajnji korisnik navedeno preduzeće.

Kada je riječ o opremi, Elnos BL je u svojoj radionici proizveo sistem zaštite i upravljanja i ormare podrazvoda, mjerenja i telekomunikacija.

Ostala oprema koju ugrađujemo je oprema naših partnera, poput Siemens-ovih prekidača i Alstom-ovih rastavljača, a merni transformatori ugrađeni u ovu trafostanicu su proizvedeni u Končaru. Elnos BL isporučio je i kompletne SN, NN i signalne kablove za kompleks fabrike. Za ovaj projekat je isporučena i SN 20 kV automatska kompenzacija reaktivne energije i električni

dizel agregat snage 500 kVA. Investitor uvozi kompletну opremu za trafo polja, uključujući i energetski transformator iz Italije, a naš posao je ugradnja navedene opreme.

Građevinski radovi počeli su u decembru, a intenzivirani su početkom ove godine. Krajnji rok za završetak TS Bjelajce je avgust 2015.

EN Italian Group "Metalleghé", which runs a factory for production silicon metal in Jajce, expands its business and opens another one - R-S Silicon - in Bjelajce in the vicinity of Mrkonjić Grad, and we are a part of it.

Based on the contract for construction of substation per "turn-key" principle, which we signed with this new company, Elnos BL, apart from entire design of civil works and electrical phase, performs electrical installation works as well.

Substation 110/20 kV Bjelajce is of smaller capacity and consists of two transmission and

ISPORUČENI MATERIJAL

ELNOS BL ISPORUČIO JE I KOMPLETNE SN, NN I SIGNALNE KABLOVE ZA KOMPLEKS FABRIKE. ZA OVAJ PROJEKT JE ISPORUČENA I SN 20 kV AUTOMATSKA KOMPENZACIJA REAKTIVNE ENERGIJE I ELEKTRIČNI DIZEL AGREGAT SNAGE 500 kVA.

one transformer bay. Transmission bays shall provide input and output of the existing transmission line Jajce-Mrkonjić Grad, which is being disconnected and then connected to our 110 kV substation.

All substations of this voltage level belong to Elektroprenos BiH, so, in this case, this company is the end user.

As for equipment, Elnos BL has developed a protection and control system as well as distribution boxes for sub-distribution, measurement, and telecommunications in its workshop.

The rest of the equipment we are installing is produced by our partners, such as Sie-

mens switches and Alstom disconnectors, and measuring transformers installed in this substation are produced by Končar. Elnos BL supplied and complete MV, LV and signal cables for the factory complex. For this project, it has been delivered MV 20 kV automatic compensation of reactive energy, as well as electric diesel generator power of 500 kVA. Investor imports all the equipment for transformer bays and power transformer from Italy, and we are to install it.

Construction works started in December last year and were intensified at the beginning of this year. Deadline for works completion on SS Bjelajice is August 2015.

SUPPLIED MATERIALS

ELNOS BL SUPPLIED AND COMPLETE MV, LV AND SIGNAL CABLES FOR THE FACTORY COMPLEX. FOR THIS PROJECT, IT HAS BEEN DELIVERED MV 20 KV AUTOMATIC COMPENSATION OF REACTIVE ENERGY, AS WELL AS ELECTRIC DIESEL GENERATOR POWER OF 500 KVA

Trafostanica puštena u pogon

Substation commissioned

Trafostanica 20/0,4 kV, 3x2000 kVA

Grand trade jedna je od najvećih distributivnih TS u Banjaluci.

Nekada je ta snaga TS-a postojala u Incelovim pogonima, za njihove potrebe.

*Substation 20/0, 4 kV, 3x2000 kVA
Grand is one of the biggest distribution SS in Banja Luka. This capacity used to be in Incel plant earlier and was used for their needs.*



Poslovni objekat Grand Trade / Business building Grand Trade

SR Prošle godine smo za potrebe napajanja novog poslovnog objekta Grand Trade u Banjaluci montirali modularno NN postrojenje Schneider Electric Prisma plus P. Novougrađeno postrojenje je šinskim razvodom Canalis KTA 3200 povezano sa tri suva transformatora tipa TRIHAL 20/0,4 kV snage po 2000 kVA.

Ova trafostanica jedna je od najvećih distributivnih TS u Banjaluci. Nekada je ta snaga TS postojala u Incelovim pogonima, za njihove potrebe.

Prilikom izvođenja radova susreli smo se sa specifičnim uslovima. Naime, građevina u temeljnog dijelu ima tri etaže ispod zemlje, a kompletan objekat bio je potpuno okopan, pa je fizički unošenje transformatora, od kojih svaki teži oko četiri tone, bilo veoma komplikovo.

vano. Angažovali smo auto-dizalicu sa kranom, koji nam je 'dobacio' transformatore otrprilike 15–20 metara do mjeseta montaže. Ovaj problem pratio je još jedan – visina prostora, pa smo i ovdje improvizovali, tako što smo za sam objekat pričvrstili montažnu platformu, izgradenu samo za ovu namjenu. Na taj način na nju smo spuštili transformatore i uvlačili ih u objekat.

EN Last year, for power supply of the new Grand Trade business building in Banja Luka we installed Prisma plus P, modular LV plant produced by Schneider Electric. Newly-installed plant is connected with the rail trunking Canalis KTA 3200 with three dry transformers type TRIHAL 20/0.4 kV, 2000 kVA each.

This substation is one of the biggest distribu-

tion SS in Banja Luka. This capacity used to be in Incel plant earlier and was used for their needs.

During the work performance, we confronted with specific conditions. Namely, a structure has three underground levels at the foundation part, and land around the facility was entirely excavated, so it was quite complicated to bring four transformers in, and each of them had about four tons. We hired truck with crane, which 'threw' transformers at about 15–20 meters far from installation location. This problem was followed by another one – location height, so we had to improvise this as well in the way that we attached mounting platform to the facility itself. This platform was created for this project exclusively. So, we put transformers on it and drew them into the facility.

Savremena tehnologija u TS Ralja

Modern technology at SS Ralja



Novo SF₆ 35 kV postrojenje / New SF₆ 35 kV facility



Nova oprema obezbjeđuje potrošačima znatno veći stepen kvaliteta u napajanju električnom energijom i pouzdanu infrastrukturu, kao preduslov daljeg razvoja elektroenergetskog sistema.

New equipment provides consumers with significantly higher level of quality in power supply as well as with reliable infrastructure, being a prerequisite for further development of electric power system.

SR Velika rekonstrukcija TS 110/35/10 kV Beograd 18-Ralja, koja se nalazi na obodu Voždovca u blizini Sopota, obavljena je za potrebe Elektrodistribucije Beograd, a Elnos BL Beograd bio je zadužen za građevinske i elektromontažne radove.

Ovaj projekat realizovan je u periodu od februara do aprila protekle godine, u saradnji sa našim stalnim partnerima Institutom Mihajlo Pupin i Siemens-om.

Trafostanica 110/35/10 kV Beograd 18-Ralja puštena je u pogon 1982. godine, a preko mreže 35 i 10 kV napaja električnom energijom šumadijsko područje mreže EDB. Ovaj energetski objekat ima instaliranu snagu 2×31,5 MVA.

Rekonstrukcija trafostanice Beograd 18-Ralja bila je neophodna, jer je 35 kV razvodno postrojenje bilo u veoma lošem eksplotacijskom stanju.

Nova oprema u TS Ralja obezbjeđuje potrošačima znatno veći stepen kvaliteta u napajanju električnom energijom i pouzdanu infrastrukturu, kao preduslov daljeg razvoja elektroenergetskog sistema. S druge strane, dispečeri novom opremom dobijaju veće mogućnosti za

manipulacije na mreži pod opterećenjem. Kako bismo montirali nove 35 kV ćelije, morali smo prethodno obaviti sve neophodne građevinske radove. Građevinski radovi obuhvatili su, između ostalog, izradu novog kablovskog kanala, otvora za prolaz energetskih i komandno-signalnih kablova i kablovsku kanalizaciju za uvod energetskih kablova u nove ćelije razvodnog postrojenja 35 kV.

Na TS Beograd 18-Ralja ugrađena je savremena oprema koja obuhvata 35 kV gasom SF₆ izolovane ćelije, i to ukupno osam ćelija. Sistem zaštite i upravljanja je integrисани sistem sa mikroprocesorskim zaštitnim uredajima i staničnim računarom, a u predstojećem periodu predviđeno je povezivanje na postojeću daljinsku stanicu za vezu sa dispečerskim centrom upravljanja.

S obzirom na činjenicu da smo većinu radova obavljali pod naponom, morali smo uvesti i posebne mjere zaštite. Takođe, zahvaljujući adekvatnim tehničkim uslovima, potrošačima je obezbijedeno napajanje električnom energijom, uz povremena neophodna minimalna isključenja.



NN ormari sa novim 35 kV čelijama / LV cabines with new cells 35 KV

EN Large upgrading of the SS 110/35/10 kV Belgrade 18-Ralja, located at the end of Voždovac and in the vicinity of Sopot, was performed for Electric Power Distribution Belgrade needs, and Elnos BL Belgrade was in charge of construction and electric installation works.

This project was performed from February to April last year in cooperation with our constant partners Institute Mihajlo Pupin and Siemens.

Substation 110/35/10 kV Belgrade 18-Ralja was commissioned in 1982 and supplies the power for Šumadija region of EDB network through 35 and 10 kV network. This power facility has 2×31,5 MVA of installed power.

Upgrading the substation Belgrade 18-Ralja was necessary due to the fact that distribution plant of 35 kV had been in a very bad exploitation condition.

New equipment installed in the SS Ralja provides consumers with significantly higher level of quality in power supply as well as with reliable infrastructure, being a prerequisite for further development of electric power system. On the other hand, new equipment provides dispatchers with greater possibilities of handing the network under load.

In order to install new 35 kV cells, we had to perform all the necessary construction works prior to it. Among other works, construction works comprised of creating new cable duct, openings for access to power and command-signal cables and cable sewage, in order to mount power cables into new cells of 35 kV distribution plant.

Modern equipment consisting of 35 kV SF₆ gas isolated cells, i.e. eight cells, was installed in the SS Belgrade 18-Ralja. Protection and management system is integrated system with microprocessor protective devices and substation computer. In the upcoming period, we plan to connect the substation to the current remote station for communication with dispatcher management center.

Considering the fact that most of the activities were performed alive, we also had to introduce special protective measures. Likewise, thanks to adequate technical conditions, consumers were power supplied with necessary minimal cut offs from time to time.

IN THE AIM OF WORK IMPROVEMENT AND EFFICIENCY, SS 110/35/10 KV BELGRADE 18-RALJA, ELNOS GROUP REPRESENTATIVES ATTENDED TWO TRAININGS. THE FIRST ONE WAS ORGANIZED IN FRANKFURT AND WAS REFERRING TO THE LATEST SIEMENS EQUIPMENT USED FOR UPGRADING THIS SUBSTATION. TRAINING HELD AT THE SIEMENS TRAINING CENTER IN NUREMBERG, REFERRING TO LONGITUDINAL, DIFFERENTIAL RELAY PROTECTION OF SIPROTEC 4 TYPE, ALSO USED WITHIN THIS PROJECT, IS THE SECOND TRAINING OUR REPRESENTATIVES ATTENDED.



Trafostanica 110/35/10 kV Beograd 18-Ralja / Substation 110/35/10 kV Beograd 18-Ralja

Rekonstrukcija TS 35/10 kV Velika Plana 2

Upgrade of SS 35/10 kV Velika Plana 2

Projekat je podrazumijevaо rekonstrukciju postojećeg objekta, gdje se u elektro dijelu mijenjalo kompletno srednjenaponsko postrojenje.

Project covered upgrade of the existing facility, where, as for electric part, complete medium voltage plant was replaced.



Izrada novog krova / New roof building

SR Isporuka opreme sa uslugom ugradnje i zamjene na trafostanici 35/10 kV Velika Plana 2, jedan je u nizu projekata koje su članovi tima Elnosa BL Beograd završili tokom prošle godine, a realizovan je za investitora Privredno društvo Centar Kragujevac.

Zadatak Elnosa BL Beograd bila je zamjena dotrajale opreme novom, kvalitetnijom i modernizovanom, kada je riječ o zaštiti i komunikaciji sa Nacionalnim dispečerskim centrom.

Projekat je podrazumijevaо rekonstrukciju postojećeg objekta, gdje se u elektro dijelu mijenjalo kompletно srednjenaponsko postrojenje.

U odnosu na prethodno, novim postrojenjem se upravlja iz dispečerskog centra, što prije ove rekonstrukcije nije bilo moguće.

Riječ je o znatno pouzdanoj opremi od one koja je bila u postrojenju. Osim toga, naš zadatak bili su i građevinski radovi, te smo u prvoj fazi realizacije uradili novi krov, fasadu, kanale i ogradu.

Poslije toga, uslijedili su elektro radovi. Na početku smo uradili zamjenu 35 kV postroje-

nja, potom i 10 kV, a poslije toga i povezivanje sistema, ispitivanje i puštanje u rad nove, rekonstruisane trafostanice u Velikoj Plani.

Primarna oprema koju smo ugradili je oprema kompanije TSN iz Maribora, dok su zaštita i upravljanje američke kompanije SEL.

Zahvaljujući ugradnji nove opreme na ovom srednjenaponskom postrojenju, omogućena je stabilnost i pouzdanost u napajanju potrošača ovog konzumnog područja Elektromorave.

EN Equipment delivery with installation and replacement services at the substation 35/10 kV Velika Plana 2 is one in a series of projects members of the Elnos BL Belgrade completed during last year, and the Investor was Privredno društvo Centar Kragujevac.

Elnos BL Belgrade's task was to replace worn-out equipment with new one, of better quality and modernized, in the reference to protection and communication with the National Dispatch Center.

Project covered upgrade of the existing facil-

ity, where, as for electric part, complete medium voltage plant was replaced.

In comparison to the previous plant, the new plant is controlled from the dispatch center, which was not possible before this upgrade.

This is more reliable equipment than the one previously installed in the plant. Besides, we were to perform construction works as well, so, in the first phase of realization, we built a new roof, façade, trenches and fence.

Electric works followed after these. At the beginning, we performed replacement of 35 kV and 10 kV plants, system connection, testing and commissioning new, upgraded substation in Velika Plana afterwards.

Primary equipment we installed is equipment by company TSN, Maribor from Slovenia whereas protection and control equipment are produced by American company SEL.

Thanks to installation of new equipment on this MV plant, stability and reliability in provision of consumers has been ensured this consumption area of Elektromorava.

Sistem zaštite i upravljanja

Protection and control system

Ugradnjom ormara reljene zaštite i sistema daljinskog upravljanja na ovim TS, dobija se na pouzdanosti i kvalitetu njihovog funkcionisanja.

Installation of relay protection cabinet and remote control system in these substations improves reliability and quality of their operation.

SR Dio projekata realizovanih u elektromontažnoj radionicici Elnosa BL Beograd, nastavili smo i na terenu. Naš posao se na nekoliko projekata završavao u radionici, poslije čega smo bili zaduženi samo za transport, dok smo sa Crnogorskim elektroprenosnim sistemom potpisali ugovor i za montažu na terenu.

Naime, početkom novembra prošle godine, u jednom od ugovora sa CGES-om za trafostanicu Mojkovac 220/110 kV, završili smo sve radove. Na tri polja postavili smo ormare reljene zaštite i daljinskog upravljanja, montirali smo ih na terenu, uradili kablovskе veze, ispitali i pustili u pogon. U ovu trafostanicu ugradili smo mikroprocesorske releje proizvođača Schneider Electric.

Drugi ugovor sa CGES-om potpisani je za tri trafostanice, dvije 400 kV, Podgoricu 2, Pljevlju 2 i 110 kV Ribarevinu, sa zaštitno-upravljačkom opremom Siemens. Prošle godine, u Ribarevini urađeno je jedno polje, a preostala tri biće završena tokom ove godine, nakon čega očekujemo puštanje u pogon ove trafostanice.

Od deset polja na TS Pljevlja 2 uradili smo osam, dva su preostala za ovu godinu, dok se sa radom na TS Podgorica 2 počelo u januaru, a zaduženi smo za 11 polja.

Ugradnjom ormara reljene zaštite i sistema daljinskog upravljanja na ovim trafostanicama,

dobija se na pouzdanosti i kvalitetu njihovog funkcionisanja.

Korisnici neće primijetiti bitnu razliku, jer će i dalje imati napajanje, kao što su imali i ranije, ali sa tehničke strane, trafostanice se osavremenjuju. Ugrađujemo savremenu mikroprocesorsku opremu najnovije generacije, za razliku od opreme koja je tu bila prije rekonstrukcije, a datira iz perioda izgradnje trafostanica – od prije tri decenije.

EN We continued field work of a part of projects realized at the electrical installations workshop Elnos BL Belgrade. Our work completed at the workshop within few projects, and we were in charge of transport only afterwards, whereas we signed a contract for field mounting with Montenegrin electrical transmission system (CGES).

Namely, we completed all the works at the beginning of November last year in the frame of one of the contracts signed with CGES for substation Mojkovac 220/110 kV. We installed relay protection and remote control cabinets in three bays, we mounted them in field, installed cable communications, tested and commissioned. We

installed Schneider Electric digital protection relays in this substation.

The other contract with CGES was signed for three substations; two of them were 400 kV - Podgorica 2, Pljevlja 2 and 110 kV Ribarevina, with Siemens protection and control equipment. Last year, there was one bay installed in Ribarevina and the rest of three bays will be completed during this year, and we expect this substation's commissioning afterwards.

Out of ten bays of SS Pljevlja 2, we performed eight and two of them are planned for this year, whereas the work of SS Podgorica 2 started in January and we are in charge of 11 bays.

Installation of relay protection cabinets and remote control systems in these substations improves reliability and quality of their operation.

Users will not notice a significant change, since they will still be power supplied, just like earlier, but in the technical point of view, substations are modernized. We install the latest generation digital protection equipment, in comparison to the equipment, which had been there before upgrade, and it originates from substations construction period – three decades ago.



Trafostanica 400/110 kV Podgorica 2 / Substation 400/110 kV Podgorica 2

Rekonstrukcijom do veće sigurnosti prenosnog sistema

Through upgrade to higher level of safety of transferring system



Radovi na sanaciji temelja / Sanation works on foundation



Od puštanja u rad davne 1948. godine, na ovom dalekovodu nisu rađene veće popravke. Akcenat rekonstrukcije je na zamjeni postojećeg provodnika novim, većeg poprečnog presjeka i veće propusne moći.

Since its commissioning in 1948, this transmission line has not had major repairs. The main part of upgrade is replacement of the existing conductor by new one of a bigger cross section and throughput.

SR Dalekovodu Požarevac-Petrovac na Mlavi, jednom od prvih 110 kV dalekovoda sagrađenih u Srbiji, bila je neophodna rekonstrukcija, kako bi se izbjegli sve češći kvarovi mreže u ovom dijelu Srbije. Investitor projekta Elektromreža Srbije, angažovao je našu kompaniju kao glavnog izvođača rada.

Od puštanja u rad davne 1948, pa do prošle godine, iako su bile potrebne, na ovom dalekovodu nisu rađene veće popravke. Usljed prilično lošeg stanja, često je dolazio do kvarova prouzrokovanih pucanjem provodnika ili probijanjem izolatorskih lanaca.

Prilikom rekonstrukcije koja je u toku, sani-rani su temelji koje smo zaštitili vodootpornim premazom. Osim toga, uradili smo i antikorozivnu zaštitu čelično-rešetkaste konstrukcije stubova.

Prilikom postavljanja nove opreme, na jednom dijelu dalekovoda postavili smo posebne

više od dvije stotine elektromontera, početkom decembra prošle godine bilo je angažovano na oticanju kvara do kojeg je došlo uslijed olujnog vjetra i ledene kiše, a zbog čega su stanovnici Majdanpeka bili bez struje četiri dana. Među njima je bilo i dva deset iskusnih elektromontera iz ELNOS grupe, angažovanih na rekonstrukciji DV 110 kV Požarevac-Petrovac na Mlavi, koji su se odmah stavili na raspolažanje elektromreži Srbije. Nadljudskim naporima, radnici na tenu sanirali su kvarove i omogućili normalno funkcioniranje života u ovoj opštini.

štitnike izolatora koji smanjuju havarije, ali i štite od slijetanja ptica koje su takođe jedan od uzroka kvarova.

Akcenat rekonstrukcije je na zamjeni postojećeg provodnika novim, većeg poprečnog presjeka i veće propusne moći. To je posao koji ćemo obaviti tokom sljedeće faze, uz neophodnu zamjenu izolatora i zakivaka na stubovima, a novopostavljenom opremom izbjegći će se dalji kvarovi.

Realizaciju projekta započeli smo krajem avgusta 2014, a prema ugovoru, rok za završetak radova je kraj tekuće godine.

Rekonstrukcija dalekovoda, ukupne dužine 34 km, omogućuje veću stabilnost elektroprenosnog sistema u ovom dijelu Srbije, gdje su se u posljednje vrijeme često dešavale havarije.

EN Transmission line Požarevac-Petrovac on the Mlava, one of the first 110 kV transmission lines

built in Serbia, needed an upgrade in order to avoid more often network failures in this part of Serbia. Elektromreža Srbije, the Investor of the project, hired our company as the Leading Contractor.

Since its commission in 1948 up to last year, although they were necessary, this transmission line had no repairs. Due to rather bad condition, failures were frequent and caused by conductors' break or perforation of isolation chains.

During ongoing upgrade, we rehabilitated foundations, which were protected by water-proof coating. Besides, we applied anti-corrosive protection of steel-lattice towers structure.

During installation of new equipment, we set special protections for isolators causing failures, and these also protect from birds land-

ing, which also cause failures at one part of the transmission line.

The main part of the upgrade is replacement of the existing conductor with a new one, of a bigger cross section and bigger capacity. This is the work we are going to perform in the next phase, along with necessary replacement of isolators and nails on the towers. Installation of new equipment will help avoiding further failures.

We started project realization at the end of August 2014, and according to the contract, works deadline is at the end of this year.

Transmission line upgrade, 34 km total length, shall provide better higher level of stability within power transmission system in this part of Serbia, where often faults happened lately.

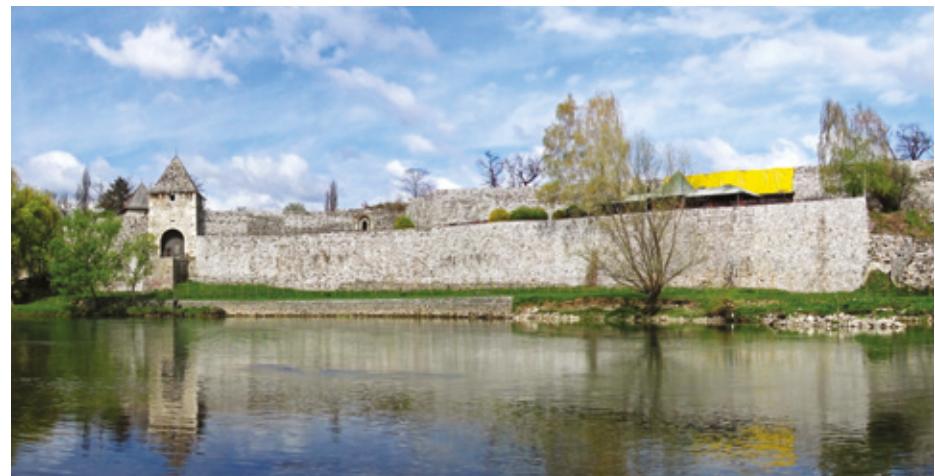
MORE THAN TWO HUNDRED ELECTRICIANS AT THE BEGINNING OF DECEMBER LAST YEAR, WERE ENGAGED ON REMOVAL OF FAULT, WHICH HAD BEEN CAUSED BY STORMY WIND AND ICY RAIN. BECAUSE OF THIS, MAJDAN-PEK INHABITANTS WERE DEPRIVED FROM ELECTRICITY FOR FOUR DAYS. THERE WERE TWENTY EXPERIENCED ELECTRICIANS FROM ELNOS GROUP AMONG THEM AND THEY WERE ENGAGED ON RECONSTRUCTION OF TL 110 KV POŽAREVAC-PETROVAC NA MLAVI, AND THEY WERE ON IMMEDIATE DISPOSAL OF ELEKTROMREŽA SRBIJE. WITH SUPERHUMAN EFFORT, WORKERS ON THE FIELD REHABILITATED FAULTS AND PROVIDED NORMAL LIFE FUNCTIONING IN THIS MUNICIPALITY.

Rekonstrukcija TS Kastel u Banjaluci

Upgrade of SS Kastel in Banja Luka

Zbog dotrajalosti, trafostanica je prokišnjavala, pa je oprema izložena vremenskim uticajima bila znatno oštećena.

Due to its old age, the substation's roof leaked, so the equipment was exposed to weather conditions and was damaged significantly.



Tvrđava Kastel / Fortress Kastel

SR Elnos BL završio je još jedan u nizu projekata u gradu na Vrbasu. Ovaj put riječ je o rekonstrukciji TS Kastel, koju je ranije izgradio Grad Banjaluka za potrebe objekata na Kastelu. Zub vremena oštetio je postojeću trafostanicu i došlo je vrijeme za njenu obnovu, ali i promjenu snage stare opreme.

Zbog dotrajalosti, trafostanica je prokišnjavala, pa je oprema izložena vremenskim uticajima bila znatno oštećena. Postavili smo novu izolaciju, ali i novu ploču za opremu, jer je stara, čeličnih profila, bila zardala. Takođe, postavili smo i novu stolariju.

Snaga transformatora bila je 400 kVA, a nova, savremenija trafostanica sa novom opremom, ima snagu od 630 kVA.

Investitor ovog projekta je Grad Banjaluka, a projekat je završen u novembru.

EN Elnos BL completed another project in a series of projects in the city on the Vrbas. This time, we are talking about upgrade of SS Kastel, which was previously constructed by the City of Banja Luka for needs of the Kastel facilities. The time had taken its toll and damaged the existing substation, so it was high time to

reconstruct it and replacement of the old equipment, too.

Due to its old age, the substation's roof leaked, so the equipment was exposed to weather conditions and was damaged significantly. We set new insulation and a new equipment board as well, since the old, steel one, was rusty. Likewise, we set new carpentry.

Transformer power was 400 kVA, and new, modern substation, with new equipment, has power of about 630 kVA.

The City of Banja Luka is the Investor, and the project was completed in November.

A photograph of a tall, lattice-style electrical pylon standing in a field of dry, brown grass. The pylon is part of a larger transmission line system with multiple wires. In the background, there are more pylons, some construction equipment, and a wind turbine. The sky is overcast.

Link for future of Swedish network

LINK ZA BUDUĆNOST ŠVEDSKE MREŽE

SR Projekat Jugozapadna veza (South West Link) je izuzetno važan za stvaranje snažne nacionalne mreže, koja će spremno dočekati buduće zahtjeve za sigurnu isporuku električne energije i integraciju velikih vjetroparkova. Ujedno, ovo je najveća investicija u švedsku nacionalnu mrežu u posljednjih 30 godina.

Riječ je o izgradnji 430 km prenosne mreže, kojom će se za 25 odsto povećati pouzdanost i prenosni kapacitet na jugu Švedske. U realizaciji projekta učestvuje nekoliko različitih izvođača, čiji je zajednički izazov da urade mnogo toga za kratko vrijeme.

Elnos Grupa je angažovana kao podizvođač radova kompanije Skanska Sverige AB. Izgradili smo novi dalekovod 400 kV Hallsberg–Barkeryd, tzv. paket br. 2, ukupne dužine 45 km. Takođe smo izvršili demontažu postojećeg dalekovoda 220 kV Talle–Nässjö, približne dužine 25 km.

Elnos Grupa je na ovom projektu angažovala oko 70 radnika, pred kojima su stajali razni profesionalni izazovi. Trasa je bila izuzetno zahtjevna, sa brojnim ukrštanjima sa lokalnim, magistralnim i auto-putevima, te sa mnogobrojnim postojećim dalekovodima različitog naponskog nivoa.

Naše kolege su imale priliku da rade na montaži 17 tipova stubova, od kojih su mnogi jedinstveni po svojim tehničkim karakteristikama. Najzanimljiviji primjer svakako su 'Design Towers', stubovi cjevastog tipa koji su specijalno dizajnirani i proizvedeni u Italiji. Svojim impozantnim dimenzijama, visina 70 m, težina 120 t, predstavljali su pravi izazov za timove naših montera. Ovi stubovi su bukvalno kao vjetroelektrane, samo umjesto propelera imaju konzole. Čak se i njihovo spajanje na tlo vrši istim specijalnim hidrauličnim alatom koji se koristi za vjetroelektrane.

I ovaj dalekovod prolazi kroz područja na kojima je rad regulisan posebnim zakonskim propisima, a to su područja vjetroparkova i ekološki osjetljive zone, tzv. Natura 2.000. Interesantno je da smo u ekološki osjetljivim zonama, poštujući zabrane korištenja vozila, mehanizacije ili uopšte kretanja po tlu, radove izvodili manuelno ili pomoću helikoptera.

ko bi se projekat realizovao po najvećim evropskim i svjetskim standardima, bila je potrebna nabavka specijalne opreme i alata, a i dodatna edukacija naših radnika. Stepenje štite na radu konstantno je bio na najvišem nivou. Danas sa ponosom možemo izjaviti da je kompletan projekat završen bez ijednog ozbiljnog incidenta ili povrede.

Projekt menadžer kompanije Skanska Björn Johansson, rezimirao je našu saradnju: „Bilo je mnogo izazova kojima smo bili izloženi na

PROJEKAT VRIJEDAN

1.09 MILIJARDI USD

PROJEKAT JUGOZAPADNA VEZA UKLJUČUJE IZGRADNJU 400 KV DALEKOVODA ZA POVEZIVANJE ŠVEDSKE NACIONALNE MREŽE U NÄSSJÖ SA NACIONALNOM MREŽOM U NORVEŠKOJ. CJELOKUPNA VRIJEDNOST PROJEKTA JE 1,09 MILIJARDI USD, A REALIZUJU GA „SVENSKA KRAFTNÄT“, OPERATOR PRENOSNOG SISTEMA ŠVEDSKE I NORVEŠKI „STATNETT“.

projektu Jugozapadna veza. Jedan od njih jeste da osoblje iz Elnosa i Skanske nije ranije radilo zajedno. Osim toga, različiti su nam maternji jezik i kulturna pozadina. Smatram da smo uspostavili dobru saradnju i da su Elnos i Skанса naučili mnogo jedni od drugih. S obzirom na naše osnovne djelatnosti, međusobno smo se dopunjavalci.“ Johansson za kraj dodaje da je Elnos Grupa potvrdila izuzetnu spremnost za najveće izazove na tržištu: „Ne vidim razlog zbog

kojeg Elnos i Skanska ne bi razgovarale o daljim poslovnim mogućnostima.“

EN Project South West Link is extremely important for creation of a strong national grid, which is going to be ready for upcoming demands for safe supply of electrical power and integration of large Wind-farms. At the same time, this has been the biggest investment in Swedish national network in the last 30 years.

This is construction of 430 km transmission grid, which shall increase reliability and transmission capacity for 25 per cent at the South of Sweden. Several different Contractors, whose common challenge is to do a lot for a short time, take part in this project realization.

Elnos Group was engaged as Sub-Contractor of works performed by Company Skanska Sverige AB. We constructed a new 400 kV Hallsberg-Barkeryd transmission line, so called Lot no. 2, 45 km long in total. We also dismantled the existing 220 kV Talle-Nässjö transmission line of about 25 km.

Elnos Group employed about 70 employees for this project and they were faced to various professional challenges. Route was extremely demanding with numerous local, motorway and highway crossings, as well as many existing transmission lines of various voltage levels.

Our colleagues had a chance to work on assembly of 17 tower types and many of them were unique in their technical characteristics. The most interesting example definitely were "Design Towers", towers of pipe type custom made and produced in Italy. They represented a realistic challenge for our fitters' teams by their impressive dimensions: height 70 m, weight 120 t. These towers literally are a form of wind power plants. Only difference is they have consoles instead of propellers. Even their connection to the ground is performed by the same special hydraulic tools used for wind power plants.

This transmission line also goes through areas, where work is governed by special legal regulations, and these are wind-farm zones and ecologically sensitive zones so called Natura 2000. It is interesting to mention that we performed works manually or with help from heli-

South West Link is being built by several different Contractors, whose common challenge is to do a lot for a short time. This is construction of 430 km transmission grid, which shall increase reliability and transmission capacity for 25 per cent at the South of Sweden.



Stub 'Design tower' (visina: 40 m, težina: 16 t)
Tower „Design tower“ (height: 40 m, weight: 16 t)



Radovi su izvođeni i pomoću helikoptera
The works were carried out by helicopter

copters in ecologically sensitive zones, obeying bans to use vehicles, machinery or to walk on the ground at all.

In order to realize the project in line with the highest European and world standards, it was necessary to acquire special equipment and tools, as well as to additionally educate our employees. Work safety was constantly at the highest level. Today, we can proudly say that entire project was completed with no serious incident or injury.

Björn Johansson, Skanska Project Manager, resumed our cooperation: "There were many challenges that we were exposed to on the South West Link project. One of them is that staff from Elnos and Skanska has never worked together before. Besides, we have different mother languages and cultural background. I believe we established a good cooperation and that both Elnos and Skanska learned a lot from each other. Considering our basic activities, we complemented each other." At the end, Johansson adds that Elnos Group confirmed extraordinary readiness for the biggest challenges at the market: "I see no reason why Elnos and Skanska should not talk about further business possibilities."

430 km

prenosne mreže u Švedskoj
of transmission grid in Sweden

25 %

**povećanje prenosnog kapaciteta
na jugu Švedske**

increase of transmission capacity at the South of Sweden

190 km

**najduži podzemni VN
kablovski vod na svijetu**
longest underground HV cable duct in the world

**PROJECT WORTH
USD 1.09 BILLION**

PROJECT SOUTH WEST LINK ALSO INCLUDES CONSTRUCTION OF 400 kV TRANSMISSION LINE FOR CONNECTION OF SWEDISH NATIONAL NETWORK TO NÄSSJÖ, THE NATIONAL NETWORK IN NORWAY. ENTIRE PROJECT IS USD 1.09 BILLION WORTH, AND IS BEING REALIZED BY "SVENSKA KRAFTNÄT", OPERATOR OF SWEDISH TRANSMISSION SYSTEM, AND NORWEGIAN "STATNETT".

AC&DC

kombinacija tehnologije
combination of technologies

MONTERI NAJZAHTJEVNIJIH TRASA

Fitters for the most demanding routes



U jednom pojasu trase nije dozvoljeno kretanje. To je zaštićena ekološka zona, sa specijalnom biljnom vrstom. Na ovom dijelu trase helikopter je prevukao konopac preko stubova, a zatim su naše mašine razvukle provodnike i optičku užad.

Movement is not allowed in one route area. It is a protected ecological zone with a special plant species. In this part, helicopter stretched rope over the towers. Afterwards, our machinery set conductors and optical fibers.

SR Šume izvan Sidensja dobine su novi izgled. Na ovom području završava se gradnja jednog od najvećih vjetroparkova u Švedskoj, čije vjetroturbine u okomitom položaju elipsi dostižu visinu od 170 m. Na projektu su angažovane brojne švedske i strane kompanije, a Elnos Grupa je bila jedan od podizvodača radova kompanije ONE Nordic.

Naime, ONE Nordic je dobio posao izgradnje novog 130 kV DV Moliden-Sidensjö, koji će služiti za povezivanje vjetroparka Sidensjö i TS u Molidenu. Jedan dio dalekovoda bio je ne samo izuzetno zahtjevan, već i opasan za rad, te je posao instalacije provodnika i zaštitnog užeta iziskivao velike napore i maksimalan profesionalizam. Baš tih najzahtjevnijih 15 kilometara trase instalirala je Elnos Grupa.

Trasa je imala izuzetno težak profil, sa ogromnim visinskim razlikama, a uz zahtjev da se na već ugrađene drvene stubove instaliraju provodnici presjeka 910 mm^2 , bila je opasna za rad. Sa

druge strane, zbog toga što dalekovod cijelom dužinom prolazi kroz vjetropark i dijelom kroz zaštićeno ekološko područje, pravila rada su bila rigorozna.

Sva vozila i kompletan alat prošli su kontrolu glavnog izvođača i specijalne komisije koja je na njih postavila svoje oznake. Samo sa tim vozilima i alatom bio je dozvoljen rad, a sve dodatno moralo je proći istu proceduru. Brzina saobraćaja je ograničena na 30 km/h, a saobraćaj je uređen brojnim regulativama, posebno u oblasti zaštite okoline. Na primjer, svako naše vozilo bilo je obezbijedeno specijalnom smjesom za skupljanje izlivenog ulja ili goriva sa tla, a za sipanje goriva u mašine koje su na trasi dolazila su specijalna vozila sa pumpom.

U zoni vjetroparka nije dozvoljeno da se jede, osim na mjestima predviđenim za to. Pušenje je bilo strogo zabranjeno cijelom dužinom trase.

U jednom pojasu trase, od oko 800 metara, čak nije dozvoljeno kretanje. To je zaštićena ekološka zona, sa specijalnom biljnom vrstom koja je pred izumiranjem. Na ovom dijelu trase helikopter je prevukao konopac preko stubova, a zatim su naše mašine preko tog konopca razvukle tri provodnika i optičku užad.

Slobodno možemo reći da je ovom referencom ostvaren jedan od najvećih profesionalnih izazova u Švedskoj. Završetak radova u roku od samo mjesec dana, ostaće zapamćen i kao anegdota. U junu 2014, švedske kompanije su već uveliko radile na svojim trasama, a mi smo tek star-



SPECIALNI DRVENI STUBOVI

ZBOG ZAŠTITE ŽIVOTNE SREDINE,
INVESTITOR JE ZAHTIJEVAO DA
SE ZA OVAJ DALEKOVOD KORISTE
DRVENI STUBOVI POSEBNOG IZGLEDA,
PROIZVEDENI PO SPECIJALNIM
METODAMA I IMPREGNIRANI PRIRODNIM
SMOLAMA.

tovali. Švedani su nam obećali pomoći kad završe svoje dionice. Međutim, mi smo prvi završili projekat, a oni su ostali da rade i poslje nas.

EN Forests over Sidensjö were a new landscape. Here, construction of one of the biggest wind-farms in Sweden is about to be completed. Its wind turbines reach height of 170 m in vertical ellipse position. Project engaged numerous Swedish and international companies, and Elnos Group was one of Sub-Contractors of the company ONE Nordic.

Namely, ONE Nordic got a construction works of new 130 kVTL Moliden-Sidensjö, which shall be used to connect wind-farms Sidensjö and SS in Moliden. One part of transmission line was not

only extremely demanding, but also dangerous for work, so works on conductors' installation and protection rope represent a huge efforts and complete professionalism. Elnos Group installed very demanding 15 km of the route.

Route had an extremely difficult profile with huge height differences. Demand to install 910 mm² conductors on already existing wooden towers made it dangerous for work, too. On the other hand, working rules were rigorous because transmission line entirely goes through wind-farm and partly through ecologically protected area.

All vehicles and tools went through control of the Lead Contractor and special commission, which labeled them with their marks. Only these vehicles and tools were allowed to perform works with, and anything additional should have gone through the same procedure. Speed limit was 30 km/h and traffic was regulated by numerous regulations, especially in the protected ecological area. For example, each our vehicle was secured by a special compound for collection of spilled oil or fuel from ground, and special vehicles with pumps were used for pouring fuel in the machinery on the route.

It is not allowed to eat in wind-farm zone, except at the spots meant for this purpose. Smoking was strictly forbidden along the entire

route. Movement is not allowed in one route area of about 800 meters. It is a protected ecological zone with a special plant species, which are about to be extinct. In this part, helicopter stretched rope over the towers. Afterwards, our machinery set three conductors and OPGW.

We can surely say that this reference accomplished one of the biggest professional challenges in Sweden. Works completion in only one month shall also be remembered as an anecdote. In June 2014, Swedish companies had already been working on their routes, and we were just about to start. Swedish people promised to help us once they complete their works. However, we completed the project first and they were still working and remained working after us.

SPECIAL WOODEN TOWERS

BECAUSE OF ENVIRONMENTAL PROTECTION, THE INVESTOR'S DEMAND WAS TO USE WOODEN TOWERS OF A SPECIAL APPEARANCE FOR THIS TRANSMISSION LINE, WHICH HAD BEEN PRODUCED BY SPECIAL METHODS AND IMPREGNATED BY NATURAL RESIN.

VJETROPARK SIDENSJÖ WIND-FARM SIDENSJÖ

Lokacija: Västernorrlands County, Švedska
Location: Västernorrlands County, Sweden

Ukupna instalirana snaga:
Total installed power:

144 MW

Godišnje smanjenje emisije CO₂:
Annual CO₂ emission decrease:

350.000 t

Broj turbina:
Number of turbines:

48

Početak rada:
Works start:

2015



Izgradnja dalekovoda za vjetroparkove

Construction of transmission lines for wind farms

Novi dalekovodi zapadno od Ramsele grade se isključivo za potrebe vjetroparkova. Faza 2 ovog projekta vrlo je slična našem prethodnom poslu, sa potpuno istim tipom stubova, pa je završena mjesec dana prije ugovorenog roka.

New transmission lines west from Ramsela are constructed for wind farms needs exclusively. Phase 2 of this project is very similar to our previous project, with completely the same tower types, so it was completed a month before contracted deadline.



Montaža i podizanje zateznog stuba / Installation and setting-up of tension tower

Svi naši radnici angažovani na izgradnji dalekovoda zapadno od Ramsele još dugo će se sjećati Faze 1 ovog ugovora. To je bio DV 2x130 kV Storfinnforsen-Ögonfagnaden, na kome su završni radovi izvedeni u izuzetno teškim vremenskim uslovima, na -30°C. Međutim, uz ogromne fizičke napore, oni su čak i ovu prepreku savladali uspješno i projekat završili u ugovorenom roku.

Srećom, Faza 2 ovog projekta rađena je u mnogo boljim vremenskim uslovima i protekla je bez ikakvih problema. Kako je riječ o poslu vrlo sličnom prethodnom i potpuno istom tipu stubova, projekat je završen mjesec dana prije ugovorenog roka. Riječ je o dalekovodu 2x130 kV Ögonfagnaden-Isbillstjärn, čija je ukupna dužina 8,86 km. Uradili smo montažu i podizanje čelično-rešetkastih stubova i instalaciju provodnika 910 mm² i zaštitnog užeta 142 mm². Svi stubovi su dvosistemski, sa vertikalnim faznim rasporedom, tzv. tipa "bure".

Za rad u zoni vjetroparkova bilo je neophodno da naši radnici prođu odgovarajuće obuke i, naravno, pridržavaju se propisa za rad u ovim

zonama. Elnos Grupa je i u Fazi 2 ovog projekta bila partner švedske kompanije Linjemontage i Grästorp AB.

Novi dalekovodi, zapadno od Ramsele, grade se isključivo za potrebe vjetroparkova. Novim dalekovodima, čija je izgradnja podijeljena u više različitih faza, obezbijediće se povezivanje na mrežu E.ON Elnät Švedska ukupno oko 1000 MW instalirane snage. Od planiranih sedam vjetroparkova u ovoj oblasti, tri su puštena u pogon.

All our employees engaged in construction of transmission lines west from Ramsela will remember Phase 1 of this contract for a long time. It was TL 2x130 kV Storfinnforsen-Ögonfagnaden, where works were performed in extremely difficult weather conditions, at -30° C. However, with great physical efforts, they overcame this obstacle successfully and completed the project in contracted deadline.

Luckily, Phase 2 of this project was performed in much better weather conditions and was completed with no problems at all. As this was a project very similar to the previous one and with

completely the same tower types, the project was completed a month before contracted deadline. This is transmission line 2x130 kV Ögonfagnaden-Isbillstjärn, which is 8.86 km long. We assembled and erected steel-lattice towers and installed 910 mm² conductors and 142 mm² earth-wire. All towers were two-system ones with vertical phase arrangement, so called "barrel" type.

In order to work in wind farm zone, our employees were to go through appropriate trainings and, of course, they were to stay in line with working regulations in these zones. Elnos Group also was partner of Phase 2 of this project for Swedish company Linjemontage i Grästorp AB.

New TLs west from Ramsela are built for wind farms purpose only. New transmission lines, whose construction has been divided into several phases, are going to provide connection to E.ON Elnät Sweden power grid of about 1000 MW installed power in total. Three wind farms were commissioned out of seven planned in this region.

Specifična montaža i rekordan rok

Specific installation and record deadline



Naši iskusni elektromonteri su prvi put u karijeri izveli instalaciju provodnika na ovaj način. Ističu da im je bilo interesantno i poučno.

Our experienced electricians installed wires in this way for the first time in their carriers. They say it was interesting and educational for them.

SR Elektromontažni radovi na rekonstrukciji dalekovoda 130 kV Saxen–Flatenberg u Švedskoj, dužine 25 km, završeni su u rekordnih mjesec dana. Naša ekipa od dvadesetak ljudi počela je sa radovima odmah nakon završetka demontažnih radova. Tu fazu radova obavio je nosilac ugovora Linjemotage i Grästorp AB, a obuhvatili su: demontažu starog užeta, zamjenu oštećenih stubova i izmjene dijela trase zbog energetskih objekata planiranih u budućnosti.

Posao Elnos Grupe, kao i mnogo puta do sada,

obuhvatao je elektromontažne rade. Šta je bilo tako specifično na ovom dalekovodu? Broj zateznih stubova. Ukupno četiri zatezna stuba na kompletnoj dužini trase od 25 km. Naši iskusni elektromonteri su prvi put u karijeri izveli instalaciju provodnika na ovaj način. Ističu da im je bilo interesantno i poučno, a radili su na sljedeći način: bukvalno su sami sebi određivali dužinu polja, jer su svi stubovi nosni. Zatim su razvlačili provodnike po oko 7 km, dovodili ih u provjes, pa ankerisali i ponovo prebacivali u mašine, zatim se u dijelu dokle je došao provodnik vršilo spajanje linijskim spojnicama i tako se nastavljalo dalje. Inače je uobičajeno da se provodnik ankeriše od jednog do drugog zateznog stuba. To su obično polja dužine kilometar, tri, četiri, pet ili osam, ali se ankerisanje uvijek radi između dva zatezna stuba. Ovaj projekat je bio izuzetak.

Na dalekovodu 130 kV Saxen–Flatenberg je bilo dosta ukrštanja sa postojećom VN i NN elektroenergetskom mrežom, ali je sve to obezbijedeno izgradnjom portala i zaštitnih mreža. Za naponski nivo 130 kV u Švedskoj se najčešće koriste drveni stubovi. I na ovom dalekovodu

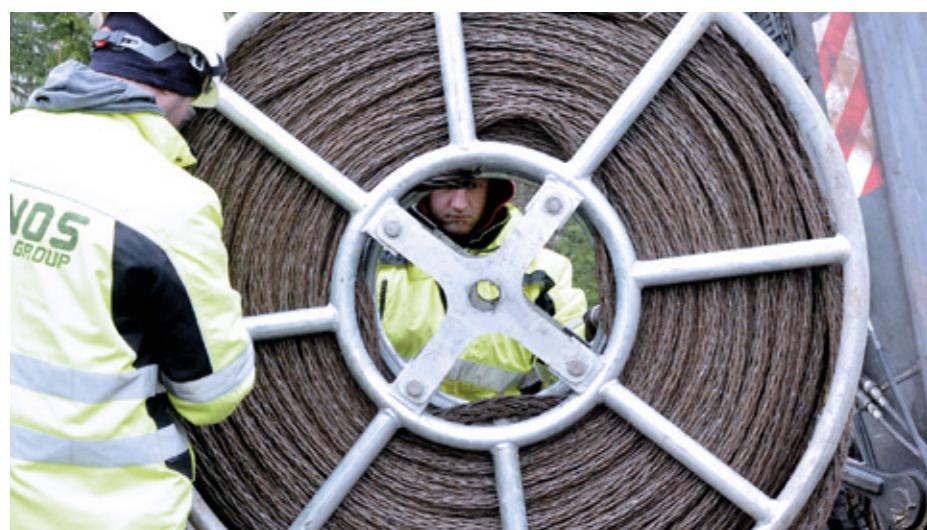
stubovi su drveni, a na njih smo instalirali provodnike 910 mm^2 , OPGW uže 125 mm^2 i zaštitno uže Dotterel 142 mm^2 .

EN Electrical installation of transmission line 130 kV Saxen–Flatenberg upgrade in Sweden, 25 km long, was completed in a record one month period. Our team, consisting of about twenty people, started its works right after completion of disassembly works. This phase of works was performed by the project leader, Linjemotage i Grästorp AB, and these included: disassembly of old rope, replacement of damaged towers and relocation of a part of the line for the purpose of power facilities planned in the future.

Elnos Group, like many times earlier, performed electrical installation works. What was so specific about this transmission line? It is the number of tension towers. There were four tension towers in entire line 25 km long. Our experienced electricians installed conductors in this way for the first time in their carriers. They say it was interesting and educational for them, and they worked as follows.

They literally defined field lengths themselves, since almost all the towers were line types. Afterwards, they tensioned conductors for about 7 km, sagged them, anchored and winched them back into the machines. After this, they were connected by line connectors in the part where the wire reached and continued the same all the way to the end. Usually, the conductor is anchored from one to another tension tower. These usually are fields of one, three, four, five or eight kilometers long, but anchoring is always performed between two tension towers. This project was an exception.

Transmission line 130 kV Saxen–Flatenberg included a lot of crossings with the existing HV and LV electric power system, was and all of them were secured by construction of portal and protective meshes. As for voltage level 130 kV, they usually use wooden towers in Sweden. Towers are wooden in this transmission line as well, and we installed 910 mm^2 conductors, 125 mm^2 OPGW and 142 mm^2 Dotterel protective rope.



Izgrađen novi 35 kV dalekovod Knežević–Kotor Varoš

New 35 kV transmission line Knežević–Kotor Varoš constructed

Novim dalekovodom obezbijediće se pouzdaniji prenos energije od postojećih mini-hidroelektrana i onih koje treba da budu izgrađene na području opštine Knežević.

New transmission line shall provide more reliable electricity transfer from the existing mini hydro power plants and those plants, which are to be constructed in the area of Municipality of Knežević.



35 kV dalekovod Knežević–Kotor Varoš / 35 kV transmission line Knežević–Kotor Varoš

SR Za investitore Elektrokrainu a.d. Banjaluka i EHE d.o.o. Banjaluka, u oktobru prošle godine uspješno smo završili radove kao podizvođač na projektu izgradnje 35 kV dalekovoda RTS Knežević – TS 110/x Kotor Varoš. Glavni ugovarač na ovom projektu bio je naš dugogodišnji partner ARS Inženjering.

Zadaci naše kompanije na realizaciji ovog projekta bili su nabavka i isporuka materijala za izvođenje elektromontažnih radova, poput provodnika, OPGW-a, ovjesne opreme i spojnih kutija za OPGW i instalacija faznih provodnika i OPGW-a.

Prilikom obavljanja elektromontažnih radova, nastojali smo da ih završimo sa minimalnim isključenjima potrošača koji su se napajali preko starog dalekovoda.

Projekat je realizovan po principu 'ključ u ruke', što je podrazumijevalo kompletну izgradnju 15,6 km 35 kV dalekovoda, za šta je bio zadužen naš partner ARS Inženjering.

Ovaj dalekovod nalazi se na trasi starog 20 kV dalekovoda RTS Knežević–TS 110/x kV Kotor Varoš, tako da je tokom izgradnje demontiran stari dalekovod.

Izgradnjom novog dalekovoda, opštini Knežević biće obezbijedeno pouzdanje snabdijevanje električnom energijom. Samim tim, obezbijediće se i pouzdaniji prenos energije od postojećih mini-hidroelektrana i onih koje treba da budu izgrađene na području opštine Knežević, a čiji je investitor kompanija EHE d.o.o. Banjaluka, članica Interenergo grupe iz Slovenije.

Pouzdanim napajanjem potrošača indirektno će doći do stvaranja povoljnijih uslova za privredne investicije u opštini Knežević.

EN In last October, as a subcontractor, we successfully completed works for the construction of 35 kV transmission line RTS Knežević–SS 110/x Kotor Varoš for Elektrokraina ad Banja Luka and EHE d.o.o. Banja Luka, the project Investors. The main Contractor of the project was our partner ARS Inženjering.

Project realization tasks of our company were purchase and delivery of material for performance of electrical installation works, such as conductors, OPGW, suspension equipment and joint boxes for OPGW and installation of phase wire and OPGW.

We tried to complete electrical installation works with minimum number of interruptions of power supply for consumers supplied by the old transmission line.

Project was realized as 'turn-key' project, which included complete construction of 15.6 km 35 kV transmission line, which was responsibility of our partner ARS Inženjering Banja Luka.

This transmission line is located on the route of old 20 kV transmission line RTS Knežević – SS 110/x kV Kotor Varoš, so that old transmission line was dismantled during construction.

Municipality of Knežević will be provided with more reliable electricity supply by constructing new transmission line. This will also ensure more reliable transmission of electrical power from the existing mini hydro power plants and those plants, which are to be constructed in the area of Municipality of Knežević. The Investor is company EHE d.o.o. Banja Luka, a member of the Interenergo Group from Slovenia.

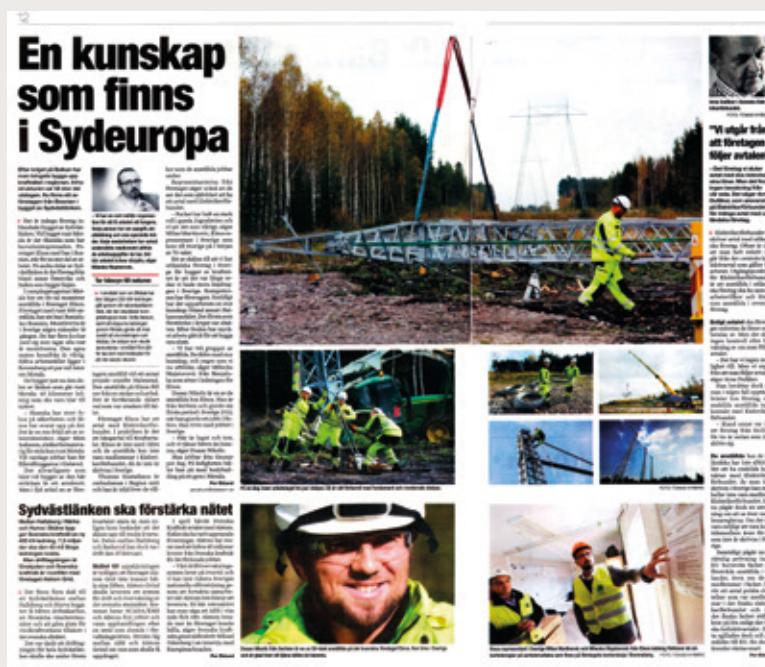
Reliable consumers supply will indirectly create more favorable conditions for economical investments in Municipality of Knežević.

Vojnička disciplina radnika iz BiH

ZNANJE KOJE POSTOJI U JUŽNOJ EVROPI

Knowledge that exists in South Europe / Military discipline of BiH workers

Tekst preuzet iz švedskog časopisa „Elektrikern“, **Autor:** Per Eklund



Text taken from Swedish magazine “Elektrikern”, **Author:** Per Eklund

Poslije rata na Balkanu bila je neophodna kompletna obnova elektroenergetske mreže. Infrastruktura je bila uništena. Danas je jedna od kompanija iz BiH angažovana na gradilištima projekta Jugozapadna veza.

After the war in Balkans, it was necessary to reconstruct entire electrical energy network. Infrastructure was destroyed. Today, one of the BiH companies has been engaged in construction sites of the South West Link project.

ODGOVORNI PREMA PRIRODI

U OBLASTI SJEVERNO OD MOTALE, 200 KV DALEKOVOD PROLAZI KROZ ZAŠTIĆENI PARK PRIRODE KOJI JE PRIRODNO STANIŠTE JEDNE UGROŽENE VRSTE SKAKAVACA. IZ TOG RAZLOGA, KAKO BI SE IZBJEGLO NARUŠAVANJE NJIHOVOG PRIRODNOG STANIŠTA, U OVOM DIJELU GRADILIŠTA KORIŠTEN JE HELIKOPTER, KAKO SE NE BI GAZILA TRAVA I UNIŠTAVAO I ZAGADIVAO PREDIO IZDUVNIM GASOVIMA AUTOMOBILA, ČIJA JE VOŽNJA NA OVOM PODRUČJU ZABRANJENA.

SR Mnogo je kompanija zaduženih za realizaciju projekta Jugozapadna veza, a nosilac projekta je kompanija Skanska, vodeća građevinska kompanija u Švedskoj. Centralno gradilište nalazi se u blizini Motale. Kompanija Elnos Group, sa upravom u BiH, zadužena je za obiman dio posla. Na drugim gradilištima Jugozapadne veze angažovane su brojne inostrane kompanije, uključujući i pojedine iz Austrije i Italije.

U kampu Motala smješteno je oko 50 radnika kompanije Elnos. Uprava kompanije, koja broji preko tri stotine zaposlenih, smještena je u Banjaluci.

Monteri u Švedskoj provode nekoliko mjeseci godišnje, a osim njih, u Motali imaju i svoje kuvare, jer je tradicionalna domaća hrana veoma važna za radnike na terenu.

Gradilište je smješteno u Borensbergu, nekoliko kilometara istočno od Motale.

Trenutno rade dio trase koja ide oko Motale, a 45 km te trase biće završeno do Nove godine.

„Kompanija Skanska veoma vodi računa o bezbjednosti, a Elnos je odmah prihvatio naš sistem. Pravo je zadovoljstvo vidjeti tako profesionalan odnos“, kaže Mats Isaksson, zadužen za bezbjednost u oblasti Motale, koji radnim danima radi na gradilištu u Gislavedu.

Kompanija Elnos je potpisala ugovor sa švedskim Sindikatom električara. Riječ je o Kraft ugovoru, jednoj vrsti kolektivnog ugovora koji se sklapa između Sindikata i pravnog lica koje nije njegov član. Zaposleni u Elnos Grupi ne mogu biti članovi ovog sindikata, s obzirom na to da nisu građani Švedske.

Ombudsman u ovoj regiji Thomas Gustafsson je zadovoljan uslovima u kojima radnici obavljaju svoje poslove.

Predstavnici kompanije navode da bi bilo sasvim prirodno da postoji ugovor sa Sindikatom.

„Sindikat je imao jak uticaj i veliku ulogu u bivšoj Jugoslaviji, i smatramo to veoma važnim segmentom

djelovanja“, rekao je predstavnik kompanije Elnos u Švedskoj Milan Martinović, koji se u Švedsku doselio početkom sedamdesetih.

Jedan od razloga zašto danas u Švedskoj rade brojne inostrane kompanije je taj što je prošlo mnogo vremena od kada su se u ovoj zemlji realizovali veliki državni projekti izgradnje električne mreže, pa se nivo domaće kompetencije sukcesivno smanjio.

Istovremeno, na Balkanu je unapređen nivo znanja i stručnosti. Prva stvar koja je uništena u ratu bila je elektroenergetska mreža, čija obnova je zahtijevala stručnjake i poznavaoce ove oblasti, a predstavljala je veoma obiman posao koji je uslijedio nakon rata.

„U našoj kompaniji imamo dvije grupe zaposlenih. Starije, iskusne radnike koji imaju zavidno znanje i one mlade, manje iskusne, koji još uvijek uče“, kaže Milenko Majstorović, član Uprave kompanije, smještena u Banjaluci.

Dušan Nikolić iz Srbije, jedan je od zaposlenih u kompaniji Elnos Group. Prvi put je otišao u Švedsku 2012. godine, kada je bio aktuelan projekt u Hoforsu. Prema njegovim riječima, voli da radi u Švedskoj. „Mirno je tamo, a imamo uslove bolje nego kod kuće“, kaže Dušan Nikolić.

Njegov radni dan traje osam sati. U slobodno vrijeme odlazi u teretanu u Motali.

EN There are many companies in charge of realization of the South West Link project and the Leader of the project is company Skanska, a leading construction company in Sweden. The main construction site is in Motala vicinity. Company Elnos Group, with its management in BiH, is in charge of a huge part of the works. In the other construction sites of the South West Link project, many international companies are engaged, including some companies from Austria and Italy.

There are about 50 Elnos employees accommodated in Motala camp. Management of the company, which has over three hundreds of employees, is in Banja Luka.

Fitters in Sweden spend several months a year, and apart from them, there are their cooks in Motala, too, since traditional homemade food is extremely important for field workers.

Construction site is in Borensberg, a few kilometers east from Motala. They are working on a part of a route surrounding Motala at the moment, and 45 km of this route shall be finished by New Year.

“Company Skanska pays a lot of attention to safety and Elnos embraced our system instantly. It is a real pleasure to see such a professional relationship”, says Mats Isaksson, the person in charge of safety in Motala area, who works on Gislaved construction site on week days.

Company Elnos signed a contract with Swedish Electricians' Union. This is a Kraft contract, a sort of collective contract concluded between Union and

a legal entity that is not a member of Union. Elnos Group employees cannot be members of this Union since they are not Swedish citizens.

Thomas Gustafsson, an Ombudsman in this region, is satisfied by conditions workers perform their activities in.

Company's representatives state it should be natural to have a contract with the Union. “Union had a strong impact and a major role in former Yugoslavia, too, and we consider it to be a very important working segment”, said Milan Martinović, a representative of Elnos company in Sweden, who moved to Sweden at early seventies of the last century.

One of the reasons have numerous international companies working in Sweden is that it has been a lot of time ever since major electrical network state construction projects realized in this country, so the level of the national competence consequently decreased.

At the same time, Balkan has improved level of knowledge and skill. The first thing destroyed in the war was electrical power network, whose reconstruction requested specialists and professionals in this field, and it represented huge amount of work followed after the war.

“There are two groups of employees in our company. Older, experienced employees, who have an envious knowledge, and the younger, less experienced employees, who are still learning, says Milenko Majstorović, a member of the company management situated in Banja Luka.

Dušan Nikolić from Serbia, is one of the Elnos Group employees. He went to Sweden in 2012 for the first time, when they worked on project in Hofors. According to him, he likes to work in Sweden. “It is peaceful and quiet, and we have better conditions than at home”, says Dušan Nikolić.

His working day lasts for eight hours. In free time, he visits the gym in Motala.

NATURE RESPONSIBLE

IN THE AREA NORTH FROM MOTALA, 200 KV TRANSMISSION LINE GOES THROUGH PROTECTED NATURAL PARK, WHICH IS A HABITAT FOR ONE OF THE MOST ENDANGERED SPECIES OF GRASSHOPPERS. DUE TO THIS, IN ORDER TO AVOID DISTURBANCE OF THEIR HABITAT, WE USED HELICOPTER IN THIS PART OF CONSTRUCTION SITE IN ORDER NOT TO STEP ON GRASS, DESTROY AND POLLUTE LANDSCAPE BY CAR EXHAUSTING GASES, WHOSE DRIVING IN THIS AREA IS FORBIDDEN.

Nastavak izgradnje auto-puta Banjaluka–Doboj

Construction of Highway Banja Luka–Doboj continued



Auto-put Banjaluka-Doboj / Highway Banjaluka-Doboj



Projekat izrade projektne dokumentacije i elektro radova na dionici Prnjavor–Doboj nastavljeni su i u 2014., a sa početkom građevinske sezone nastavili smo radove i ove godine. Takođe, potpisali smo ugovore za izmještanje NN i SN mreža i dalekovoda na dionici Banjaluka–Prnjavor.

Project of making technical documentation and electrical installations works at the section Prnjavor–Doboj were continued in 2014, and once construction season starts this year, we continue works this year, too. Additionally, we signed a contracts for relocation of LV and MV power lines and transmission lines at the section Banja Luka–Prnjavor.

SR DIONICA PRNJAVOR–DOBOK

Protekle godine nastavili smo realizaciju ugovora sa generalnim izvođačima radova na izgradnji auto-puta Banjaluka–Doboj, Integral inženjeringom iz Laktaša i Granitom iz Skoplja.

Na dionici Prnjavor–Doboj dio radova završili smo tokom februara, a nastavak je uslijedio u septembru, kada smo intenzivno počeli da radimo na pripremi izrade telefonske kablovske kanalizacije. U pitanju su SOS telefoni, za hitne slučajeve na putu.

S obzirom na to da je auto-put specifična građevina koja ima sopstvenu dinamiku, rok za završetak radova nije određen i naš dio posla zavisi od građevinskih radova.

Naime, riječ je o niskogradnji, gdje se prije početka izgradnje priprema zemljište, što je dugotrajan proces zbog slijeganja tla, tako da nastavak radova nekada treba da sačeka i do godinu dana.

Zbog velikih padavina i poplava koje su nas pogodile prošle godine, susretali smo se sa brojnim problemima, narušena je ustaljena dinamika u radu, a došlo je i do pojave odrona na pojedinim dijelovima ove dionice. Iz tog razloga,

jedan dio mreže koju smo već izmjestili, ponovo je bio predmet izgradnje i taj dio posla završen je u novembru.

Osim toga, umjesto niskonaponske mreže, morali smo izraditi novu trafostanicu za napajanje dijela potrošača, što nije bilo predviđeno idejnim projektom, nego je urađeno na zahtjev Elektrodistribucije Prnjavor i iz tehničkih razloga, zbog dužine niskonaponske mreže.

Takođe, tokom realizacije ovog projekta susretali smo se sa čestim izmjenama građevinskog projekta, uslijed promjena situacije na terenu, koji je kao konačan usvojen polovinom godine. U nekim dijelovima ove dionice mijenjale su se kote – visina ukopa regulacije rijeke.

Do kraja 2013. godine naš tim je izmjestio mreže koje je trebalo da produ ispod riječnog korita i auto-puta, međutim, projekat se promjenio tokom izgradnje, pa je i dno korita spušteno. Zbog toga je došlo do oštećenja na mrežama, koje je trebalo da saniramo, što je i urađeno tokom protekle godine.

Takođe, započeli smo izgradnju telekomunikacione kanalizacije.

U toku je priprema izgradnje javne rasvjete na petlji Johovac i usaglašavanje detalja sa građevinskim dijelom projekta u vezi sa montažom stubova na samoj petlji. Izgradnja rasvjete, kao i polaganje instalacija kablova za napajanje stubova rasvjete, planirani su za ovu godinu i početak građevinske sezone, koja zavisi od vremenskih uslova.

DIONICA BANJALUKA–PRNJAVOR

Na projektu izgradnje auto-puta, angažovani smo i za dionicu Banjaluka–Prnjavor. Naime, potpisali smo ugovore sa Integral inženjeringom i Granitom za izmještanje kompletnih srednjenaopasnih i niskonaponskih mreža i dalekovoda 110 kV Laktaši–Topola i 400 kV Tuzla–Banjaluka i izgradnju SOS kanalizacije.

U toku je izmještanje četiri niskonaponske i jedne srednjenaopasne mreže. Završili smo i projektovanje ukrtšanja dalekovoda i za izgradnju telekomunikacione kanalizacije.



Montaža ovjesne opreme i provodnika / Installation of suspension equipment and conductors

EN SECTION PRNJAVOR-DOBOK

Last year, we continued realization of the Contract with General Contractors at the construction of Highway Banja Luka-Doboj, Integral Engineering from Laktaši and Granit from Skopje.

In February, we completed a part of works at the section Prnjavor-Doboj, and continued the performance in September, when we intensified preparation of telephone cable trenches. These works refer to SOS telephones along the highway.

Considering the fact that highway is a specific structure with its own time schedule, work schedule was not specified and our part of works depends on civil works.

Namely, this is construction engineering and the land is being prepared before the construction start, which is a long-term process due to subsidence, so that the work continuance sometimes could be prolonged for a year.

Due to large amount of precipitation and floods last year, we confronted numerous problems, normal works dynamics was interrupted, and there were landslides at some loca-

tions along this section. Due to this, one part of already relocated network was subject to reconstruction and this part of work was completed in November.

Besides, instead of low-voltage network, we had to construct a new substation to supply a part of consumers, which was not planned in preliminary design, but it was performed on demand of the Elektroprivreda Prnjavor (Electrical Distribution Company) and due to technical reasons – length of low-voltage network.

Likewise, during this project realization, we often confronted changes of the civil works project, because of situation changes in the field, whose final form had been adopted mid-year. In some parts of this section, elevations changed – height of river regulation pit.

By the end of 2013, our team relocated networks that were supposed to be located under the river bed and highway. However, project was changed during construction and the river bed bottom was lowered. This caused damages in power lines, which were to be rehabilitated, and this was performed during last year.

Likewise, we started construction of telecommunication trenches.

Now, we are performing preparation works for construction of public lightning at the loop Johovac as well as details adjustment with project civil part referring to pole mounting at the loop itself. Construction of lighting, as well as laying cable installations for power supply of lightning poles are planned for this year and the beginning of the construction season, which depends on weather conditions.

SECTION BANJA LUKA-PRNJAVOR

We are also in charge of section Banja Luka-Prnjavor within the highway construction project. Namely, we signed contracts with Integral Engineering and Granit for relocation of entire medium-voltage and low-voltage power lines as well as transmission lines 110 kV Laktaši-Topola and 400 kV Tuzla-Banja Luka and construction of the SOS trenches.

At the moment, we are relocating four LV and one MV power lines. We also completed design for crossing transmission lines and construction of telecommunication trenches.

MODERNIZACIJA RAFINERIJE NAFTE BROD

Modernization of Oil Refinery in Brod





Složenost projekta koji predstavlja do sada naš najveći zadatak u ovom kompleksu, zahtijevala je odličnu organizaciju, jer smo samo na taj način mogli da završimo rekonstrukciju objekta.

Project complexity, being our largest task in this facility so far, demanded excellent organization since this was the only way for us to complete the facility upgrade.



Montaža ormara MCC / Installation of MCC cabinets

SR Elnos BL i dalje je dio velikih projekata, koji su još jedan dokaz povjerenja naših klijenata i sa ponosom možemo istaći kako već godinama nižemo uspjeh za uspjehom i, kao i do sada, naše poslovanje nastavljamo u tom maniru.

Jedan od projekata tokom 2014. godine bio je onaj u Rafineriji nafte Brod, realizovan za našeg investitora, rusku kompaniju „Зарубежнефтестроймонтаж“.

Riječ je o projektu Rekonstrukcija podstanice P-20 (RU-6 kV i RU-0,4 kV), koji je podrazumijevao rekonstrukciju, odnosno modernizaciju elektroenergetskog dijela postrojenja nove linije za preradu nafte – Sekcija 31, kao i rekonstrukciju, odnosno modernizaciju najvažnijeg elektroenergetskog postrojenja u Rafineriji nafte Brod – Postrojenja P-20.

Realizacijom dijela projekta, koji se odnosi na postrojenje Sekcija-31, doprinosi se kvalitetu obavljanja samog tehnološkog procesa ovog postrojenja sa aspekta pouzdanosti snabdijevanja električnom energijom. Modernizacijom elektroenergetske opreme u rasklopnom postrojenju P-20 podiže se sigurnost, raspoloživost i pouzdanost napajanja električnom energijom većeg broja veoma važnih naftnih postrojenja.

Rekonstrukciju postrojenja započeli smo 21. januara, a završili u rekordnom roku, 10. aprila. Predviđeno trajanje radova bilo je 85 dana i, iako je pred nama bio ogroman izazov, projekt je završen i prije predviđenog termina.

Osim toga, poseban izazov za Elnosov tim bili su uslovi u kojima smo radili, jer je dio postrojenja morao da ostane pod naponom. Naime, proces proizvodnje u Rafineriji nafte Brod veoma je složen, pa samim tim nismo bili u mogućnosti

da ga zaustavljamo. S tim u vezi, trebalo je da tokom izvođenja radova u sekciji S-31 obezbijedimo stalno napajanje potrošača koji su neophodni za tehnološki proces, a da paralelno s tim mijenjam i rekonstruišemo dio postrojenja koje je u beznaponskom stanju.

Složenost ovog projekta u Rafineriji nafte Brod, koji predstavlja do sada najveći projekt u ovom kompleksu, zahtijevala je odličnu organizaciju, jer smo samo na taj način mogli da završimo rekonstrukciju objekta u predvidenom roku.

Radili smo u timovima, pa smo na terenu imali i po tri tima u isto vrijeme. Zaposlili smo više od 50 pomoćnih radnika, koji su radili na fizičkim poslovima demontaže i montaže kablova, čišćenja kablovskih kanala i slično. Poslove smo izvodili u postrojenjima pod naponom i pod otvorenim nebom, u različitim vremenskim uslovima. Ovakva vrsta posla zahtijevala je mnogo zaloganja i truda, a rezultati su dokaz da je naša kompanija spremna da obavlja zadatke u svim uslovima za rad.

Poseban dokaz kvaliteta i profesionalnog pristupa poslu je zahvalnica koju je Elnos BL dobio iz Moskve, od generalnog direktora „Зарубежнефтестроймонтажа“ Anatolija Nikolajeviča Padalke, u kojoj izražava zahvalnost našoj kompaniji za kvalitetne i u roku završene radove na kapitalnom remontu tehnoloških postrojenja, kao i za visok profesionalizam zaposlenih.

„Želim Vašoj kompaniji uspjeh u profesionalnoj djelatnosti i nadam se budućoj uspješnoj i uzajamno korisnoj saradnji“, dodaje se u zahvalnici gospodina Padalke.

Osim ove, zahvalnicu generalnog direk-

tora „Зарубежнефтестроймонтажа“, dobio je i glavni inženjer Elnosa BL, zadužen za ovaj projekat, Milorad Lalović, „za profesionalan pristup poslu, ispoljavanje inženjerskih vještina, uspješnu saradnju sa stručnjacima ‘Зарубежнефтестроймонтажа’ i uspješno puštanje u eksploraciju Podstanice P-20“.

EN Elnos BL still is a part of large projects, which are another proof of our clients' trust and we are proud to say we have accomplished many successes for years and we continue to perform equally in the upcoming period.

One of the projects in 2014 was at the Oil Refinery in Brod, which was realized for our Investor – Russian company ZARUBEZHNEFTESTROIMONTAZH.

This was Substation upgrade project of P-20 plant (RU-6 kV and RU-0.4 kV), which included upgrade, i.e. modernization of electric power part of plant within a new line for oil refinery – Section 31, as well as upgrade, i.e. modernization of the most important electric power plant in the Oil Refinery in Brod – Plant P-20.

Upgrade of a part of project referring to Section-31 contributes to quality of the technological process itself within this plant with reliability aspect in electric power supply. Modernization of electric power equipment within the switchyard P-20 improves security, availability and reliability in electric power supply of larger number of important oil plants.

We started upgrade on January 21, and completed it on April 10 – in record deadline. Scheduled works duration was 85 days and, although it was a big challenge for us, the project was completed even before the planned date.

REVIZIJA POSTROJENJA

JOŠ JEDAN OD POSLOVA URAĐENIH U RAFINERIJI NAFTE BROD TOKOM PROŠLE GODINE BILA JE I REVIZIJA 0,4 KV POSTROJENJA U PROIZVODNIM POGONIMA. RIJEČ JE O GODIŠNJEM ISPITIVANJU ELEKTROENERGETSKE OPREME 0,4 KV POSTROJENJA U OKVIRU REMONTA POSTROJENJA. OVAJ POSAO JE OBUVATAO FUNKCIONALNO ISPITIVANJE I PROVJERU ZAŠTITA NA PREKO 500 POZICIJA POTROŠAČA ELEKTRIČNE ENERGIJE U PROIZVODNIM POGONIMA RAFINERIJE. PROVJERILI SMO I ISPITALI OTPOR UZEMLJENJA POSTROJENJA I IZOLACIJE ENERGETSKIH KABLOVA, ISPITALI TERMIČKE, PREKOSTRUJNE I ZEMLJOSPOJNE ZAŠTITE, TE OTPOR PETLJE KVARA SVIH POTROŠAČA. OSIM TOGA, ISPITALI SMO STARE ELEKTROMEHANIČKE ZAŠTITE, KAO I NOVU OPREMU ZASNOVANU NA MIKROPROCESORSKIM ZAŠTITAMA PROIZVODAČA SCHNEIDER ELECTRIC I SIEMENS.



Panorama Rafinerije nafte Brod / Panorama of Oil Refinery in Brod

PLANT REVISION

REVISION OF 0.4 KV PLANT IN PRODUCTION FACILITIES WAS ANOTHER PROJECT PERFORMED AT THE OIL REFINERY IN BROD LAST YEAR. IT WAS AN ANNUAL TESTING OF ELECTRICAL POWER EQUIPMENT WITHIN 0.4 KV PLANT IN THE FRAME OF PLANT OVERHAUL. THIS PROJECT COVERED FUNCTIONAL TESTING AND CONTROL OF PROTECTION UNITS AT OVER 500 POINTS OF ELECTRIC POWER CONSUMERS WITHIN THE REFINERY PRODUCTION FACILITIES. WE CHECKED AND TESTED PLANT EARTHING, INSULATION RESISTANCE OF THE POWER CABLES, TESTED THERMIC, OVER-CURRENT AND EARTHING PROTECTION AND ALSO CHECKED FAULT LOOP RESISTANCE FOR ALL CONSUMERS. BESIDES, WE TESTED OLD ELECTRICAL MECHANICAL PROTECTION, AS WELL AS NEW MICROPROCESSOR BASED PROTECTION EQUIPMENT BY SCHNEIDER ELECTRIC AND SIEMENS.

Apart from this, Elnos' team was specially challenged by conditions we were working at, since a part of the plant had to remain energized. Namely, production process of the Oil Refinery in Brod is a very complex one, so we were in no situation to stop it. In the reference to this, we were supposed to provide continuous supply for the consumers necessary for technological process even during work performance in Section S-31, and, at the same time, to change and upgrade a part of plant which was not energized.

Project complexity representing our largest task in this facility so far demanded excellent organization since this was the only way for us to complete the facility upgrade by scheduled deadline.

We worked in teams, so we had three teams on field at the same time. We also hired more than 50 assistant employees to perform physical activities of cable dismantling and installation, cleaning cable trenches etc. We performed activities in energized plants and outdoors, in different weather conditions. This type of work demanded a lot of work and effort, and results are evidence that our company is ready to per-

form tasks in all working conditions.

A special evidence for quality and professional performance approach is a letter of gratitude that Elnos BL got from Moscow by Anatolij Nikolajevič Padalke, the General Manager of the ZARUBEZHNEFTESTROIMONTAZH. The General Manager expresses gratitude to our company for quality and timely completed works in capital overhaul of technological plants, as well as for our employees' high level of professionalism.

"I wish for your company to be successful in professional activities and I hope for future successful cooperation for benefit of both sides", Mr. Padalke adds in his letter of gratitude.

Apart from this letter of gratitude, Milorad Lalović, the Elnos BL Banja Luka Head Engineer in charge of this project, also got a letter of gratitude from the General Manager of the ZARUBEZHNEFTESTROIMONTAZH, "for professional approach to work, applying engineering skills, successful cooperation with specialists from ZARUBEZHNEFTESTROIMONTAZH and successful commissioning of substation P-20".

Automatizacija filterskih postrojenja

Automation of filter plants



Zastarjelo filtersko postrojenje nije adekvatno odgovorilo sve većim zahtjevima kada je riječ o kapacitetu i ekologiji, tako da je bila neophodna rekonstrukcija.

Outdated filter plant did not provide adequate feedback for growing demands and production referring to capacity and ecology, so upgrade was necessary.

SR Rekonstrukcija filterskog postrojenja u kompaniji B.S.I. Jajce, koja je jedina bh. kompanija u oblasti proizvodnje silicijuma, jedan je od naših prošlogodišnjih projekata.

Glavna djelatnost ovog preduzeća je proizvodnja metalnog i sivog silicijuma. U okviru kompanije, u funkciji su tri električne peći koje su spremne da proizvedu metalni silicijum najvišeg kvaliteta. Proizvodnja od oko 18 do 20 hiljada tona godišnje izvozi se u Italiju, Mađarsku, Sloveniju, Njemačku, Slovačku i Poljsku, za proizvodnju ruda aluminijuma i silikona.

Tehnološki proces proizvodnje silicijuma zahtijeva prečišćavanje i filtriranje produkata tehnološkog procesa u električnim pećima. Zastarjelo filtersko postrojenje nije adekvatno odgovorilo sve većim zahtjevima kada je riječ o kapacitetu i ekologiji. Iz tog razloga bila je neophodna njegova rekonstrukcija.

Ovaj projekt uradili smo u skladu sa najvišim standardima i kompleksnim zahtjevima tehnološkog procesa.

Rekonstrukcija je obuhvatala isporuku novog PLC-a Simatic S7 300 sa MP 377 15 touchpanelom, izradu potpuno novog ožičenja ormara automatskog upravljanja i programiranje ugra-

denog PLC-a. Osim toga, povezali smo signal od drugih postrojenja do PLC-a i pustili postrojenje u rad.

Filtersko postrojenje smo rekonstruisali u predviđenom roku, uprkos teškim uslovima rada. Rekonstrukcija je izvedena u halama u kojima se odvija tehnološki proces, gdje je mnogo prašine i čadi, pa su elektromonteri morali konstantno da nose zaštitne maske za disanje.

Realizacijom ovog projekta ispoštovani su rigorozni ekološki standardi i stvoreni uslovi za pouzdan i neprekidan rad postrojenja kompanije B.S.I. Jajce.

EN Upgrade of filter plant at the Company B.S.I. Jajce - the only company for production of silica in BiH – is one of our last year's projects.

Main activity of this company is production of metal and grey silica. There are three electric furnaces in the company and they are ready to produce highest quality metal silica. Production amounting from 18 to 20 thousand tons per year is exported to Italy, Hungary, Slovenia, Germany, Slovakia and Poland for purpose of producing aluminum and silica ores.

Silica technological production process itself demands refinement and filtering of technological process products in electrical furnaces. Outdated filter plant did not provide adequate feedback for growing demands and production referring to capacity and ecology, so upgrade was necessary.

We performed this project in accordance with the highest level standards and complex technological process demands.

Upgrade included delivery of new PLC Simatic S7-300 with MP 377 15 touch panel, making completely new wiring of automatic control box and programing of installed PLC. Apart from this, we connected signals acquired from other plants to PLC and performed commissioning.

Filter plant was upgraded in planned deadline, despite difficult working conditions. Upgrade was performed at the site where technological process is performed, with a lot of dust and soot, so some of the electricians had to wear protective breathing masks all the time.

Rigorous ecological standards were met in realization of this project and conditions for uninterrupted operation of the plant in the company B.S.I. Jajce were created.



Kompanija B.S.I. u Jajcu / Company B.S.I. in Jajce

Novo postrojenje Rafinerije ulja Modriča

New plant of the Oil Refinery in Modriča



Rafinerija ulja Modriča / Oil Refinery Modriča



Projekat je podrazumijevao izradu niskonaponskih postrojenja za elektromotorni pogon i izradu opšte elektroinstalacije u novom kompleksu u Rafineriji ulja Modriča.

Project included construction of low voltage plant for electrical drive and performance of general electrical installation in new complex of Oil Refinery in Modriča.

SR Sa investitorom, ruskom kompanijom „Зарубежнефтестроймонтаж“, sa kojom poslujemo već nekoliko godina uz odlične rezultate, ostvarili smo saradnju i na projektu Novi kompleks blendovanja maziva, u Rafineriji ulja Modriča.

Upravo ovaj ugovor i jeste proizašao iz te kvalitetne saradnje, pa smo njegovu realizaciju započeli odmah po završetku modernizacije i revitalizacije postrojenja P-20 u Rafineriji nafte Brod.

Riječ je o velikom projektu, međutim, nešto manje složenom u odnosu na Rafineriju u Brodu, gdje smo imali izazove rada pod naponom. Ovdje je u pitanju bila izgradnja novog postrojenja, pa su problemi sa kojima smo se susretali u prethodnom projektu, gdje je bila riječ o rekonstrukciji već postojećeg postrojenja, izbjegnuti.

Projekat je podrazumijevao izradu niskonaponskih postrojenja za elektromotorni pogon

i izradu opšte elektroinstalacije u novom kompleksu u Rafineriji ulja Modriča.

Radovi su obuhvatili isporuku i montažu četiri „Okken“ postrojenja proizvođača Schneider Electric. Riječ je o niskonaponskom postrojenju za distribuciju električne energije i upravljanje motornim pogonom (MCC).

U MCC ormare integrисани su kasetni razvodi za distribuciju električne energije i napajanje motora i instalacija pogonskih uređaja promjenljive brzine – frekventni regulatori i kompenzacija reaktivne energije. Takođe, ovi ormari su opremljeni Modbus modulima za komunikaciju, pa je omogućena integracija na SCADA sistem, čija realizacija je planirana za drugu fazu.

Kada je riječ o izradi kablovske instalacije u novom pogonu, isporučili smo i položili 35 km energetskih i komandno-signalnih kablova 0,4 kV razvoda. Osim toga, isporučili smo i montirali 150 svjetiljki u Ex izvedbi i uradili smo opštu

instalaciju u novom pogonu. U okviru ovog dijela posla u Rafineriji ulja Modriča, izradili smo sistem gromobranske instalacije i uzemljenja.

Izradom novog kompleksa blendovanja maziva, Rafinerija ulja Modriča povećava svoje kapacitete i dobija najmoderniji kompleks proizvodnje ulja na našim prostorima.

EN We again cooperated with the Russian company ZARUBEZHNEFTESTROIMONTAZH, the Investor we have been cooperating with for several years now with excellent results, in the project of New complex for lubricants mixing at the Oil Refinery in Modriča.

This very contract is a result of this successful cooperation, so we started its realization right after modernization and revitalization of plant P-20 in Oil Refinery in Brod.

This was a big project but still less complex than the one at the Oil Refinery in Brod, where we were challenged by work in an energized plant. Here, it was all about construction of new plant, so we avoided problems we had been faced with in the previous project – upgrade of the existing plant.

Project included construction of low voltage plant for electric drive and performance of general electrical installation in new complex of Oil Refinery in Modriča.

Works included delivery and installation of four "Okken" plants produced by Schneider Electric. This is low voltage plant for electricity distribution and electric drive (MCC).

MCCs for electric power distribution and engine supply and installation of drive appliance for speed regulation – variable speed drive

units and compensation of reactive power were integrated in MCC cabinets. Likewise, these cabinets are equipped with Modbus communication modules, so it is possible to integrate in SCADA system, whose realization was planned for the second phase.

As for cable installation in this plant, we delivered and laid 35 km of power and control cables of 0.4 kV distribution. Additionally, we delivered and installed 150 light fixtures for usage in explosive environment as well as general installation in new plant. This part of the project also included lightning rods and grounding system installation.

By construction of the new complex for lubricants mixing, the Oil Refinery in Modriča increases its capacity and gets the most modern oil production complex in our area.

Elektroinstalacije poslovnog objekta

Business building electrical installations

SR Za investitora Agraminvest d.o.o. Mostar, krajem godine završili smo prvi dio projekta elektroinstalacija poslovnog objekta Euroherc Banjaluka.

Ovaj projekat podrazumijevao je izradu elektroinstalacija podzemnih garaža na prvom, drugom i trećem nivou ispod zemlje, vanjske rasvjete i grijajuća rampi.

U podzemnim garažama kompletirali smo opštu instalaciju. Postavili smo rasvjetu proizvođača Lug, ugradili smo spratne ormare Rittal i glavni razvodni ormar sa opremom Schneider Electric-a.

Kada je riječ o grijajućima rampi, za otapanje snijega i leda na dvije rampe poslovnog objekta, isporučili smo i ugradili grijne kablove za asfalt, za koje je predviđeno ručno i automatsko upravljanje.

U okviru dijela ugovora koji se odnosi na vanjsku rasvjetu, isporučeno je i montirano šest dekorativnih kandilabera. Ugrađene su svjetiljke Lug City LED 66 W.

Nastavak radova na elektroinstalacijama nadzemnih etaža očekujemo u septembru tekuće godine.

EN At the end of the year 2014, we completed the first part of the project, building electrical installations for Euroherc Banja Luka, for Agraminvest d.o.o. Mostar, the Investor.



Poslovni objekat Euroherc u Banjaluci / Business building Euroherc in Banja Luka

This project covered electrical installations of underground garages at the first, second and third underground level, outdoor lighting and ramps' heaters.

We set entire installations in underground garages. We installed lightning by LUG; also we installed Rittal floor cabinets and main distribution cabinet by Schneider Electric equipment.

As for ramp heaters, for melting snow and ice of the two ramps for the business building,

we delivered and installed heating cables for asphalt, which can be controlled manually or automatically.

Six decorative light poles were delivered and installed in the frame of a part of the contract referring to outdoor lighting. Lamps of Lug City LED 66 W type were installed.

Continuation of works on electrical installations of overhead floors is expected in September of the current year.

Rekonstrukcija TS 110/35/20 kV Bečeј

Upgrade of SS 110/35/20 kV Bečeј



Foto / Photo: Vladimir Ognjanović

Trafostanica 110/35/20 kV Bečeј / Substation 110/35/20 kV Bečeј

Projekat se sastojao iz tri tehnološke faze, od kojih je svaka predstavljala tehnološku cjelinu za sebe i nosila posebne izazove.

Project consisted of three technological phases, where each represented a technological entirety itself and meant special challenges.

Elektromontažnim i građevinskim radovima, kao podizvodač, bili smo dio rekonstrukcije TS 110/35/20 kV Bečeј za naručioca Elektrovojvodina d.o.o. Novi Sad. Glavni izvodač ovog projekta bila je Energotehnika-Južna Bačka d.o.o.

Projekat Elnosa BL Beograd na trafostanici Bečeј, koji je završen u novembru, sastojao se iz tri tehnološke faze.

U prvoj fazi obavljeni su radovi u zgradit transformacije 20 kV i zgraditi postrojenja, a podrazumijevali su demontažne, betonske, zidarske, bravarske, molersko-farbarske i završne radove. Postavili smo interne saobraćajnice, ograde i čeličnu konstrukciju portala i nosača aparata 110 kV i temelje transformatora, kade, aparata i portala. Osim toga, postavili smo i protivpožarni zid trafo-boksa, šahtove i kanale.

Druga faza obuhvatala je demontažu posto-

jeće čelične konstrukcije, izmještanje ograde i vađenje postojećih betonskih temelja. Izgrađeni su novi temelji, interne saobraćajnice, izrađene i montirane nove čelične konstrukcije nosača aparata, portal i kablovski kanali.

U posljednjoj fazi, naš tim je demontirao postojeće čelične konstrukcije, izmjestio ogradu i izvadio postojeće betonske temelje. Izgrađeni su novi temelji, interne saobraćajnice, izrađene i montirane nove čelične konstrukcije nosača aparata, portali, nova uljna jama.

Svaka faza predstavljala je cjelinu za sebe i sa sobom je nosila posebne izazove.

Zahvaljujući dobroj organizaciji i komunikaciji sa nadzornim organima, prevazišli smo probleme sa podzemnim vodama. Naime, one su nam stvarale probleme prilikom izgradnje uljne jame, ali smo uspješno savladali tu poteškoću.

Uslov investitora bio je da trafostanica tokom rekonstrukcije mora biti u funkciji, pod naponom, s obzirom na to da je riječ o glavnoj trafostanici za napajanje Bečeja i okoline električnom energijom, tako da je i to bio jedan od izazova sa kojima smo se susreli i koje je trebalo prevazići. Iz tog razloga, tehnologija radova prilagođena je uslovima investitora, a sa druge strane, vodili smo posebno računa o bezbjednosti radnika, koja nam je na prvom mjestu.

Osim dotrajalosti i lošeg stanja opreme na ovoj trafostanici, jedan od razloga za njenu rekonstrukciju je i taj što je obližnja fabrika „Sojaprotein“ tražila veću snagu, zbog povećanja proizvodnih kapaciteta.

Prije rekonstrukcije ova fabrika radila je s nagnom od 5 MW, što je rekonstrukcijom povećano, u skladu sa „Sojaproteinovim“ potrebama, na 15 MW. Riječ je o fabriци koja spada među najznačajnije preradivače soje u centralnoj i jugoistočnoj Evropi.

Osim što je omogućen nesmetan razvoj i napredak ove fabrike, rekonstrukcijom TS Bečeј sistem je spreman da primi i ostale zainteresovane korisnike, ali i da omogući razvoj opštine Bečeј i cijele Vojvodine.

EN We were a part of upgrade of SS 110/35/20 kV Bečeј for company Elektrovojvodina d.o.o. Novi Sad, the Employer, and performed electrical installations and construction works as

a subcontractor. The Leader of this project, was company Energotehnika-Južna Bačka d.o.o.

Elnos BL Belgrade, performed the substation Bečeј project which ended in November and consisted of three technological phases.

In the first phase, works on transformer plant 20 kV were performed and these covered dismantling, concrete, masonry, locksmiths, painting and finishing works. We set internal communication roads, fences and steel structure of gantry and supports for the 110 kV equipment, as well as foundations for transformer's oil pit, equipment and gantry. Additionally, we set a firewall of the transformer box, manholes and cable trenches.

The second phase covered dismantling the existing steel construction, fence relocation and taking out the existing concrete foundations. There were new foundations, internal communications, new steel structures of equipment supports made, constructed and installed, as well as gantry and cable trenches.

In the final phase, our team dismantled the existing steel construction, relocated fence and took out the existing concrete foundations. There were new foundations, internal communications, new steel structures for equipment supports made, constructed and installed, as well as gantries and new oil pit.

Each of the phases represented a entirety itself and had special challenges.

Thanks to good organization and communication with the Supervisor we overcame problems with underground waters. Namely, they caused a lot of problems in construction of the oil pit, but we solved these problems successfully.

It was Investor's condition to keep the substation operating and energized during work performance, since this is the main substation for electricity supply of Bečeј and surrounding area. So, this also was one of challenges we came across and were supposed to deal with. This was the reason that work technology had to be adjusted to Investor's terms and, on the other hand, we paid special attention to employees' safety at work, which is our primary task.

Apart from worn out equipment and its bad condition at this substation, one of the reasons for its upgrade was a demand for more power by nearby factory "Sojaprotein", due to expanded production capacities.

Before the upgrade, this factory's working capacity was 5 MW and it was upgraded to 15 MW in accordance with "Sojaprotein" needs. This factory is one of the most significant soya processors in Central and South-East Europe.

Besides undisturbed development and improvement of this factory, upgraded SS Bečeј system is also ready to accept the other interested users and to ensure development of Municipality of Bečeј and entire Vojvodina at the same time.



TS Bečeј - građevinski radovi / SS Bečeј - construction works

11 godina USPJEŠNE SARADNJE

Eleven years of positive cooperation



Rasim Mujkić, regionalni menadžer Legrand-a / Rasim Mujkić, Legrand's regional manager

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Elnos BL je najveći distributer Legrand-ovih proizvoda u Bosni i Hercegovini, a naši proizvodi su dostupni kupcima zahvaljujući razvijenoj mreži maloprodajnih objekata kompanije Elnos BL na teritoriji Republike Srpske.

Elnos BL is the largest distributor of LEGRAND products in the Bosnia and Herzegovina, and our products are available to the customers thanks to developed network of retail shops of the company Elnos BL in the territory of the Republic of Srpska.

SR Više od jedne decenije, tačnije od 2003. godine, naše preduzeće sarađuje sa svjetskim liderom u proizvodnji NN elektropreme, francuskom kompanijom Legrand. O saradnji ove dvije kompanije, razgovarali smo sa Legrand-ovim regionalnim menadžerom Rasimom Mujkićem.

„Sa Elnosom imamo veoma uspješnu saradnju, na obostrano zadovoljstvo. I jedna i druga strana uvijek nastoje da ispunе svoje preuzete obaveze i obećanja, pa se nadamo da će naša saradnja trajati još dugi niz godina“, istakao je Mujkić.

Ukratko nam predstavite kompaniju Legrand?

Legrand grupa je globalni specijalista u proizvodnji i ponudi elektro i digitalnih proizvoda i sistema za infrastrukturu objekata u zgradarstvu, tercijarnim djelatnostima i industriji. Grupa Legrand je svjetski lider u niskom naponu, a direktno smo prisutni kao filijala ili predstavnštvo u preko 180 zemalja svijeta, sa ponudom od preko 180.000 proizvoda. U sastavu grupe se nalazi 30 svjetski poznatih brendova, a zapošljavamo 35.000 ljudi, dok je ukupni promet kompanije oko četiri milijarde evra.

Kao važnu osobinu Legrand grupacije ističemo stalne inovacije i širenje ponude u različitim segmentima, sa pet odsto ulaganja ukupnog prometa na godišnjem nivou, što rezultira mogućnošću stalnog praćenja modernih tehnologija, pa samim tim i nuđenje kompletnih sistema za objekte i projekte koji spadaju u domen naše djelatnosti. U Bosni i Hercegovini Grupa Legrand je predstavljena u formi predstavništva i posao ostvarujemo sa pet distributera.

Kakav assortiman nudite svojim kupcima?

Naša ponuda je kompletna, počevši od transformatora, šinskog razvoda, kompenzacije jalove energije, niskonaponskih ormara i kompletne rasklopno-zашtitne opreme unutar ormara (zračni strujni prekidači do 6000 A, DPX automatski strujni prekidači do 1600 A, rastavne sklopke do 1600 A, kontrolno zaštitne sklopke, Fid sklopke, automatski osigurači svih vrsta i kategorija...), redne stezaljke, kompletni materijal za obilježavanje...

U sistemu razvođenja nudimo više komercijalnih grupa proizvoda pod brendom LEGRAND i BTICINO, kao što su: Celiane, Valena, Niloe, Mosaic, Axolute, Leaving, Matix.

Posebno smo ponosni na činjenicu da smo jedini proizvođač na svijetu koji proizvodi prekidače i utičnice za sve svjetske standarde kao što su šuko, američki, britanski, australijski, brazilski...

Osim toga, šta biste još izdvojili iz Legrand-ove ponude?

Nudimo sve vrste kanala i kanalica bilo da se radi o stropnom (Cablofil žičane police), parapetnom (DLP plastične ili Al kanalice, GWO-čelične kanale) ili podnom načinu razvođenja.

Da bi instalacija u jednoj zgradi bila potpuna, naša grupa u ponudi ima i kompletan sistem instalacije za slabu struju, poznatiju kao VDI proizvodi za pasivnu instalaciju informatičkih mreža (ormari, patch paneli, spojnici, napajanje i sve vrste RJ utičnica).

Sa posebnim zadovoljstvom ističemo naš sistem kućne automatičke My Home, koji je zasnovan na vlastitom protokolu – SCS, bez dodatnog investiranja u software, a karakterišu ga veliki broj funkcija, modularnost, fleksibilnost i širok izbor upravljačkih elemenata. Ugradnjom ovakvog sistema dobija se na komforu, uštedi energije i sigurnosti. Za kontinuirano napajanje električnom energijom, neophodni su i UPS proizvodi koje Legrand Grupa nudi, bilo u konvencionalnom ili modularnom obliku.

Koji su to proizvodi u Legrand-u, a koji se nalaze u ponudi naše kompanije Elnos BL?

Kompanija Elnos je najveći distributer Legrand-ovih proizvoda u BiH i u ponudi su sve nabrojane grupe proizvoda. Riječ je o sveobuhvatnoj ponudi, prilagođenoj komercijalnom, industrijskom i stambenom tržištu. Legrand-ovi proizvodi su dostupni kupcima i zahvaljujući razvijenoj mreži maloprodajnih objekata preduzeća Elnos na teritoriji RS.

EN For more than one decade, i.e. since 2003 our company has been cooperating with world leader in production of electrical equipment, French company Legrand. Cooperation between these two companies was discussed with Legrand's regional manager, Mr. Rasim Mujkić.

“Cooperation with Elnos is very positive, to the satisfaction of both parties. Each party always strive to meet its obligations and promises, so we do hope that our cooperation will last for many years”, stated Mujkić.

Can you please present the company Legrand in brief?

Group is a global specialist in production and offer of electrical and digital products and infrastructure systems in civil engineering, tertiary activities and industries.

The Legrand Group is a world leader in low-voltage products, and we are directly present as an affiliate or representative office in over 180 countries, having over 180,000 products in offer. There are 30 world-wide known brands within the group, and 35,000 people employed, whilst the total turnover of the company is four billion EUR.

As a significant characteristics of Legrand Group, constant innovations and widening a range of offers in different segments stand out with investing five percent of total turnover annually, which results in constant follow-up of modern technologies, and therefore providing an offer of complete systems for facilities and projects within our scope of activities.

In BiH, Legrand Group is present in form of representative office and business activity is carried out through five distributors.

What range of products is offered to your clients?

Our offer is full, ranging from transformers, bus bars, reactive power compensation, low-voltage boxes and complete switching and protective equipment in the cabinet (air circuit breaker up to 6000 A, DPX MCCBs up to 1600 A, disconnecting switches up to 1600 A, control - protective switches, differential current switches, miniature circuit breakers of all types and categories..), terminal blocks, complete range of materials for marking...

Within the range of products for distribution system we offer several commercial groups of products under the brand name LEGRAND and BTICINO such as: Celiane, Valena, Niloe, Mosaic, Axolute, Living, Matix.

Especially, we are proud of the fact that we are sole producers in the world producing switches and outlets complying with all world standards such as Schuko, American, British, Australian, Brazilian, etc.

Besides, what else distinguishes from Legrand's offer?

All types of cable trays whether it is about ceiling (Cablofil wire mesh tray), cable trunkings (DLP plastic or Al trays, GWO-steel trays) or floor distribution. To have installation in a building complete, our group also has a complete system of installations for low current, better known as VDI products for passive installation of IT networks) distribution cabinets, patch panels, connectors, power supply and all types of RJ outlets in our offer.

It is our special pleasure to present our system of home automation My Home, which is based on its own protocol - SCS, with no additional investing in software, and is characterized with a great number of functions, modularity, flexibility and a wide spectrum of control elements. Installation of such system provides comfort, energy saving and safety. For continuous power supply UPS products that LEGRAND Group offers, either in conventional or modular form, are also required.

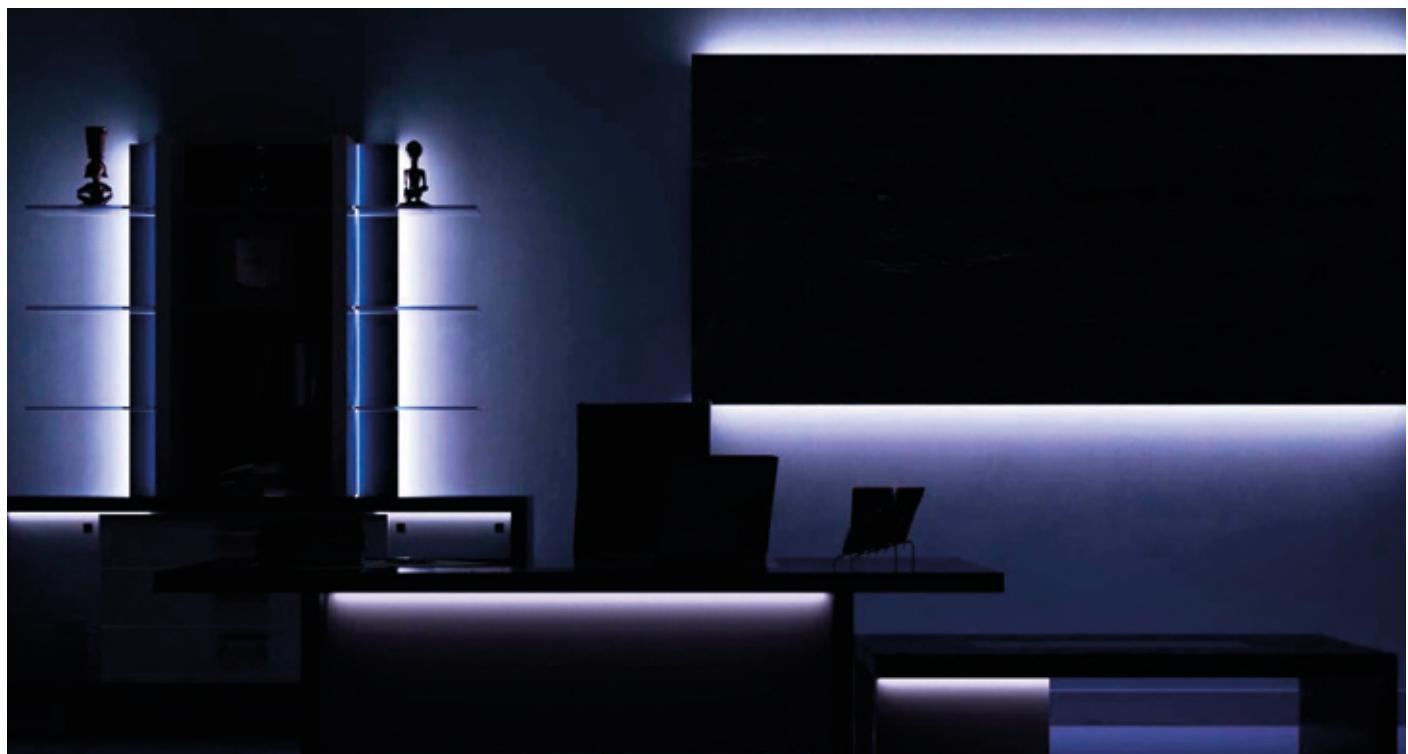
Which Legrand products can be found in the offer of our company Elnos BL?

The company Elnos is the largest distributor of LEGRAND products in the Bosnia and Herzegovina and all mentioned groups of products are present in the offer. It is about encompassing offer, adapted to the commercial, industrial and residential market. LEGRAND products are available for sale thanks to developed network of retail shops of the company Elnos in the territory of the Republic of Srpska.

Innovative LED lighting in our market

V-TAC

Inovativna LED rasvjeta na našem tržištu



///

V-TAC je brand sa predstavništvima u Bugarskoj, Velikoj Britaniji, Ujedinjenim Arapskim Emiratima i Indiji, izgrađen u saradnji sa stručnjacima iz oblasti energetike i očuvanja životne sredine.

V-TAC is a brand with offices in Bulgaria, Great Britain, United Arab Emirates and India, built in cooperation with experts in the field of energy and environmental protection.



UŠTEDA ENERGIJE

V-TAC PROIZVODI NASTAJU KAO REZULTAT DUGOTRAJNOG PROCESA KOJI POČINJE OBIMnim ISTRAŽIVANJIMA O IZVODLJIVOSTI I PRAKTIČNOSTI, SA OSNOVNIM CILJEM UŠTEDE ENERGIJE I ZAŠTITE ŽIVOTNE SREDINE. U SKLADU SA RASTUĆOM POTREBOM ZA LED TEHNOLOGIJOM U CIJELOM SVIJETU, V-TAC TEŽI DA SE NADE MEĐU LIDERIMA U RAZVOJU I ŠIRENJU OVE TEHNOLOGIJE I DA PREDLOŽI NAJBOLJE I NAJMODERNIJE PROIZVODE svojim kupcima.



SR Kompanija V-TAC jedna je od vodećih za LED osvjetljenje, a zahvaljujući saradnji sa kompanijom Elnos BL, proizvodi ove renomirane kuće našli su put do naših kupaca. Širok assortiman V-TAC proizvoda nudimo u svim maloprodajnim objektima i jedini smo zastupnici ove kompanije u Srpskoj.

Elnos BL u svojoj ponudi ima širok assortiman od oko stotinu različitih proizvoda ove kompanije, specijalizovane za LED rasvetu. Najzastupljeniji proizvodi su LED paneli, reflektori i sijalice, a naši klijenti su kako pojedinci koji kupuju ove proizvode za domaćinstva, tako i veliki tržni centri i izvođači radova na različitim građevinskim objektima.

Jedna od karakteristika V-TAC kompanije su česte inovacije. Ažurnim praćenjem trendova oni često uvode novitete na tržištu, zahvaljujući čemu zadržavaju stalne i privlače nove klijente.

V-TAC je brend sa predstavništvima u Bugarskoj, Velikoj Britaniji, Ujedinjenim Arapskim Emiratima i Indiji, izgrađen u saradnji sa stručnjacima iz oblasti energetike i očuvanja životne sredine. Akcenat je na projektovanju, izradi i plasiranju na tržište svih vidova svijetlećih tijela za uštedu energije, sa posebnim osvrtom na LED rješenja.

Sa nešto više od četiri godine iskustva, kompanija se veoma brzo razvila i dobila internacionalni predznak.

Osluškujući puls naših korisnika i činjenicu da je LED rasvjeta veoma tražena, među potencijalnim dobavljačima izabrali smo upravo kompaniju V-TAC, koja nudi odličan omjer kvaliteta i cijene.

Saradnju smo započeli u avgustu prošle godine i od samog početka bilježimo mjesечni rast prodaje, što potvrđuje da su novi proizvodi u našoj ponudi za kratko vrijeme našli svoje mjesto na tržištu Republike Srpske.

Svi proizvodi kompanije V-TAC imaju CE, RoHS, TUV sertifikaciju, a njihova LED sijalica od 10 W sa Samsung diodom i radnim vijekom od 50 hiljada

sati, proglašena je za najbolju sijalicu u Evropi za 2012. godinu.

Konstantan kvalitet osvjetljenosti i vijek od 30 do 50 hiljada radnih sati, garantovan je ugradnjom jedinstvenih najkvalitetnijih dioda proizvedenih u Philips-u, Sharp-u, Samsung-u i Epistar-u.

Kvalitet LED sijalica veoma je važan, a jedna od njihovih odlika je ta što su veoma prilagodljive prostoru svojim izgledom, dimenzijama i oblikom. Rade bez zagrijavanja, lako su zamjenljive i, što je veoma važno, izgledaju izuzetno dekorativno.

EN V-TAC company is one of the leading in LED lighting, and thanks to cooperation with Elnos BL company, products of this renowned company found their way to our buyers. The wide selection of V-TAC products is offered in all retail facilities and we are the only representatives of this company in Srpska.

Elnos BL has a large selection of about a hundred different products from this company, specializing in LED lighting. The most prevailing products are LED panels, flood lights and light bulbs, and our clients are both individuals, buying these products for households, and large shopping centers and contractors in various construction buildings. One of specifics of the V-TAC company are frequent innovations. They often introduce novelties in the market through prompt monitoring of trends, which is how they keep the existing and attract new customers. V-TAC is a brand with branch offices in Bulgaria, Great Britain, United Arab Emirates and India, developed in cooperation with experts in the field of energy and environmental protection. The emphasis is on design, production and market placement of all types of energy saving lighting, with special emphasis on LED solutions.

With a bit more over four years of experience, the company developed very fast and gained an international prefix. Through feeling the pulse of our

customers and the fact that LED lighting is in high demand, we chose V-TAC Company among potential suppliers, as it offers an excellent ratio between quality and price.

We started cooperation in August last year and we have had monthly growth in sales from the start, which confirms that the new products in our offer found its place in the Republic of Srpska market in a short period.

All the V-TAC products have CE, RoHS, TUV certificates, and their 10 W LED light bulb with Samsung diode and working life of 50 thousand hours was announced the best light bulb in Europe for 2012.

The constant lighting quality and working life from 30 to 50 thousand working hours is guaranteed by installation of unique diodes of the best quality produced in Philips, Sharp, Samsung and Epistar.

The quality of LED light bulbs is very important, and one of its specifics is that they are most adjustable to the space by their appearance, dimensions and shape. Those operate without warming-up, they are easily replaced, and very importantly, they have a very decorative appearance.

ENERGY SAVING

V-TAC PRODUCTS RESULT FROM LONG-TERM PROCESS STARTING WITH COMPREHENSIVE RESEARCH ON FEASIBILITY AND PRACTICALITY, WITH THE BASIC AIM OF ENERGY SAVING AND ENVIRONMENTAL PROTECTION. IN LINE WITH THE GROWING NEED FOR LED TECHNOLOGY WORLDWIDE, V-TAC ASPIRES TO BE AMONGST THE LEADERS IN DEVELOPMENT AND EXPANDING OF THIS TECHNOLOGY AND TO PROPOSE THE BEST AND STATE-OF-THE-ART PRODUCTS TO ITS CUSTOMERS.

Modernizacija distributivne mreže BIOSCO CS TRAFOSTANICAMA

Modernization of distribution power grid by Biosco CS substations



Male dimenzije, lako uklapanje u stambene blokove u urbanoj sredini, jednostavna i brza ugradnja na terenu koja traje svega nekoliko sati, neke su od osnovnih karakteristika i specifičnosti ovih trafostanica.

Small dimensions, easy set into residential facilities in urban area, simple and fast installation in the field, which last for only few hours, are some basic characteristics and features of these substations.



Biosco CS trafostanice / Biosco CS substations

SR Fabrika prefabrikovanih betonskih trafostanica Biosco CS Elnosa BL Beograd, koje se rade prema licenci Schneider Electric-a, nakon svečanog otvaranja prethodne godine do danas je realizovala tri velika ugovora, a prilikom realizacije ovih projekata ugrađeno je preko stotinu trafostanica.

Dva projekta smo realizovali za Elektrodistribuciju Beograd, a treći ugovor imali smo sa Elektrovojvodinom.

Prema prvom ugovoru sa EDB-om, bili smo zaduženi za isporuku 35 komada, dok smo u drugom ugovoru isporučili 33 kompaktne transformatorske stanice, 10/0,4 kV. Naši zadaci bili su montaža, fabričko testiranje i transport trafostanica.

Projekat sa Elektrovojvodinom podrazumijeva je isporuku 44 trafostanice 20/0,4 kV.

Osim izrade transformatorskih stanica, montaže, fabričkog testiranja i transporta, naš anga-

žman prilikom realizacije ovog projekta podrazumijevao je i gradevinske radove – iskopavanje, montažu, postavljanje, uvezivanje kablova, uzemljenje i, u kraju, postepeno puštanje u rad trafostanica.

Male dimenzije, lako uklapanje u stambene blokove u urbanoj sredini, jednostavna i brza ugradnja na terenu koja traje svega nekoliko sati, neke su od osnovnih karakteristika i specifičnosti ovih trafostanica.

Takođe, svojim dimenzijama se odlično uklapaju i ne narušavaju željeni izgled stambenih naselja. Postavljaju se umjesto starih trafostanica "kula" i u odnosu na njih koje su velike, neugledne i zidane, Biosco CS trafostanice su mali, poluukopani, lako prenosivi energetski objekti.

Veoma su bezbjedne i jednostavne za održavanje i malih gabarita. Prednosti Biosco CS trafostanica su poboljšanje napajanja i savremen razvoj sekundarne distributivne mreže, a osim

toga, praktične su za uvođenje u daljinsko upravljanje sekundarnom distributivnom mrežom.

Jedna od važnih karakteristika je ta da prilikom zamjene trafostanica imamo minimum isključenja napajanja električnom energijom, jer je veoma važno da potrošači što kraće budu u beznaponskom stanju prilikom zamjene dotrajalje opreme i modernizacije.

Modernizacija distributivnog sistema bila je neophodna jer, osim neadekvatne konstrukcije "kula", problem je i nepouzdana oprema koja je predstavljala stalnu potencijalnu opasnost.

Kada je riječ o poluukopanim Biosco CS trafostanicama, sve je veoma pristupačno za rad i moguće je mjeriti potrošnju, što će uticati i na kontrolu i smanjenje gubitaka na mreži. Takođe, veoma je značajno što se u njih mogu ugraditi jedinice za daljinsko upravljanje. Na ovaj način biće omogućeno dobijanje kompletnih podataka o energiji, što će imati veliki značaj za rezultate

poslovanja, smanjenje gubitaka i smanjeno vrijeme trajanja kvarova koji nastanu na mreži.

Projekte slične do sada realizovanim očekujemo i tokom ove godine, a prema planovima, u budućnosti bi trafostanice Biosco CS mogле biti ugrađivane i u Smart City Novi Sad, koji bi, prema najavama, trebalo da se prošire.

EN Factory of prefabricated concrete substations Biosco CS owned by Elnos BL Belgrade, produced according to Schneider Electric license, has realized three significant contracts for the last three years after official opening two years ago, and over one hundred substations were installed within these projects.

Two projects were realized for Power Utility of Belgrade, and third contract was signed with Elektrovojvodina.

In line with the first PUB contract, we were in charge of delivering 35 pieces, whereas in line with the second contract, we delivered 33 compact 10/0.4 kV substations. We were to install, perform factory testing and transport substations.

Project with Elektrovojvodina covered delivery of 44 20/0.4 kV substations.

Apart from making transformer substations, installation, factory testing and transport, our engagement in this project realization covered construction works as well – excavation, installation, aligning, cable connection, grounding, and, at the end, gradual commissioning of substations.

Small dimensions, easy set into residential facilities in urban area, simple and fast installation in the field, which last for only few hours, are some basic characteristics and features of these substations.

Likewise, they fit in by their dimensions perfectly and do not disturb the designed appear-

ance of settlements. They replace old substation "towers" and in comparison to those big, unpresentable and concrete-constructed, Biosco CS substations are small, semi-grounded, easy transferrable power facilities.

They are very safe, simple for maintenance and of small dimensions. Advantages of Biosco CS substations are improved power supply and modern development of secondary distribution power grid. Apart from this, they are practical for implementation into remote control systems of secondary distribution power grid.

One of the important features is that in replacement of substations we have minimum of power supply interruptions, since it is very important for the consumers to be left without power in as short period as possible during replacement of worn out equipment and modernization processes.

Distribution system modernization was also necessary, apart from inadequate "towers" structure, due to the problem of unreliable equipment, which represented a possible danger at any moment.

As for semi-grounded Biosco CS substations, everything is easy to access for work and it is possible to measure consumption, which also will affect both control and decrease of power line losses. Likewise, it is very important that remote control devices could be integrated in them. This way will provide acquiring of all information on power, which will greatly affect business results, decrease of losses and decreased failure time occurring at the power line.

This year, we expect project similar to those we have realized so far, and according to plans, in future the Biosco CS substations could also be installed in the Smart City Novi Sad, which, as announced, should be expanded.



PRIZNANJE AUREA

POSLOVNI PORTAL EKAPIJA PROŠLE GODINE JE DODIJELIO PRIZNANJA I NAGRADA ZA INVESTICIJU GODINE "AUREA 2014". ELNOS BL BEOGRAD DOBIO JE PRIZNANJE KAO JEDAN OD FINALISTA TAKMIČENJA, ZA PROJEKAT OTVARANJA FABRIKE TRAFOSTANICA BIOSCO CS. OVA NAGRADA DODJELJUJE SE VEĆ ŠEST GODINA, SA CILJEM PROMOVISANJA NOVIH IDEJA, ORIGINALNOSTI I KVALITETNIH PROJEKATA KOJI ĆE DATI DOPRINOS CJELOUKUPNOM PRIVREDNOM AMBIJENTU I ODRŽIVOM RAZVOJU SRBIJE. DODJELI PRIZNANJA "AUREA" U BEOGRADSKOM "AEROKLUBU", PRISUSTVOVALI SU MNOGOBROJNI PREDSTAVNICI DIPLOMATSKOG KORA, POSLOVNE ZAJEDNICE I MEDIJA.

AUREA CERTIFICATE

BUSINESS PORTAL EKAPIJA AWARDED CERTIFICATES AND PRIZES FOR INVESTMENT OF THE YEAR – "AUREA 2014" LAST YEAR. ELNOS BL BELGRADE WAS AWARDED CERTIFICATE, BEING ONE OF THE FINALIST IN THE COMPETITION, FOR PROJECT OF OPENING THE FACTORY FOR SUBSTATION PRODUCTION BIOSCO CS. THIS PRIZE HAS BEEN AWARDED FOR THE LAST SIX YEARS WITH THE AIM TO PROMOTE NEW IDEAS, ORIGINAL AND QUALITY PROJECTS, WHICH ARE TO CONTRIBUTE ENTIRE ECONOMIC SURROUNDING AND SUSTAINABLE SERBIAN DEVELOPMENT. THE CERTIFICATE "AUREA" WAS AWARDED AT "AEROKLUB" IN BELGRADE AND THIS EVENT WAS ATTENDED BY NUMEROUS REPRESENTATIVES OF DIPLOMATIC BODY, BUSINESS COMMUNITY AND MEDIA.

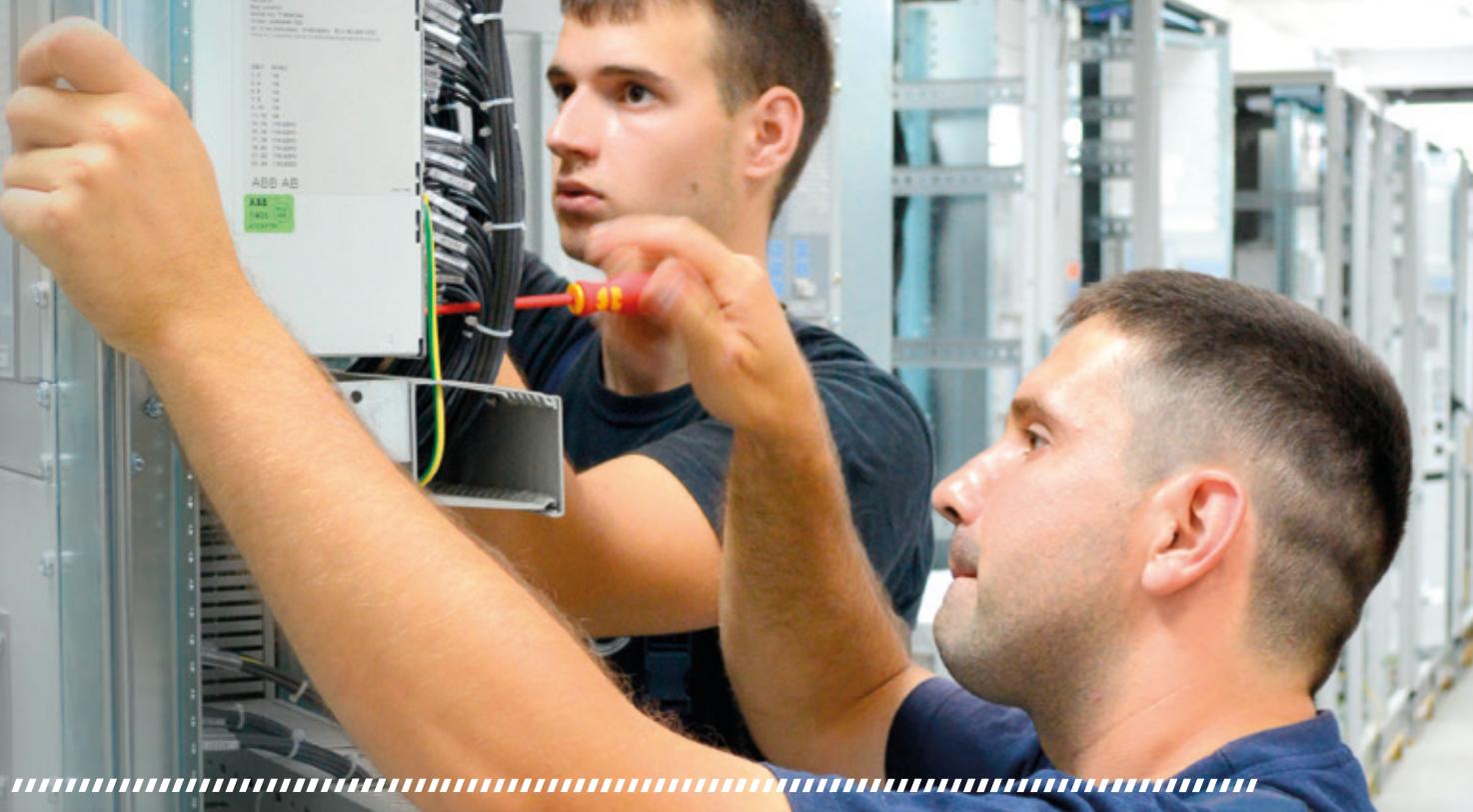


Istovar i ugradnja trafostanice / Discharge and installation of substation

Record Year for the Electromechanical Workshop

REKORDNA GODINA

ZA ELEKTROMONTAŽNU RADIONICU



Za kratko vrijeme uspjeli smo da obezbijedimo stručnjake i opremu koji mogu da odgovore najsavremenijim tehnološkim zahtjevima i da se svojom elektromontažnom radionicom istaknemo na veoma zahtjevnom tržištu.

In a short-run, we managed to provide the experts and equipment that may answer to the state of art technological requests and to stand out with our Electromechanical workshop on the very demanding market.

SR Primarna djelatnost naše elektromontažne radionice tokom protekle godine bila je proizvodnja i isporuka sistema relejne zaštite i daljin-skog upravljanja i, s obzirom na obim proizvodnje isporučenih i ugrađenih ormara, za 2014. slo-bodno možemo reći da je bila rekordna godina.

Početak izrade ovog sistema kreće još u projektnom birou, poslije čega projekte preuzima radionica u kojoj ugrađujemo i montiramo sisteme upravljanja i zaštite. Kada obavimo ovaj dio, slijedi konfigurisanje, parametrizacija i podešavanje zaštitno-upravljačkih uređaja.

Na kraju, fabrički testiramo i obavljamo simula-ciju rasklopnih aparata u radionici, baš onako kako će ovaj sistem da funkcioniše u trafostanicama. Na ovaj način, najpričušnije prenosimo sliku stanja kakvo će biti kasnije u eksplata-ciji sistema.

Ovakav princip rada dokaz je da se prilagođavamo specifičnim zahtjevima, jer upravo testiranje svakog pojedinačnog signala još u radionici, a onda i na samoj trafostanici, zahtjev je jednog od naših najvećih klijenata, Elektromreže Srbije.

Sa ponosom možemo reći da smo za kratko vrijeme uspjeli da obezbijedimo stručnjake i opremu koji mogu da odgovore najsavremenijim tehnološkim zahtjevima i da se svojom elektromontažnom radionicom istaknemo na veoma zahtjevnom tržištu.

RADIONICA U BEOGRADU

Tokom 2014. godine, u okviru odjeljenja zaštite i upravljanja u elektromontažnoj radionici naše kompanije Elnos BL Beograd, posebno izdva-jamo četiri ugovora.

Za krajnjeg korisnika Elektromrežu Srbije, u partnerstvu sa ABB-om, realizovali smo, i to u rekordnom roku, projekte na tri trafostanice sa 128 ormara relejne zaštite i daljinskog upravljanja: dvije 220 kV Bajina Bašta i Kruševac 1 i jednoj 400 kV, Smederevo 3.

Bili smo zaduženi za projektovanje, elektromontažne radove i fabričko testiranje svih stanicu u prisustvu krajnjeg kupca, Elektromreže Srbije.

Drugi ugovor, projektovanje trafostanica i fabričko testiranje, realizovali smo u saradnji sa Schneider Electric-om i Elektromontažom, Kraljevo za krajnjeg korisnika EMS, a riječ je o 114 ormara za 400 kV trafostanice Beograd 20 i Obrenovac.

I sa Crnogorskim elektroprenosnim sistemom imali smo dva ugovora za dvije 400 kV trafo-stanice Podgorica 2 i Pljeva 2 i 110 kV Ribare-vinu, gdje će biti ugrađena zaštitno-upravljačka oprema našeg partnera Siemens, dok su u dru-



Ormari relejne zaštite i upravljanja / Relay protection and remote control cabinets

gom ugovoru za 110 kV trafostanicu Mojkovac ugrađeni mikroprocesorski releji proizvođača Schneider Electric.

Osim projektovanja, montaže i fabričkog testiranja po ugovorima sklopljenim sa Crnogorskim elektroprenosnim sistemom, naš zadatak bila je i montaža na samim trafostanicama i puštanje u pogon kompletnih objekata.

RADIONICA U BANJALUCI

Kada je riječ o elektromontažnoj radionici Elnosa BL u Banjaluci, iako nismo imali ovako obimne projekte, njihov ukupan broj bio je veći nego proteklih godina.

Važan projekat na kojem smo bili angažo-vani je trafostanica Stanari, za koju smo izra-dili i fabrički ispitati preko 50 ormara različi-tih tipova, poput ormara zaštite i upravljanja, staničnog računara, telekomunikacije i blokova ormara sopstvene potrošnje.

Porast cijena električne energije dovodi do veće potrebe za njenom uštedom. Jedna od metoda štednje je kompenzacija reaktivne ener-gije. U svojim ormariima automatske kompen-zacije, koji su već postali naš standardni proiz-vod, tokom prošle godine ugradili smo bate-

rije jačine veće od 4.000 kVA za kompenzaciju reaktivne energije.

Takođe, često smo imali i pojedinačne zahtjeve, a specifičnost takve proizvodnje je da svaki ormara radimo od ponude, preko izbora materijala, dobavljača, rasporeda opreme u ormaru, sistema označenja i sistema označavanja.

EN During the last year, the basic activity of our Electromechanical workshop was production and delivery of the relay protection and remote control systems and, taking into consideration scope of production of delivered and built-in cabinets, we may say that 2014 was a record year.

Production of the subject system commences in a design office, and after that the designs are taken by the Electromechanical workshop where we incorporate and assembly systems of the control and protection. Following completion of this part of work follows configuration, parametrization and settings of the protection and control devices.

At the end, we perform test on switching devices and simulation in the Workshop in the way identical to the one in which the system will be functioning in the substations when incor-

porated. In such way, we provide a picture of the condition which will be subsequently in the phase of the system exploitation.

Such principle of work is an evidence that we comply with the specific requests, since such testing of each single signal, while in workshop and afterwards in the substation, is a request of one of our biggest clients, Electric Network of Serbia.

We proudly say that in a short-run we managed to provide the experts and equipment that may answer to the state of art technological requests and to stand out with our electromechanical workshop on the very demanding market.

WORKSHOP IN BELGRADE

Concerning 2014, we would like to especially emphasize four contracts within the Protection and Control Sector in the Electromechanical workshop of our company Elnos BL Belgrade.

For the final user, Electric Network of Serbia, in the partnership with ABB, we realized, within a record deadline, projects of three substations with 128 relay protection and remote control cabinets: two 220 kV Bajina Bašta and Kruševac

1 and one 400 kV, Smederevo 3.

Our obligations included design work, electromechanical works and factory tests of all stations in the presence of the final buyer, Electric Network of Serbia.

The second contract, design of the substations and factory tests, we performed in co-operation with Schneider Electric and Elektromontaža Kraljevo for the final user EMS, and it includes 114 cabinets for 400 kV substations Beograd 20 and Obrenovac.

We also realized with Montenegrin Electrical Transmission System two contracts for 400 kV substations Podgorica 2 and Pljevlja 2 and 110 kV Ribarevina, where protection and control equipment of our partner Siemens is to be incorporated, while in the second contract for 110 kV substation Mojkovac, digital protection devices by Schneider Electric producer are incorporated.

In addition to designing, assembling and factory testing, our task under the contracts concluded with Montenegrin Electrical Transfer System was also assembly work in the substations and commissioning of the finished structures.

WORKSHOP IN BANJALUKA

When it comes to the Electromechanical workshop Elnos BL in Banja Luka, we did not have such large projects, yet their aggregate number was bigger than in previous years.

A significant project in which we were engaged is Stanari substation, for which purpose we produced and performed factory tests on over 50 cabinets of various types, such as protection and control cabinets, stationary computer, telecommunications and block cabinets for local consumption.

Rising prices of electric energy leads to the higher need of energy saving. One of the energy saving methods is compensation of the reactive energy. In our cabinets for automatic compensation of reactive energy, which have become our standard product, we incorporated batteries of more than 4,000 kVA power for reactive energy compensation during the last year.

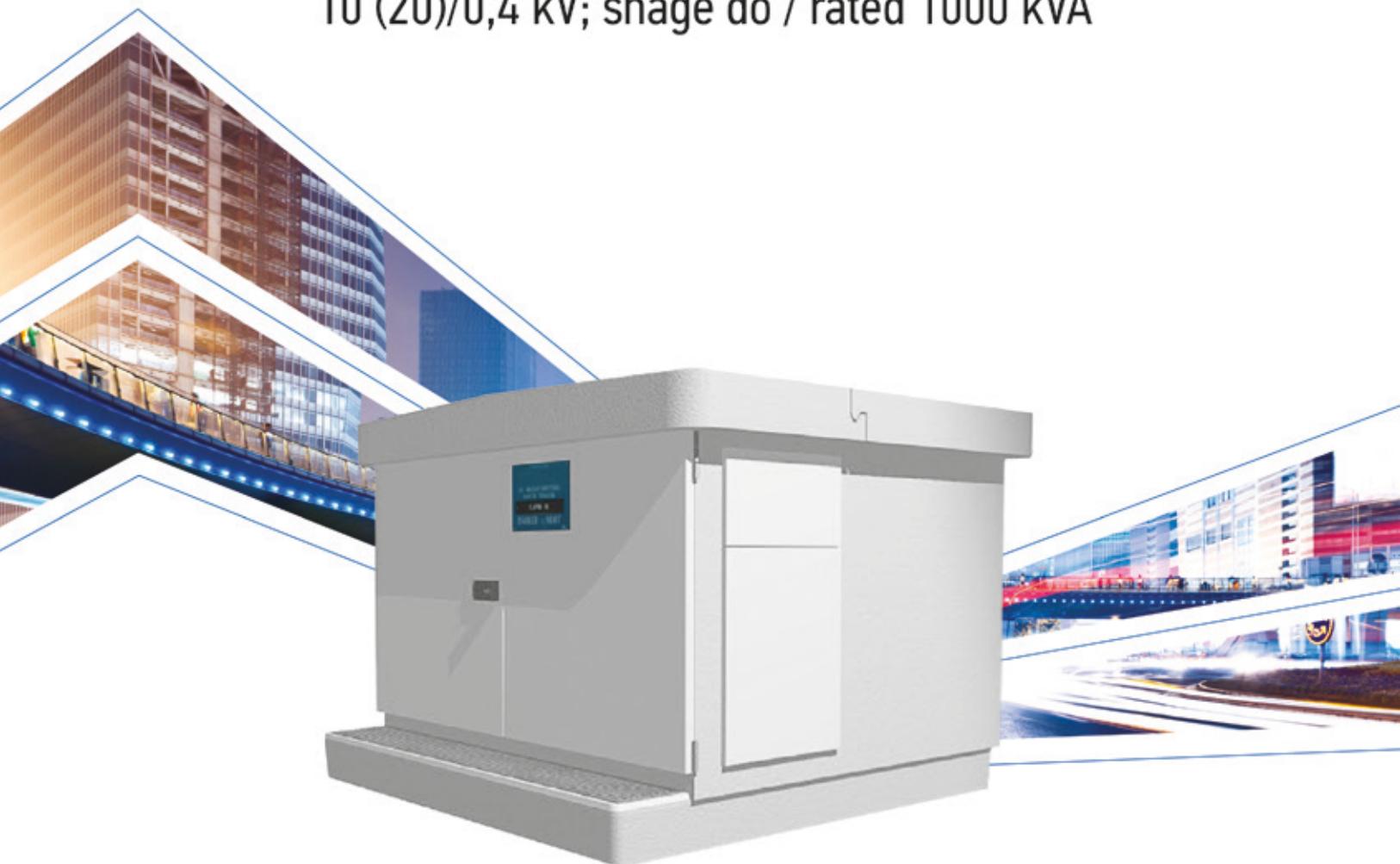
Moreover, quite often we had individual requests, and specificity of such production is that every cabinet is produced starting from offer, through selection of material, suppliers, arrangement of equipment in cabinet, wiring system and marking system.



Montaža ormara reljejne zaštite i upravljanja / Installation of relay protection and managing cabinets

Biosco CS

10 (20)/0,4 kV; snage do / rated 1000 kVA



PREFABRIKOVANA DISTRIBUTIVNA DALJINSKI UPRAVLJIVA TRANSFORMATORSKA STANICA

Prefabricated distribution remote controllable
transformation station

Partner licenced
by

Schneider
Electric



PRVA USPJEŠNA GODINA

RADA TOPLANE NA BIOMASU

The first successful year of
biomass heating plant

Po završetku sezone grijanja, rekonstruisali smo glavnu vrelovodnu mrežu ključnih tačaka i uveli skretnice pomoću kojih su odvojeni glavni vodovi, te uradili remont svih toplotnih stanica.

When heating season came to an end, we had the main hot water pipe line of the main points renovated and switch points introduced that separate main pipe lines, and had all heating system stations renovated.

SR Kada su Elnos BL i partnerska kompanija IEE pretprošle godine započeli projekat Toplane na biomasu – modernizacija sistema daljinskog grijanja Gradiška, bili smo pioniri u ovoj oblasti i nismo znali šta nas očekuje u narednom periodu.

Sezona grijanja kojom smo započeli ovaj projekat bila je na polovini, tako da smo imali priliku da u hodu rješavamo probleme, vidimo koji su nedostaci mreže i šta sve možemo da očekujemo tokom sezone. Po završetku sezone, uhvatili smo se u koštac sa tehničkim problemima sistema. S obzirom na to da je izasna bila jedna polovina sezone grijanja, imali smo uvid u stanje i realnu situaciju funkciranja sistema, koliko često puca mreža, koliko ima kvarova na njoj i kako kotač reaguje na loženje biomase.

Generalnim remontom namjera nam je bila da osiguramo toplanu najmanje za sljedećih 17 godina, koliko imamo ugovor sa Opštinom Gradiška.

Po završetku sezone grijanja, rekonstruisali smo glavnu vrelvodnu mrežu ključnih tačaka i uveli skretnice pomoću kojih su odvojeni glavni vodovi. Na taj način, moguće je locirati kvar i isključiti mrežu u dijelu grada u kojem je kvar nastao, kako bi ostatku grada bilo omogućeno neometano snabdijevanje toplotnom energijom. Takođe, uradili smo i remont svih toplotnih stanica.

Toplana na biomasu predstavlja odličan primjer projekta privatno-javnog partnerstva sa Opštinom Gradiška, i pokazuje da je i u BiH moguće imati kompaniju koja se bavi toplifikacijom, a koja može ekonomski pozitivno poslovati.

„Prva poslovna godina Toplane Gradiška uz sebe nosi i atribute uspješnosti, ali i sva iskušenja, imajući u vidu činjenicu da je ovakav projekt pionirski korak na prostorima BiH. Znali smo da ćemo biti suočeni sa mnogim dilemama i iskušenjima u startnoj godini projekta, ali smo svi zajedno ostali pri uvjerenju da smo napravili epohalan iskorak, ne samo u kontekstu daljinskog grijanja, već i u aspektu ekološke standardizacije u skladu sa direktivama Evropske unije“, istakao je načelnik Opštine Gradiška Zoran Latinović.

Veliki izazov za nas su predstavljeni veoma kratki rokovi, kako bismo korisnicima omogućili kvalitetno grijanje uz maksimalan ekološki faktor.

„Sadašnji kvalitet grijanja skoro da se ne može ni porebiti sa onim koji smo imali u vrijeme kada se koristio mazut kao pogonski energet. Građani su dobili stabilno napajanje toplotnom energijom bez nuspojava – aerozagadenja, i to su suštinske prednosti koje smo ovim partnerstvom ostvarili“, istakao je Latinović.

Dodao je da je prva prednost korištenja biomase ekološki mjerljiva dobit za sve građane, bez obzira na to da li se oni griju na sistem toplane, jer je znatno smanjena emisija CO₂ u gradu.

„Sa aspekta zaštite zdravlja stanovništva, to je neporeciva dugoročna dobit, ali i u ekonomskom aspektu imamo pozitivne efekte, jer koristimo energet koji je prirodna tekovina ovog prostora“, naglasio je Latinović.

Šira društvena zajednica uključena je u cjelokupan proces snabdijevanja biomasom i ostalim

sredstvima neophodnim za rad toplane. Biomasa je energet koji čini otpad iz drvne industrije, ali i ostaci koji trunu u šumama i voćnjacima. Iz tog razloga, u sistem grijanja na biomasu u odnosu na grijanje na mazut, zaposleno je 15 odsto više radnika, koji skupljaju biomasu.

Prilikom modernizacije sistema otvorili smo i službu za korisnike i uveli call centar sa besplatnom info linijom, kako bismo u svako doba bili u službi građana.

Jedna od korisnika je penzionerka Leposava Čakalj, koja ističe da je veoma zadovoljna kvalitetom grijanja, ali posebno susretljivošću zaposlenih u call centru.

„Službenici su veoma ljubazni, ali nadasve stručni. Takođe, prilikom dešavanja izvjesnih tehničkih kvarova, došli su u veoma kratkom roku i rješili problem. Koliko sam imala priliku da razgovaram sa drugim korisnicima toplane, sve je više zadovljnih korisnika, što je veoma povoljno“, zaključila je Leposava.

Kada je riječ o predstojećem periodu, namjeravamo modernizovati toplifikacioni sistem i uvesti daljinsko upravljanje toplotnim stanicama iz toplane. Na taj način osiguraćemo nadzor i upravljanje toplotnim stanicama. Takođe, važan projekat koji imamo u planu za budućnost je i mjerenje potrošnje korisnika.

Nadamo se da će nam uspjeh projekta Toplana na biomasu u Opštini Gradiška, otvoriti vrata toplanu u okruženju, a sudeći po reakcijama i planovima lokalnih zajednica, na dobrom smo putu da projekat toplane na biomasu realizujemo i u drugim gradovima u regionu.

POSJETA UČENIKA

KAKO BI SE UPOZNALI SA NOVOM TEHNOLOGIJOM GRIJANJA NA BIOMASU, UČENICI TEHNIČKE ŠKOLE GRADIŠKA, U OKVIRU KAMPAÑE "ZAGRLJAJ TOPLOTE", POSJETILI SU TOPLANU U DECEMBRU. ZAJEDNO SA PROFESOROM VIDJELI SU RAD POSTROJENJA NA EKOLOŠKI ČISTO I OBNOVLJIVO GORIVO. UČENICI KAŽU DA IM JE PORED TEORIJE U TOKU ŠKOLOVANJA I PRAKSA VEOMA VAŽNA I DA ĆE IM POSJETA OVOM PREDUZEĆU POMOĆI DA LAKŠE SAVLADAJU GRADIVO.



Toplana na biomasu u Gradišci / Biomass Heating Plant in Gradiška

EN Two years ago, when Elnos BL and partner company IEE started the project Biomass Heating Plant - modernization of remote heating system of Gradiška, we were pioneers in this field and we did not know what we were to expect in the coming period.

The heating season, in which this project started, was at its half, so we had an opportunity to solve problems on time, realize network failures and discover what to expect in the season. When the season ended, we faced system technical problems. As a half of the heating season passed, we could take a look into situation and actual situation in system functioning, frequency of network failures, occurrence of failures and how boiler reacts to biomass feeding.

An overall repair service was carried out to provide heating plant's functioning in the next 17 years, the period of agreement with the Municipality of Gradiška with regard to the heating plant.

As heating season was over, the main hot water pipe line of main points were renovated and switch points that separate main pipe lines introduced. In such way, it is possible to have a defect located and turn off the pipe line in a part of city where the defect occurred, so that the remaining parts remain supplied with thermal energy. Furthermore, repair of all heating stations was conducted.

The Biomass Heating Plant represents an extraordinary example for the project between private and public partnership with the Municipality of Gradiška, and demonstrates that having a company in BiH dealing with heating sys-

tems and positive business activity is possible.

"The first business year of Toplana Gradiška is also marked with success as well as temptations, given the fact that such project is a prime step in Bosnia and Herzegovina territory. We knew we would face numerous dilemmas and temptations in the first year of the project, but all of us remained assured that we made an epochal step, not only in terms of remote controlled heating, but also in terms of ecological standardization in accordance with EU directives", said Zoran Latinović, the Mayor of the Municipality of Gradiška.

Our huge challenging task were short terms to provide clients with good heating with maximum ecological factor.

"Current heating quality cannot be compared with the one that existed in era of fuel oil used as operational power source. Citizens get regularly supplied thermal energy with no side effects - air pollution, which are crucial advantages made with such partnership", as emphasized by Latinović.

He added that a prime advantage of biomass use is ecological benefit for all citizens, regardless of the fact if they are heated through heating plant system, because emission of carbon dioxide has been significantly reduced in the city.

"In consideration of health protection, it is undeniable long-term profit; also, from the economic point of view, positive effects exist because power source, which is natural wealth in this area, is used", as stated by Latinović.

Wider social community is involved in the entire process of biomass supplying and other

assets needed for heating plant operations. Biomass is an energy source obtained from wood industry waste, and residuals that rot in woods and orchards. For the said reason, biomass heating system compared to fuel oil heating involves 15 percent more employees who collect biomass.

In the course of system modernization, a customer's service was established as well as a call center with free info line so we could be at hand, any time.

One of the customers, Leposava Čakalj, a retired person emphasizes that she is very satisfied with the quality of heating, especially with affordability of call center's employees.

"Employees are very kind, but professional above all. In addition, when certain technical defects occurred, they would come quickly and solve the problem. Also, I was in position to talk to other customers and I may say that there are more and more satisfied customers, which is laudable", ended Leposava.

With regard to the coming period, we intend to improve heating system and introduce remote control over heating stations from the heating plant. In such way monitoring and control of heating stations will be provided. Furthermore, important project scheduled for the future is customer's consumption measuring.

We do hope that success of the project Biomass Heating Plan in the Municipality of Gradiška will open the door to neighboring heating plants and, according to a respond and plans of local communities, we are on the good path to realize the project for biomass heating plant in other cities in the region.

STUDENTS' VISIT

IN ORDER TO LEARN ABOUT NEW BIOMASS HEATING TECHNOLOGY THE STUDENTS OF THE TECHNICAL SCHOOL OF GRADIŠKA, WITHIN THE CAMPAIGN CALLED "IN THE ARMS OF HEAT", VISITED THE HEATING PLANT IN DECEMBER. ALONG WITH THEIR TEACHER THEY HAD INSIGHT INTO PLANT OPERATING ON ECOLOGICALLY CLEAN AND RENEWABLE FUEL. BESESIDE THE THEORETICAL LEARNING DURING EDUCATIONAL PROCESS THE STUDENTS SAY THAT PRACTICAL TRAINING ALSO PLAYS SIGNIFICANT ROLE, AND THUS VISIT PAID TO THIS COMPANY WILL HELP THEM EASILY MASTER TEACHING MATERIALS.



Sistem za doziranje sječke / System balancing of wood chips



Konferencija Achilleslive u Oslu / Conference Achilleslive in Oslo

SR KONFERENCIJA ACHILLES LIVE U OSLU

Vodeće skandinavske energetske kompanije i dobavljači održali su u Oslu manifestaciju „Achilleslive“, u septembru prošle godine. Na ovoj dvodnevnoj konferenciji bili su i predstavnici naše kompanije Branko Torbica, Milan Martinović i Bo Norlin. Na konferenciji u Oslu je bilo riječi o trenutnim i budućim investicijama, ali i o razvoju i poslovnim mogućnostima. Cilj ove manifestacije bio je da učesnicima ponudi jedinstveno mjesto za okupljanje skandinavskih energetskih kompanija i njihovih dobavljača, a jedna od vodećih tema konferencije bili su obnovljivi izvori energije i isporuka čiste i pouzdane energije.

Karakteristika ove konferencije bili su i "speed-networking" – 'jedan na jedan' sastanci, koji su omogućili učesnicima umrežavanje sa brojnim stručnjacima iz ove oblasti.

Konferencija „Achilleslive“ je pružila jedinstvenu priliku učesnicima da dobiju uvid u nordijsko tržište, investicione planove, poslovne mogućnosti i da razumiju zahtjeve i potrebe energetskih kompanija. Takođe, učesnicima je pružena mogućnost da razvijaju nove poslovne kontakte, ali i da održavaju postojeće.

I ove godine Sellicha Qualification system sertifikovao je kompaniju Elnos BL kao kvalifikovanog isporučioca roba, usluga i izvođača radova za nordijski region. Riječ je o sertifikatu koji ima veliki značaj za poslovanje naše kompanije na ovom tržištu.

EN CONFERENCE ACHILLES LIVE IN OSLO

The leading Scandinavian utilities and suppliers

held a conference "Achilleslive" in Oslo in September 2014. On this two-day conference were also the representatives of our company Branko Torbica, Milan Martinović and Bo Norlin. At the Conference in Oslo discussed are current and future investments, developments and business opportunities. The goal of this manifestation was to offer the participants a unique place for gathering Scandinavian utilities and their suppliers, and one of the leading topics of the Conference was renewable energy sources and supply of clean and reliable energy. This Conference also featured one-to-one "speed networking" meetings that gave the opportunity to the participants to connect with numerous experts from this field. The "Achilleslive" Conference offered unique opportunity to the participants to have insight into the Scandinavian market, investment plans, and business opportunities and to better understand requests and demands of the utility companies. Furthermore, the participants were enabled to build up new business contacts and to maintain current ones. This year as well, Sellicha Qualification system certified the company Elnos BL as the qualified supplier of goods, services and contractor for the Nordic region. It is a certificate which is very significant for the business operations of our company on this market.

SR JUBILEJ MAKO CIGRE U SKOPLJU

Makedonski nacionalni komitet Međunarodnog savjeta za velike elektroenergetske sisteme MAKO CIGRE prošle godine proslavio je dvadesetu godišnjicu. Svečana sjednica generalne skupštine MAKO CIGRE, koja je bila centralni događaj ovog jubileja,

održana je početkom oktobra 2014. godine u skopskom hotelu „Aleksandar Palace“, a Elnos BL bio je jedan od sponzora ove manifestacije.

Godišnjica MAKO CIGRE obilježavana je tokom cijele godine, nizom manifestacija. Program obilježavanja ovog jubileja protekao je u znaku broja 20, a obuhvatao je raznovrsne aktivnosti i događaje, ukupno njih 20, tokom prošle godine.

Organizatori manifestacije istakli su da su dvije protekle decenije bile posvećene promociji, obrazovanju i razmjeni znanja, a ova organizacija danas zauzima važno mjesto u državi, pokrivajući oblasti značajne za njeno kvalitetno funkcionisanje. Jaka radna snaga, eksperti iz oblasti energetskog sektora, predstavljaju osnovu za poboljšanje kvaliteta u ovom sektoru.

EN MAKO CIGRE JUBILEE IN SKOPJE

Macedonian National Committee of the International Council on Large Electric Systems MAKO CIGRE celebrated its twentieth anniversary last year. Solemn Session of the General Assembly of MAKO CIGRE, which was the central event of this jubilee, was held in early October 2014 in Skopje hotel "Aleksandar Palace", and Elnos BL was one of the sponsors of this event.

Anniversary of MAKO CIGRE was also marked throughout the year, by a series of events. The program of celebrating this anniversary was marked by number 20, which included a variety of activities and events, 20 in total, during the last year.

Event organizers pointed out that two of the past decades were dedicated to the promotion, education and sharing of knowledge and this organization today holds an important place in the country, covering areas of importance for its well functioning. A strong workforce, experts in the energy sector, is the basis for quality improvement in this sector.

SR TOPLANA NA BIOMASU PREDSTAVLJENA NA FORUMU U NOVOM SADU

Projekat kompanije Elnos BL i naše partnerske kompanije IEE, Toplana na biomasu – modernizacija sistema gradskog grijanja u Gradišci, predstavljen je na 8. međunarodnom forumu o čistim energetskim tehnologijama, održanom u oktobru u Novom Sadu. Organizator ovog foruma bio je Institut za evropske poslove (INEA) i Fakultet tehničkih nauka Univerziteta u Novom Sadu.

S ponosom ističemo da smo na ovoj manifestaciji sa preko 400 učesnika, pobrali pažnju svih učesnika i stručnjaka, jer smo jedini iznijeli konkretan primjer primjene čistih energetskih tehnologija – Toplanu u Gradišci, koja već drugu godinu sezona uspješno posluje, sa sve većim brojem zadovoljnih korisnika.

Projekat i koncept toplane na biomasu namijenjen je gradovima i ogleda se u namjeri da se izgrade nove



Svečana sjednica MAKO CIGRE / Solemn Session of MAKO CIGRE

ili rekonstruišu postojeće toplane sa lož-ulja na novi energet - biomasu, sa ciljem kvalitetnog i održivog načina snabdijevanja toplotnom energijom.

Na forumu u Novom Sadu razmijenili smo iskustva sa ostalim učesnicima i stvorili nove kontakte iz kojih će, nadamo se, proizaći i nove uspješne poslovne saradnje.

Forum u Novom Sadu otvorila je potpredsjednica Vlade i ministarka građevine, saobraćaja i infrastrukture Srbije Zorana Mihajlović, a među učesnicima su bili i predstavnici ministarstava energetike iz zemalja regiona.

EN BIOMASS HEATING PLANT PRESENTED AT NOVI SAD FORUM

The project of Elnos BL company and our partner company IEE, Biomass heating plant - modernization of city heating system in Gradiška, was presented at the 8th International Forum on clean energy tech-

nologies, held in October in Novi Sad. The organizer of this forum was the Institute for European Affairs (INEA) and the Faculty of Technical Sciences of Novi Sad University.

We are proud to point out that we had over 400 participants at this event, and garnered the attention of all participants and experts, because we were the only ones to present a actual example of the application of clean energy technologies - Heating plant in Gradiška, which has already been operating the second heating season successfully, with a growing number of satisfied customers.

The project and the concept of a biomass heating plant is intended for cities and it is planned to build new or reconstruct existing heating plants replacing the heating oil energy source to a new one - biomass, with the aim to reach quality and sustainable mode of heat energy supply.

At the forum in Novi Sad we have shared experien-



Dragiša Zečević, direktor IEE-a Banjaluka / Dragiša Zečević, director of IEE Banja Luka

ces with other participants and created new contacts which will, hopefully, also create new successful business relationship.

Forum in Novi Sad was opened by Deputy Prime Minister and Minister of construction, transport and infrastructure of Serbia, Zorana Mihajlović, and among the participants, there were also representatives of the ministries of energy from the regional countries.

SR PREDSTAVLJENI REZULTATI U OBLASTI INŽENJERINGA

Ellos BL Beograd ponovo je bio veliki sponzor Savjetovanja o elektroodistributivnim mrežama Srbije, održanog od 22. do 26. septembra 2014, u Vrnjačkoj Banji.

Osim izložbe, učešća u redovnom programu, konferencije i predstavljanja portofilia naše kompanije, održali smo i prezentaciju na temu razvoja, rezultata i najnovijih referenci u oblasti inženjeringu. Takođe, predstavili smo modularni sistem danske kompanije CUBIC, čiji smo ovlašteni distributer za tržište Srbije.

Ovo savjetovanje, deveto po redu, organizovao je Nacionalni komitet CIRED Srbije u saradnji sa nacionalnim komitetima Crne Gore i Rumunije i drugim komitetima, stručnjacima i kompanijama iz Srbije i regiona.

Predsjednik komiteta Dragoslav Jovanović, istakao je da CIRED pruža priliku za izuzetan susret naučnika, stručnjaka, poslovnih ljudi, elektroodistributivnih kompanija, inženjera iz oblasti distribucije, proizvođača, korisnika i servisera energetske i druge opreme za distribuciju, konsultanata i projektanata, menadžera i eksperata iz svih oblasti koje imaju udjel u funkcionisanju distributivnih sistema.

Savjetovanju je prisustvovalo preko 600 učesnika, između ostalih i predstavnici Ministarstva rudarstva i energetike Srbije, Elektroprivrede Srbije, Elektromreže Srbije, predstavnici elektroprivreda Crne Gore i Bosne i Hercegovine i predstavnici brojnih stranih i domaćih kompanija.

EN PRESENTATION OF THE RESULTS IN THE FIELD OF ENGINEERING

Ellos BL Belgrade again was a major sponsor of the Conference on electricity distribution in Serbia, held from September 22 to 26, 2014 in Vrnjačka Banja. In addition to exhibition, participation in the regular program, conference and presentation of a portfolio of our company, we also held a presentation on the development, results and recent references in the field of engineering. In addition, we have presented a modular system of Danish company CUBIC. We are an authorized distributor for the Serbian market for this company.

This consultation, the ninth in a row, was organized by the National Committee CIRED Serbia in cooperation with national committees of Montenegro

and Romania and other committees, experts and companies from Serbia and the region.

Dragoslav Jovanović, the President of the Committee, stressed that CIRED provides an opportunity for an exceptional meeting of scientists, experts, business people, electricity distribution companies, engineers in the field of distribution, manufacturers, users and service technicians of power and other distribution equipment, consultants and designers, managers and experts from all areas that have a stake in the operation of distribution systems. Conference was attended by over 600 participants, including representatives of the Ministry of Mining and Energy of Serbia, Serbian Electric Power Industry, Electric Network of Serbia, representatives Electric Power Industry of Montenegro and Bosnia and Herzegovina and representatives of many foreign and domestic companies.

SR RAZVOJ ENERGIJE VJETRA

Prvi Međunarodni sajam i kongres o obnovljivim izvorima energije i energetskoj efikasnosti, RENEXPO® Western Balkans, održanje tokom juna prošle godine u Beogradu u organizaciji REECO SRB.

Cilj ove manifestacije je povezivanje međunarodnih i nacionalnih partnera iz cijele Europe. RENEXPO® Western Balkans predstavlja mjesto okupljanja eksperata u oblasti obnovljivih izvora energije i energetske efikasnosti u izgradnji i renoviranju, a Elnos BL Beograd bio je jedan od sponzora ove manifestacije koja povezuje projektne partnera i lidera u industriji. Takođe, RENEXPO® predstavlja važnu platformu za stručnjake, pružaocu usluga, kao i profesionalnu razmjenu znanja i iskustva.



Prvi Međunarodni sajam i kongres o OIE u Beogradu / First International Fair and Congress on RES in Belgrade

Na konferenciji o energiji vjetra, stručna javnost je imala priliku da se bliže upozna sa mogućnostima srpskog tržista i regionala zapadnog Balkana za razvoj energije vjetra do 2020. godine. Na konferenciji se diskutovalo i o strukturisanju isplativih projekata o energiji vjetra u Srbiji, uslovima i izazovima u izgradnji vjetroparkova. Osim toga, teme konferencije su bile i regionalni razvoj tržista i finansiranja, praktični aspekti nabavke, projektovanja i izgradnje vjetroparkova, integracija energije u pametne i mikromreže...

U okviru dvodnevne međunarodne konferencije održana je i prva „Noć energije“, tokom koje su posjetioci u večernjim satima mogli da obidu 13 gradskih lokacija gdje se nalaze realizovani projekti na kojima su primijenjene obnovljiva energija i energetska efikasnost.

Tokom dva sajamska dana predstavili su se učesnici iz Srbije, Njemačke, Austrije, Turske, Mađarske,

Rumunije, Bugarske, Holandije, Hrvatske, Bosne i Hercegovine...

EN THE DEVELOPMENT OF WIND ENERGY

First International Fair and Congress on renewable energy and energy efficiency, RENEXPO® Western Balkans, was held in June last year in Belgrade, organized by REECO SRB.

The aim of this event is to connect international and national partners from all over Europe. RENEXPO® Western Balkans is a meeting place for experts in the field of renewable energy sources and energy efficiency in construction and renovation, and Elnos BL Belgrade was one of the sponsors of this event that is linking project partners and leaders in the industry. Also, RENEXPO® is an important platform for professionals, service providers, and professional exchange of knowledge and experience.

At a conference on wind energy, public experts had the opportunity to become familiar with the capabilities of the Serbian market and the Western Balkan region for the development of wind energy by 2020. The conference also discussed about the structuring of cost-effective projects on wind energy in Serbia, conditions and challenges in the construction of wind farms. In addition, the topics at the conference involved regional market development and financing, practical aspects of procurement, design and construction of wind farms, energy integration into smart and micro grids...

During the two-day international conference the first "Night of energy" was also held during which the visitors were able to visit 13 locations in the city in the evening. These locations held implemented projects that incorporated renewable energy and energy efficiency.

During the two days of the event participants from Serbia, Germany, Austria, Turkey, Hungary, Romania, Bulgaria, the Netherlands, Croatian, Bosnia and Herzegovina presented themselves...



Elnos Srbija na tehničkoj izložbi CIRED-a / Elnos Serbia at the technical exhibition CIRED



Promotivni štand Elnosa Srbija / A promotional stand Elnos Serbia

**SR SAJAM ENERGETIKE U BEOGRADU**

Deseti međunarodni sajam energetike, paralelno sa Sajmom zaštite životne sredine, održan je u oktobru 2014. Slogan sajma bio je "Zelena energija za budućnost", a održan je pod pokroviteljstvom ministarstava rудarstva i energetike i poljoprivrede i zaštite životne sredine Srbije, u saradnji sa Privrednom komorom Srbije.

Mi smo nastavili svoju tradiciju, pa ja tako Elnos BL Beograd i ovaj put bio dio ove manifestacije koja je nedavno primljena u Uniju međunarodnih sajmova (UFI). Koncepcijски, sajam je obuhvatao obnovljive i

neobnovljive izvore energije i energetsku efikasnost.

Osnovne teme kojima su se učesnici bavili bile su razvoj energetskog potencijala Srbije, planovi za ulaganja stranih investitora i zaštita životne sredine.

Na kraju ove manifestacije, dodijeljene su zahvalnice i diplome u nekoliko kategorija. Elnosu BL Beograd dodijeljena je zahvalnica za promotivni nastup "Energetika".

Na sajmu je učestvovalo oko 150 izlagača, od čega je četvrtina inostranih učesnika iz 15 zemalja.

EN THE ENERGY FAIR IN BELGRADE

The tenth International Energy Fair, in parallel with the Fair of Environmental Protection, was held in October 2014. The slogan of the fair was the "Green Energy for the future", and it was held under the sponsorship of the Ministry of Mining and Energy and Ministry of Agriculture and Environmental Protection of Serbia, in cooperation the Serbian Chamber of Commerce.

We have continued our tradition, and so yet again Elnos BL Belgrade was a part of this event, which was recently admitted to the Union of International Fairs (UFI). Conceptually, the fair included the re-

THE TENTH ENERGY FAIR WAS THE PLACE WHERE WERE PRESENTED NEW TECHNOLOGIES AND EXCHANGED EXPERIENCES FOR THE IMPROVEMENT OF THE ENTIRE SECTOR. AS A SPECIALIZED EVENT, THE FAIR FOLLOWS ECONOMIC DEVELOPMENTS, TRENDS AND ISSUES OF THE ENERGY SECTOR.

newable and non-renewable energy sources and energy efficiency.

The main topics for the participants were the development of the energy potential of Serbia, plans for investments by foreign investors and environmental protection.

At the end of the event, letters of gratitude and diplomas were awarded in several categories. Elnos BL Belgrade was awarded a letter of gratitude for promotional advent of "Energetika".

The fair was attended by about 150 exhibitors. One quarter of these participants included foreign participants from 15 countries.

DESETI SAJAM ENERGETIKE BIO JE MJESTO NA KOME SU PREDSTAVLJENE NOVE TEHNOLOGIJE I RAZMJENJENA ISKUSTAVA ZA UNAPREDIVANJE KOMPLETNOG SEKTORA. KAO SPECIJALIZOVANA MANIFESTACIJA, SAJAM PRATI PRIVREDNA DEŠAVANJA, TREDOVE I PROBLEMATIKU ENERGETSKOG SEKTORA.

Donacije eparhijama **Srpske pravoslavne crkve**

Donations to eparchies of the Serbian Orthodox Church

Dugogodišnji angažman u pružanju pomoći Srpskoj pravoslavnoj crkvi od strane naše kompanije, prošle godine krunisan je donacijama Eparhiji bihaćko-petrovačkoj i Eparhiji budimljansko-nikšićkoj.

Long-term engagement of our company in helping the Serbian Orthodox Church was crowned by donations for the Bihać-Petrovac and Budim-Nikšić Eparchies.

SR OBNOVA EPARHIJE BIHAĆKO-PETROVAČKE

Poput mnoštva drugih hramova i objekata širom Bosne i Hercegovine, u ratnim razaranjima devedesetih godina prošlog vijeka, oštećeni su i hramovi i objekti Eparhije bihaćko-petrovačke.

Prema riječima sekretara Eparhije, protopreverita Zdravka Bogojevića, zahvaljujući pomoći ljudi dobre volje i institucija, do danas su skoro svih hramovi obnovljeni.

„Osim sredstava Vlade Republike Srpske i Vlade Unsko-sanskog kantona, najveći doprinos egzistenciji ove eparhije i njenim građevinskim djelatnostima pružaju dobrovotori Srpske pravoslavne crkve, kao što je gospodin Dušan Torbica“, kazao je Bogojević.

Dodao je da je eparhija na taj način uspjela da obezbijedi kompletan enterijer neophodan za prostorije eparhije, salon, spavaće sobe i dnevne boravke, što ne bi bilo moguće bez ove donacije.

EN REBUILDING OF THE BIHAĆ-PETROVAC EPARCHY

During the war devastations in the nineties of the last century, majority of temples and auxiliary facilities of the Bihać-Petrovac Eparchy were damaged.

According to the Eparchy secretary, Protopreverita Zdravko Bogojević, thanks to help from people of goodwill and institutions, almost all the temples have been rebuilt to this day.

“Besides the funds coming from the Republic of Srpska Government and Government of Una-Sana Canton, the biggest contribution to existence of this Eparchy and its’ civil engineering activities is provided by the Serbian Orthodox Church’s people of goodwill, such as Mr. Dušan Torbica”, said Bogojević.

He added that thanks to this contribution, the Eparchy was able to provide the complete interior required for the Eparchy premises, lounge, bedrooms and living rooms, which would not be possible without this donation.

His Holiness Patriarch Serbian Irinej visited the Bihać-Petrovac Eparchy in September last year on the occasion of the Saint Patron’s day of the Gathering of Serb Saints.

SR POMOĆ CRKVI U VELICI

Povodom obilježavanja sedam decenija od fašističkog genocida u crnogorskom selu Velika, na dan Svetog Kirika i Julite prošle godine, održan je sabor, a svetu arhijerejsku liturgiju i pomen nevinim žrtvama u crkvi u ovom crnogorskom mjestu služio je Njegova svetost patrijarh srpski Irinej.

Potpredsjednik Odbora za obilježavanje godišnjice genocida prof. dr Ranko Simonović istakao da je ovaj sabor organizovan zahvaljujući dobrovoljnim prilozima veličkih bratstava i donacijama više prijatelja Velike.

„Među najvećim donatorima je renomirana Elnos Grupa, koja je posredstvom ove eparhije kao su-organizator pomena, darovala novčana sredstva. Za ovu priliku porta hrama je proširena za oko 200 kvadrata, zarad čega je, budući da je vrlo nepodesan teren, sazidano gotovo toliko zida i izgrađen otvoreni oltar“, naveo je Simonović.

EN HELP FOR CHURCH IN VELIKA

There was a gathering organized on the occasion of marking 7 decades since the fascist genocide committed in Montenegrin village Velika on the Day of holy Kirik and Julita last year. His Holiness Patriarch Serbian Irinej served the Holy Archpriest Liturgy and commemoration for the innocent victims in church of this Montenegrin place.

Prof. dr Ranko Simonović, Vice-Chairman of the Board for commemoration of committed fascist genocide emphasized that this gathering thanks to generous contributions from thirty Velika brotherhoods and donations of many friends of Velika.

“The renowned Elnos Group is amongst the biggest donors, which donated financial funds through this Eparchy as the co-organizer of this commemoration. The temple doorway was expanded for about 200 square meters for this occasion, with almost as much wall was also built due to inadequate terrain, and an open altar was built“, said Simonović.



Crkva u Velici / Church in Velika

Majske poplave **SOLIDARNOST NA DJELU**

May floods – solidarity in action

U samo dan ili dva, mnogi su izgubili život, drugi su ostali bez ičega što su godinama gradili, voda je odnijela veliki broj poljoprivrednih dobara i stoke, sve je nestajalo u trenutku, nošeno nemilosrdnom bujicom, nepovratno.

In only a day or two, many lost lives, others lost everything they were building for years, water took away a number of farms and cattle, all gone in a moment, carried away by merciless raging water, irreversibly.



Doboj u maju 2014. / Doboj, May 2014

SR Nedaće koje su zadesile stanovništvo u BiH, Srbiji i Hrvatskoj tokom prošlogodišnjih majske poplava, ostavile su tragove i posljedice koje se saniraju i danas, godinu poslije. Prema prognozama, obnova će trajati dugi niz godina, jer je ogroman broj uništenih i oštećenih objekata, kao i onih koji se nalaze na terenima na kojima su aktivirana klizišta.

Ova prirodna katastrofa nezapamćena je na našim prostorima, kako stručnjaci kažu, u posljednjih 120 godina otkad se vodi evidencija, poplave sa katastrofalnim razmjerama poput ovih nisu zabilježene.

Slike sa televizijskih ekrana, potresne priče i sudbine pogodenih poplavama, fotografije u novinama, ali i prizori kojima su mnogi svjedočili prolazivši kroz uništene gradove, ostaće duboko urezane u sjećanjima i ući će u istoriju.

Ipak, najteže je onima koji su ostali bez svojih najmilijih, jer su poplave u regionu odnijele nekoliko desetina života, kao i onima koji su ostali bez krova nad glavom, bez imovine, onima koji će godinama osjećati posljedice ove velike katastrofe.

U samo dan ili dva, mnogi su ostali bez ičega što su godinama gradili, voda je odnijela veliki broj

poljoprivrednih dobara i stoke, sve je nestajalo u trenutku, nošeno nemilosrdnom bujicom, nepovratno. Materijalna šteta je nesaglediva, ali isto tako mnogi će trptiti psihičke posljedice još dugo poslije.

Ipak, ono što se može izdvojiti kao svjetlo u toj tami je solidarnost među ljudima.

Naša kompanija jedna je od onih koje su postale dio projekata obnove nakon poplava. Odmah po formiranju Uredbe o načinu i postupku sanacije šteta na stambenim objektima izazvanim poplavama u Republici Srpskoj u maju 2014. godine, koju je usvojila Narodna skupština RS po hitnom postupku, Elnos Grupa u BiH uključila se u njenu realizaciju. Osim vaučer modela, pomogli smo onima koji su pogodenici poplavama i na druge načine.

Zeljeznicama Republike Srpske donirali smo aparat za isušivanje vazduha, a jednoj porodici iz Banjaluke pomogli smo novčanim sredstvima za osnovne namirnice neophodne u tim teškim danima. Učestvovali smo i u sanaciji objekta za djevojčicu bez roditelja.

Poplavama su pogodenici i brojni zaposleni u našoj kompaniji, a vlasnici i radne kolege su pokazale so-

lidarnost prikupljanjem pomoći. Našim kolegama, pomoć je stigla i od naših partnera iz FBiH.

U talasu prikupljanja pomoći, obezbijedili smo kamion osnovnih namirnica za najugroženije gradove, a naše preduzeće stavilo je na raspolaganje opremu i radnike Elektroprivredi RS.

Maj 2014. godine ujedinio je narode, komšije, prijatelje i rodbinu. Jedni drugima su pružali ruku spasa bez postavljanja pitanja ko je ko, važno je bilo da je pomoć potrebna i svi su se angažovali. Pomoć je pristizala sa svih strana u konvojima, a obnova i čišćenje počeli su odmah po povlačenju vode. Grupe volontera formirane su spontano u većini gradova, oni koji su manje stradali pomagali su onima kojima je pomoć bila neophodna. Organizovali su se u grupama, ali i u privatnim aranžmanima, a cilj je bio jedan – pomoći ljudima i pokazati im da nisu sami.

EN The trouble which came upon the population of BiH, Serbia and Croatia during the last May floods, left traces and consequences being cleaned up to this day, a year later. According to forecasts, reconstruction will take many years, as there is a huge

number of destroyed and damaged buildings, as well as those located in terrains with landslides activated.

This natural disaster remains without comparison in our area - according to the experts, floods of such catastrophic extent have not been noted in the last 120 years since the records have been kept.

Images from television screens, shocking stories and destinies of those affected by floods, newspaper photographs, but also the scenes many had witnessed passing through the destroyed cities, shall remain deep in the memories and will enter history.

Still, it is most difficult for those who lost their dearest, as the floods in the region took away several dozens of lives and for those who lost roofs over their heads, their property - those who will feel the consequences of this great catastrophe for years.

In only a day or two, many lost lives, others lost everything they were building for years, water took away a number of farms and cattle, all gone in a moment, carried away by merciless raging water, irreversibly. Material damages are beyond count, but many will also suffer psychological consequences for much longer.

Still, the thing which may be seen as a light in this darkness is the solidarity among people. Our company is one of those who became a part of reconstruction following the floods. Immediately upon passing of the Decree on manner and procedure for repair of damage on housing buildings caused by floods in the Republic of Srpska in May 2014, adopted by the RS National Assembly in urgent procedure,

Elnos Group in BiH joined its realization. Besides the voucher model, we also helped those affected by floods in other ways.

We donated an air dryer to the Republic of Srpska Railroads, and we helped one family from Banja Luka financially, for elementary supplies, necessary in those difficult days. We also participated in reconstruction of housing building for an orphan girl.

Floods also affected numerous employees of our company, and both owners and colleagues showed solidarity through collecting of contributions. Our colleagues also received assistance from our partners from the BiH Federation.

During the activities on collecting of contributions, we provided a truck with basic supplies for the most affected cities, and our company made its equipment and employees available for Elektroprivreda of Republic of Srpska.

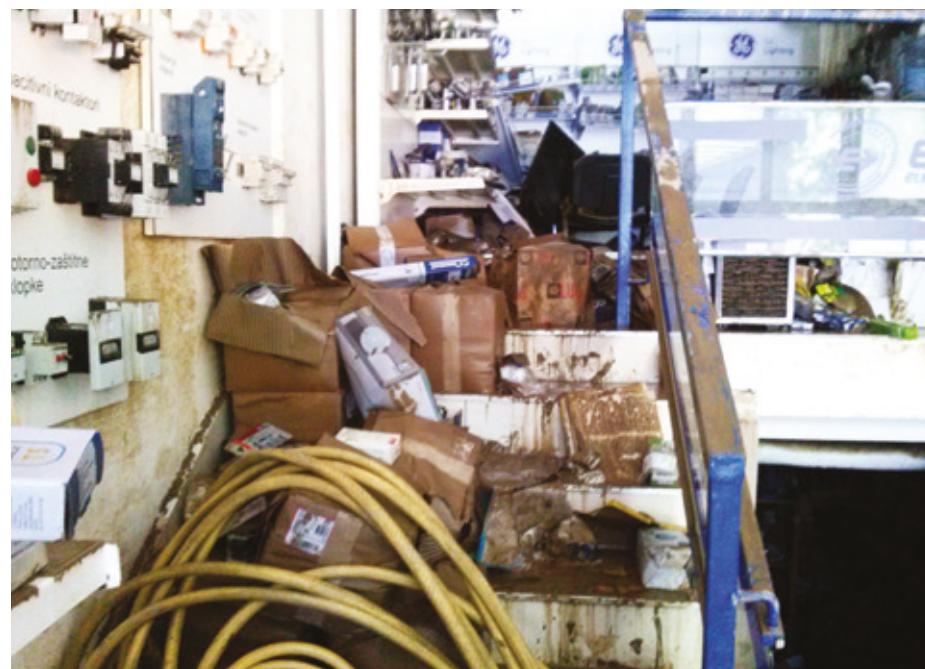
May 2014 united neighbors, nations, friends and relatives. They offered a helping hand to one another without asking who is who, it was important that help was needed and everyone got involved. Assistance was arriving from everywhere in convoys, and reconstruction and cleaning started immediately upon dropping of water levels. Groups of volunteers were formed spontaneously in majority of cities, those who were affected less were helping those who were in dire need for help. They organized themselves, by buses, but also in private arrangements, with only one aim - to help the people and to show them they were not alone.

MALOPRODAJNA U DOBOJU

POPLAVE SU U VELIKOJ MJERI OŠTETILE I NAŠ MALOPRODAJNI OBJEKAT U DOBOJU, GDJE JE PODRUM POPLAVLJEN U POTPUNOSTI, DOK JE VODA U PRIZEMLU DOSTIZALA ĆETIRI I PO, A NA GALERIJI DVA METRA. UNIŠTENA JE SVA OPREMA I 50 ODSTO ROBE, A PROSTOR JE KOMPLETNO UNIŠTEN, TAKO DA SMO VREMENOM MORALI SVE OBNOVITI. ISKORISTIVO JE BILOKO DESETAK ODSTO PROSTORA, S TIM ŠTO JE I TAJ DIO BILO NEOPHODNO SANIRATI. CIŠĆENJE JE TRAJALO SKORO DVA MJESECA, A NA ISUŠIVANJU, PRANJU I SRĐIVANJU OBJEKTA, UČESTVOVALO JE DVADESETAK NAŠIH KOLEGA. TIH TEŠKIH DANA ZA CIJELI REGION I MI SMO OSJETILI SOLIDARNOST NA DJELU – NAŠI KUPCI SU NAM BILI OD VELIKE POMOĆI I VEOMA SMO IM ZAHVALNI NA TOME. IAKO JE DANAS OBJEKAT PONOVO U FUNKCIJI I DALJE JE PRISUTNA VELIKA KOLIČINA VLAGE KOJA IZBJIAZI ZIDOVU, A PROCES ISUŠIVANJA PROSTORA TRAJAĆE JOŠ DUGO.

RETAIL SHOP IN DOBOJ

THE FLOODS ALSO CAUSED MAJOR DAMAGE TO OUR RETAIL SHOP IN DOBOJ, WHERE THE BASEMENT WAS COMPLETELY FLOODED, WHILE THE WATER IN THE GROUND FLOOR REACHED FOUR AND A HALF, AND TWO METERS AT THE GALLERY. ALL THE EQUIPMENT AND 50 PERCENT OF GOODS WERE DAMAGED, THE PREMISES WERE TOTALLY DESTROYED, SO THAT WE HAD TO RECONSTRUCT EVERYTHING OVER TIME. ONLY ABOUT TEN PERCENT OF THE PREMISES WERE OPERATIONAL, BUT ALSO HAD TO BE CLEANED UP. THE CLEANING ITSELF TOOK ABOUT TWO MONTHS, AND ABOUT TWENTY OF OUR COLLEAGUES WERE WORKING ON DRYING, WASHING AND FIXING OF THE PREMISES. DURING THOSE DIFFICULT DAYS FOR THE ENTIRE REGION WE FELT SOLIDARITY IN THE ACT - OUR BUYERS HELPED US A LOT AND WE ARE VERY GRATEFUL FOR THAT. EVEN THOUGH THE FACILITY IS OPERATIONAL AGAIN, HUMIDITY IS STILL VERY PRESENT, IT IS COMING OUT OF THE WALLS AND THE DRYING PROCESS WILL TAKE MUCH LONGER.



Maloprodajni objekat u Doboju nakon poplave / Retail shop in Dobojsko after flood

Summer on Vrbas - six decades long tradition

LJETO NA VRBASU

Tradicija duga šest decenija

Prema tvrdnjama Banjalučana sa nešto većim životnim iskustvom, tradicija skokova sa mosta je mnogo duža i traje skoro devet decenija. Između ostalog, ovaj odvažan gest bio je način udvaranja i osvajanja djevojaka.

According to the citizens of Banja Luka with somewhat longer lifetime experience, the tradition of jumping off a bridge is much longer and has been going on for almost nine decades. Among other things, this bold gesture was a way to court and conquer the ladies.



SR Kada su članovi Kluba akademičara Banjaluke, koji su činili studenti banjalučkog univerziteta, davne 1953. godine ostvarili svoju ideju i pokrenuli Karneval na Vrbasu, niko nije ni slutio da će ova manifestacija da poživi do današnjih dana.

Pod drugim nazivom, duduše, ali sa disciplinama koje su, uz manje izmjene, od prvog dana ostale iste.

Manifestaciju, koja od 1995. godine nosi naziv „Ljeto na Vrbasu“ i koja ima jasno ucrtano ime u kalendaru dešavanja, danas organizuje Turistička organizacija Banjaluke. Još jednom je ovaj sportsko-kulturni događaj mijenjao svoje ime, kada su ga organizovali Turistički savez Banjaluke i Savez organizacija fizičke kulture – SOFKA, pod nazivom „Susreti na Vrbasu“.

Iako se ime mijenjalo, ciljevi su uvijek ostali isti – njegovanje i zaštita rijeke Vrbas, kao prirodne ljepote, obogaćivanje sportskog i kulturnog života građana u ljetnom periodu, ali i turističke ponude grada.

Tokom šest decenija postojanja, sportske discipline „Ljeta na Vrbasu“ nisu se mnogo mijenjale. Uz određene izmjene, one glavne, najatraktivnije, ostale su iste svih ovih godina.

Najveću pažnju privlače skokovi sa Gradskog mosta, ali i trke dajak i kajak čamcima, koje su ujedno i najposjećenije discipline tokom trajanja manifestacije u gradu na Vrbasu.

Prema tvrdnjama Banjalučana sa nešto većim životnim iskustvom, tradicija skokova sa mosta nije počela ovom manifestacijom. Ona je mnogo duža, tvrde oni i kažu da traje skoro devet decenija. Između ostalog, ovaj odvažan gest bio je način udvaranja i osvajanja djevojaka.

Predsjednik Turističke organizacije Banjaluka Ostoja Barašin istakao je kako je Ljeto na Vrbasu, kao jedna od najstarijih manifestacija u BiH, potvrdilo svoju vrijednost i značaj i da je neophodno pokazati zahvalnost ljudima koji su to počeli davne 1953. godine, kao i svim ljudima koji su je održali do današnjih dana i nastoje da je obogate i sačuvaju za buduća pokoljenja.

„Obezbjedivanje finansijskih sredstava za realizaciju ove manifestacije jedan je od zahtjevnijih i težih poslova koje Turistička organizacija Banjaluke radi“, istakao je Barašin.

Elnos BL jedan je od sponzora „Ljeta na Vrbasu“ dugi niz godina.

„Već više godina, kompanija Elnos BL prepoznaje naše napore da ‘Ljeto na Vrbasu’, ne samo očuvamo, nego i obogatimo raznim sadržajima i u tom smislu nas iz godine u godinu finansijski pomaže, zbog čega smo izuzetno zahvalni. Svaka marka koju dobijemo za ove aktivnosti nam dobro dođe, s obzirom na ekonomsku krizu i krizne godine koje nam iz godine u godinu otežavaju prikupljanje finansijskih sredstava. Elnos je u kontinuitetu, bez obzira na krizu, ostao uz nas“, kazao je Barašin.

Entuzijazam i ljubav prema Vrbasu glavni su

faktori što je ova manifestacija opstala sve ove godine.

Ljudske vrijednosti očuvale su manifestaciju, kao i potreba da se afirmiše i štiti Vrbas, kao izuzetno značajan i privredni i turistički potencijal.

EN When the members of Banja Luka Academic Club, consisting of Banja Luka University students, back in 1953 realized their idea and initiated the Carnival on Vrbas, no one could foresee that this event would last to this day.

It was given a different name though, but with disciplines which remained the same from day one, with some minor changes.

The event, which has been titled “Summer on Vrbas” since 1995 and which has a clearly drawn name in the calendar of events, is being organized by the Tourist organization of Banja Luka. The title of this sports-cultural event was changed on another occasion, when it was organized by the Tourist community of Banja Luka and Alliance of physical culture organizations SOFKA, when it was titled “Encounters on Vrbas”.

Even though the name sometimes changed, the aims always remained the same - protection of the River Vrbas, as a natural attraction, enrichment of sportive and cultural life of the citizens during the summer period, but also of the tourist offer of the city.

During six decades of existence, the sports disciplines of the “Summer on Vrbas” have not changed much. The main, most attractive ones, remained the same during all these years, with some minor changes. Jumps from the City Bridge (Gradski most) attract the biggest attention, but so do the dayak (dayak - narrow wooden boat put in motion by pushing against the river bed with a long wooden stick) and kayak boat races, which are the most

visited disciplines during this event in the city on Vrbas.

According to the claims of citizens of Banja Luka with longer life experience, the tradition of jumping off the bridge had not started with this event. They say it has existed much longer, for almost nine decades. Among other things, this bold gesture was a way to court and conquer the ladies.

President of the Banja Luka Tourist Organization, Ostoja Barašin, emphasized that the Summer on Vrbas, as one of the oldest events in Bosnia and Herzegovina, confirmed its value and significance and that it is necessary to show appreciation towards the people who started it back in 1953, as well as to all those individuals who have maintained it until today, doing their best to enrich and save it for the future generations.

“Providing of financial funds for realization of this event is one of the most demanding activities of the Banja Luka Tourist Organization”, Barašin emphasized. Elnos BL has been one of the sponsors of the “Summer on Vrbas” for many years.

“For some years now, Company Elnos BL has recognized our efforts not only to preserve the “Summer on Vrbas”, but also to enrich it with various activities and they have been supporting us financially in that direction, and we are extremely grateful for this. Each penny we receive for these activities is most welcome, having in mind the economic crisis which has been making it difficult for us to collect sufficient funds. Regardless of the crisis, Elnos has remained by our side”, said Barašin.

Enthusiasm and love for Vrbas are the main reasons why this event has survived all these years.

Human values, as well as the need to affirm and protect Vrbas, as an extremely significant economic and tourist potential, have preserved the event.



Skok sa Gradskog mosta / Jump from the City Bridge

Openday na ETF-u

Openday at Faculty of Electrical Engineering



Otvaranje manifestacije / The manifestation opening

Manifestacija ima za cilj predstavljanje i upoznavanje studenata sa programima univerziteta širom svijeta i predstavljanje kompanija koje nude stručno usavršavanje studenata, prakse i zaposlenje.

The manifestation aims to present and teach students about the programs of universities around the world and to present companies offering professional development of students, practice and employment.

SR "U fokusu svega što radimo na Elektrotehničkom fakultetu Univerziteta u Banjaluci su studenti, za koje tvrdimo da su u potpunosti ravnopravni sa bilo kojim studentom ovog fakulteta bilo gdje u svijetu. Bolonjski proces smo shvatili na takav način da naše studente još na fakultetu pripremamo za privredne tokove i ono što ih očekuje kada postanu diplomirani inženjeri."

Ovim riječima dekan ETF-a Branko Dokić otvorio

je manifestaciju „Openday“, koja je održana u okviru međunarodne konferencije EESTEC Chairpersons meeting, 19. novembra prošle godine.

Organizator ovog događaja bilo je Udruženje studenata elektrotehnike Europe (EESTEC) – Lokalni komitet Banjaluka, u saradnji sa Elektrotehničkim fakultetom.

Ovo je drugi „Openday“ u gradu na Vrbasu, koji ima za cilj predstavljanje i upoznavanje studenata sa univerzitetima i programima univerziteta širom svijeta, ali i predstavljanje kompanija koje nude stručno usavršavanje studenata, prakse, stipendije i zaposlenje.

Naša kompanija bila je jedan od sponzora ove manifestacije, kojoj su prisustvovali predstavnici 23 države iz preko 50 evropskih gradova.

EESTEC okuplja studente elektrotehnike i srodnih nauka, a čini je 55 lokalnih komiteta sa univerziteta iz 28 evropskih država. Cilj organizacije je da različitim radionicama i studentskim razmjenama poboljša kulturnu i stručnu saradnju među studentima u Evropi.

EN "The focus of everything we do at the Faculty of Electrical Engineering, University of Banja Luka are the students, and we say that they are fully equal to any student of this type of faculty anywhere in the world. We have recognized Bologna process in such a way that we are still preparing our students

at the faculty for the economic trends and for what is waiting for them when they become graduate engineers."

This was the opening made by the dean of Faculty of Electrical Engineering Mr. Branko Dokić at "Openday" event which was held as a part of the international conference EESTEC Chairpersons meeting, on 19 November, 2014.

The organizer of this event was the Association of Students of Electrical Engineering Europe (EESTEC) - Local Committee of Banja Luka, in cooperation with the Faculty of Electrical Engineering.

This is the second "Openday" in the city on the River Vrbas, which aims to present and introduce students to the universities and university programs around the world, but also to present the companies offering professional development to students, practices, scholarships and employment.

Our company was one of the sponsors of this event, which was attended by representatives of 23 countries from more than 50 European cities.

EESTEC brings together students of electrical engineering and related sciences, and it is made of 55 local committees at universities from 28 European countries. The aim of the organization is to improve cultural and professional cooperation among students in Europe through various workshops and student exchanges.

Dupla kruna za RK Borac

Double crown for Handball Club Borac

SR Za Rukometni klub „Borac“, prošla godina veoma je značajna, jer je osvojio duplu krunu – prvenstvo i Kup BiH, čime je samo potvrdio svoj kvalitet u zemlji i u regionu. Crveno-plavi su osvojili nekoliko desetina peharja i titula, pogotovo sa najvećih i najznačajnijih svjetskih takmičenja.

Klub je osnovan 1950. godine i jedan je od najpoznatijih rukometnih kolektiva, ne samo u BiH i u regionu, nego i u Evropi.

Kao kruna rezultata izdvajaju se dva trofeja – onaj iz 1976. godine, kada je ‘tim iz Gospodske’ ponio titulu šampiona Evrope i 1991, kada su igrači „Borca“ osvojili Kup IHF.

Ovaj tim je ponosni vlasnik sedam titula prvaka i deset trofeja pobednika Kupa Jugoslavije, a jedinstven je po činjenici da su njegovi igrači osvojili šest zlatnih olimpijskih medalja i mnoštvo evropskih i svjetskih odličja.

Naša kompanija jedan je od sponzora ovog zaštitnog znaka grada na Vrbasu i najtrofejnijeg sportskog

kolektiva u Republici Srpskoj i BiH.

„U vrijeme kada se privrednici teško odlučuju na sponzorstva, kompanija Elnos BL imala je sluha i podržala RK ‘Borac’ u protekloj sezoni. Nadamo se da smo se adekvatno revanširali i opravdali ukazano povjerenje osvajanjem prvenstva i kupa BiH“, istakao je marketing menadžer kluba Vladimir Branković.

EN The past year is of great significance for the Handball Club “Borac”, as it won a double crown - BiH Championship and Cup, thus confirming its quality both in the country and in the region. The red-and-blue won several dozens of cups and titles, especially from the largest and most significant world competitions.

The club was founded in 1950 and it is one of the most known handball clubs, not only in BiH and the region, but also in Europe.

Two trophies are especially significant as crowns of their results – the one from 1976, when the “team

from Gospodska Street” (central pedestrian area in Banja Luka, BiH) won the title of European champion and the one from 1991, when “Borac” players won the IHF Cup.

This team is a proud owner of seven champion titles and ten trophies of Yugoslavia Cup’ winners, and what makes it unique is that its players won six golden Olympic medals and many European and world medals.

Our company is one of the sponsors of this trademark of the city on The River Vrbas and most awarded sports team in the Republic of Srpska and BiH.

“At a time when entrepreneurs rarely decide to provide sponsorship, Company Elnos BL had the understanding to support the Handball Club “Borac” during the past season. We hope that we provided adequate results and justified the trust by winning the BiH Championship and Cup”, emphasized Vladimir Branković, Marketing Manager of the Club.



Tim RK „Borac“ / Team HC „Borac“

Skanska i Elnos:

Susret licem u lice

Skanska and Elnos: Meeting face to face



Uspomena sa Petrovaradinske tvrđave / The memory from the Petrovaradin Fortress

SR Partnerstvo kompanija Skanska Sverige AB i Elnos Grupa započeto je na projektu izgradnje dalekovoda 400 kV Hallsberg–Barkeryd. U aprilu 2014. godine, ovo partnerstvo dobilo je i novu dimenziju. Naime, tada je Elnos Grupa u Beogradu bila domaćin grupi od 20 inženjera iz kompanije Skanska.

Tokom studijske posjete gosti su obišli naš poslovni centar u Beogradu, kao i jedan od najznačajnij-

"I am sure that this is the first visit to Serbia for many from Skanska, and that it will contribute to more positive attitude towards cooperation with Elnos in the future, as well as to cooperation with foreign contractors in general."

Björn Johansson

jih referentnih objekata na kojima je naša kompanija bila angažovana – trafostanicu 400/220/110 kV Novi Sad 3. Tom prilikom, projekt menadžer kompanije Skanska na pomenutom zajedničkom projektu Björn Johansson je istakao: „U mnogim slučajevima možete riješiti puno poslova u razgovoru preko telefona ili slanjem e-pošte. Ali, vrijednost susreta licem u lice ne treba potcenjivati.“

Utiske cijele grupe prenio nam je g. Johansson: „Naša posjeta Beogradu bila je vrlo zanimljiva i zabavna. Odlično ste nam predstavili kompaniju i način života u Srbiji. Dobio sam mnogo pozitivnih komentara mojih kolega i siguran sam da dugo vremena niko neće zaboraviti sve aspekte posjete i fantastičan ručak koji smo imali u Novom Sadu. Siguran sam da je za mnoge ljude iz Skanske ovo prva posjeta Srbiji, te da će ona doprinijeti povećanju pozitivnog stava prema saradnji sa Elnosom u budućnosti, kao i saradnji sa stranim izvođačima uopšte.“

EN The partnership between companies Skanska Sverige AB and Elnos Group started on the construction project for a 400 kV transmission line Hallsberg - Barkeryd. This partnership got a new dimension in

April 2014. Namely, that is when Elnos Group hosted a group of 20 engineers from Skanska in Belgrade.

During the study visit the guests visited our business center in Belgrade, as well as one of the most significant reference facilities in which our company was engaged - a 400/220/110 kV Novi Sad 3 substation. On that occasion, Björn Johansson, Skanska Project Manager for the before mentioned joint project, emphasized: "In many cases you can solve a lot of issues by talking over the phone or sending emails. But the value of having meetings face to face should not be underestimated."

Mr. Johansson passed on the impressions of the entire group: "Our visit in Belgrade was very interesting and enjoyable. You made a very favorable presentation of Elnos Company and way of life in Serbia. I have received a lot of positive feedback from the Skanska staff and I am sure no one will forget all aspects of visit and the fantastic lunch we had in Novi Sad for a long time. I am sure that this is the first visit to Serbia for many from Skanska and it will contribute to more positive attitude towards cooperation with Elnos in the future as well as to cooperation with foreign contractors in general."

„Siguran sam da je za mnoge ljude iz Skanske ovo prva posjeta Srbiji, te da će ona doprinijeti povećanju pozitivnog stava prema saradnji sa Elnosom u budućnosti, kao i saradnji sa stranim izvođačima uopšte.“

Björn Johansson

Studijsko putovanje u Termoelektranu Stanari

Study travel to TPP Stanari

SR U cilju sticanja praktičnog znanja studenata Elektrotehničkog fakulteta Univerziteta u Banjaluci o opremi u elektroenergetskim postrojenjima, naša kompanija je početkom marta organizovala posjetu 400 kV TS Stanari. Na ovo stručno putovanje išla su 33 studenta, tri asistenta i četiri profesora.

"Obilazak TS Stanari veoma je značajan, jer nije isto kada se neko postrojenje vidi na terenu ili kada je ono samo crtež na papiru. Na ovaj način stičemo znanje koje ćemo lakše primjenjivati, a osim toga, dragocjene su nam informacije koje smo saznali od iskusnih inženjera", rekao je student četvrte godine Nikola Ćubić.

TS Stanari je četvrta trafostanica ovog naponskog nivoa u Republici Srpskoj, a činjenica da je trenutno u beznaponskom stanju, omogućila nam je da studentima pokažemo manipulisanje VN aparatima u poljima 400 i 110 kV, što inače nije praksa, iz bezbjednosnih razloga.

Omogućili smo i obilazak SN postrojenja i razvoda sopstvene potrošnje, pokazali SCADA sistem i stanično upravljanje VN aparatima. Osim toga, upoznali smo ih i sa aktivnostima i djelatnostima naše kompanije, ali i sa osnovnim karakteristikama TE Stanari.

Docent dr Čedomir Zeljković okarakterisao je ovo studijsko putovanje kao veliki iskorak, veoma značajan za studente: „U obrazovnom sistemu naše struke izraženo je to da imamo veoma malo prakse, obilazaka, koji su od velikog značaja za naše studente. Ovim putovanjem u Stanare, Elnos je učinio veliku stvar za nas, vodili su računa da isplaniraju naš boravak u Stanarima do najsigurnijih detalja“.

Zeljković je naglasio kako bi bilo odlično kada bi se ova praksa nastavila i kada bi što više studenata dobilo priliku za učenje kroz praksu, kao što je bilo ovo putovanje.

EN In the aim of achieving practical knowledge of electrical energy plant equipment, at the beginning of March, our company organized a visit to 400 kV SS Stanari for students of the Faculty of Electrical Engineering, University of Banja Luka. This professional visit included 33 students, three assistant professors and four university professors.

"Visit to SS Stanari is very important, since it is not the same when you see some plant in field and when it is only a draft on a paper. In this way, we acquire knowledge that we are going to apply

easier, and, besides, we got valuable information from experienced engineers", said Nikola Ćubić, a fourth year student.

SS Stanari is the fourth substation of this voltage level in the Republic of Srpska, and the fact it is not energized now, provides us with possibility to show the students how HV devices are controlled in 400 and 110 kV bays, which normally is not practice for safety reasons.

We also provided a visit to MV plants and local consumption distributors, showed them SCADA system and station control of HV devices. Besides, we introduced them to activities and our company work, but also to basic characteristics of the TPP Stanari.

Čedomir Zeljković, Ph.D, described this study travel as a huge step forward, which is very important for the students: "Our profession education system has a significantly small practical part, travels, which are of a great importance to our students. This trip to Stanari represents a great thing Elnos did for us. They planned our visit to Stanari to details".

Zeljković also stressed it would be excellent if this practice continued so that more and more students get chance to learn through practice, as in this travel.



Učesnici studijskog putovanja u Stanare / The participants of study tour to Stanari





SR FIDIC OBUKA U BEOGRADU

Naša kompanija se konstantno razvija i raste, i u skladu sa tržišnim zahtjevima prilagođavamo se trendovima i idemo u korak sa njima. Važan segment našeg poslovanja su edukacije, a jedna od njih je i edukacija o FIDIC (International Federation of Consulting Engineers) ugovorima, koju već nekoliko godina počinju članovi našeg tima.

Prošlogodišnja obuka Upravljanje projektima i ugovorima i značaj i sadržaj dinamičkog plana radova prema FIDIC modelima ugovora, održana je u martu u organizaciji Inženjerske komore Srbije i Građevinskog fakulteta Beograd.

Eminentni stručnjaci iz oblasti građevine održali su predavanje o FIDIC ugovorima, njihovom značaju, specifičnostima i važnosti primjene ovih ugovora prilikom ugavarjanja projekata.

Na predavanjima je bilo riječi o upravljanju projektima i ugovorima, značaju i sadržaju dinamičkih planova prema FIDIC modelima ugovora i kvalitetu

i upotrebljivosti dinamičkih planova. Takođe, jedno predavanje se odnosilo na praktične primjere dinamičkih planova na projektima u Srbiji.

EN FIDIC TRAINING IN BELGRADE

Our company has been constantly growing and developing, and in accordance with market demands we have been adjusting to trends and keeping pace with them. Educations are an important segment of our business, and training on FIDIC (International Federation of Consulting Engineers) contracts is one of them, attended by our team members for several years now.

Last year's training - Management of projects and contracts and significance and contents of the time schedule of works according to FIDIC contract models was held in March, organized by the Serbia Chamber of Civil Engineering and Belgrade Faculty of Civil Engineering.

Renowned experts from the field of civil engineers

held the lecture on FIDIC contracts, their significance, specifics and importance of implementation of these contracts in negotiating for projects.

There was also discussion on management of projects and contracts, significance and importance of time schedule according to FIDIC contract models and quality and adaptability of time schedules. Likewise, one lecture referred to practical examples of time schedules on projects in Serbia.

SR OBUKA NA ZECK MAŠINAMA

Trend edukacija naših radnika nastavili smo kao i prethodnih godina, a jedna od obuka kojoj smo prisustvovali, održana je u njemačkoj kompaniji ZECK, smještenoj u gradu Schesslitz.

Tokom dva dana naše posjete ovoj kompaniji, prisustvovali smo obuci za rad na kočionim i vučnim mašinama koje su kupljene za potrebe izvođenja projekta i izgradnje dalekovoda 400 kV na projektu South West Link u Švedskoj. Osim teorijske, imali smo i praktičnu obuku na poligonu, kako bismo što bolje savladali rad na ovim mašinama.

Kompanija ZECK je porodično preduzeće osnovano 1918. godine, a danas je vodi već treća generacija. ZECK je pionir u Njemačkoj među proizvođačima visokokvalitetnih mašina sa posebnom namjenom za izgradnju dalekovoda. Zahvaljujući dugogodišnjoj tradiciji i entuzijazmu u razvoju tehnologije, zadržavanju kvaliteta, stalnim inovacijama i dosadašnjim rezultatima kompanije, ZECK maštine čvrsto drže vodeće pozicije širom svijeta kada je riječ o pouzdanosti, tehnologiji, efikasnosti i bezbjednosti.

Kompanija trenutno broji 90 radnika, od kojih su mnogi zaposleni već dugi niz godina, kao svjedoci rasta i razvoja kompanije koja se prostire na prostoru cijele Njemačke i koja je međunarodni lider u proizvodnji mašina sa specijalnom namjenom.



ZECK mašina / ZECK machine

Drugi dan posjete, naši domaćini iz ove kompanije organizovali su fakultativni izlet u Münhen, gdje smo imali priliku da obiđemo BMW-ov izložbeni salon i BMW muzej i upoznamo se sa istorijom razvoja BMW vozila i motocikala od njihovog postanka do danas.

Muzej je osnovan 1972. godine, pred otvaranje Olimpijskih igara, a bavi se istorijom razvoja kompanije BMW i sadrži primjerke automobila, motocikala, motora i turbine za avione... Srebrno-futuristička zgrada u kojoj je smješten muzej, poznata je kao "činija za salatu" ili "bijeli kotao". Izložbeni eksponati razmješteni su u muzeju na različite načine, pa su tako neki smješteni u udubljenja u zidu, poredani jedan iznad drugoga, motocikli stope 'zakačeni' na zidu... Poslije obilaska ovog dijela muzeja, posjetilac dolazi na najviši sprat gdje ga očekuje mini-bioskop, virtualni eksponati i uvod u BMW-ove buduće tehnologije.

Nakon ove posjete, bili smo i u čuvenom minhenskom restoranu „Haxenbauer München“.

EN TRAINING ON ZECK MACHINES

The trend of educating our employees was continued as in previous years, and one of the trainings we attended, was held in a German company ZECK, located in Schesslitz. During our two-day visit to this company, we attended training on working with tensioning and pulling machines, bought for the needs of execution of project and construction of 400 kV power transmission line on a project South West Link in Sweden. Besides theoretical training, we also had practical training at the training area, in order to master working on these machines as properly as possible.

The ZECK company is a family owned company established in 1918 and led by the third generation today. ZECK is a pioneer in Germany amongst producers of high-quality machines intended especially for construction of power transmission lines. Due to its longtime tradition and enthusiasm in development of technology, maintenance of quality, constant innovations and results of the company so far, ZECK machines hold leading positions worldwide when it comes to reliability, technology, efficiency and safety.

The company currently has 90 employees, of which many have been employed for a long period of years, as witnesses of growth and development of a company covering the area of entire Germany and being an international leader in production of machines for specific purposes.

On the second day of the visit, our hosts organized a trip to Munich, where we had the opportunity to see the BMW exhibition hall, as well as the BMW museum, to get acquainted with the history of development of BMW vehicles and motorcycles from their origin until today.

The museum was founded in 1972, prior to opening



Montaža aktivnog dijela 400 kV prekidača snage / Installation of the active parts of 400 kV power switch

of the Olympics, and it focuses on history of development of BMW company and has exhibits of cars, motorcycles, engines and plane turbines...

The silver-futuristic building where the museum is located is known as the "salad bowl" or the "white boiler". The exhibits are located in different ways in the museum, so that some are placed in the dents in the wall, lined up one above the other, motorcycles are "hooked" on the wall... After touring this part of the museum, the visitor comes to the highest floor with the mini-cinema, virtual exhibits and introduction on future BMW technologies.

After this visit, we also went to the famous Munich restaurant „Haxenbauer München“.

SR SIEMENS PREKIDAČI – OBUKA U STANARIMA

Praktična obuka i licenciranje radnika za montažu, ispitivanje i puštanje u rad prekidača Siemens naponskih nivoa 110 kV (tip 3AP1 FI, tip 3AP1 FG) i 400 kV (tip 3AP2 FI), jedna je u nizu održanih prošle godine.

Članove Elnos Grupe obučavao je predavač iz Berlina, a ovoj obuci je prethodila teoretska, održana u ovom njemačkom gradu 2012. godine. Nakon nje su dodijeljene licence za teoretski dio, što je bio preduvjet za prisustvo na praktičnoj obuci održanoj u Stanarima.

Teoretska obuka o prekidačima odnosila se na ispitivanje, montažu, punjenje prekidača i njihovo puštanje u rad i ispitivanje SF₆ gase, a za dobijanje konačne licence koja omogućava i rad sa ovim prekidačima, bio je potreban i praktični dio.

Praktična trodnevna obuka odnosila se na rad sa tropolnim prekidačima sa dva prekidna mesta na individualni motorni pogon (3AP2 FI). Na osnovu licence koju smo dobili poslije završene edukacije, ovlašteni smo za rad sa kompletnom Siemens-ovom

opremom. Ova licenca važi do 2017. godine, a produžava se automatski, ako se u tom periodu urade projekti sa dva prekidača.

Dolazak predstavnika kompanije Siemens na "in house" obuku, iskoristili smo da ga upoznamo sa radom naše kompanije, Banjalukom i okolinom.

EN SIEMENS SWITCHES – TRAINING IN STANARI

Practical training and certification of employees in charge of installation, testing and commissioning of Siemens switches of 110 kV (type 3AP1 FI, type 3AP1 FG) and 400 kV (type 3AP2 FI) voltage levels, is one of series trainings held last year.

Members of Elnos Group were trained by an instructor from Berlin, Germany, and this training was preceded by theoretical training, which was held in this German city in 2012. After the training, employees were certified for this part, and it was a prerequisite for practical part of training held in Stanari.

Theoretical training for the switches referred to testing, assembly and charging of switches as well as to its commissioning and testing of SF₆ gas. In order to acquire the final certificate, which enables us to work with these switches, it was necessary to undergo the practical part as well.

Practical three-day course referred to work with three-pole switches with two disconnecting chambers with individual engine drive (3AP2 FI). We have been authorized to work with all Siemens equipment based on the certificate we were given after completed education. This certificate is valid through 2017. It is renewed automatically if projects with two switches are performed in this period.

We used the visit of the Siemens representative to "in house" training to introduce him to the work of our company, Banja Luka and its surroundings.

Kursevi i obuke u Švedskoj

Courses and training in Sweden



Obuka za rukovanje eksplozivnim spojnicama / Training for handling explosive joints



SR Od osnivanja naše kompanije, kada smo počeli da gradimo ime i stičemo rejting, pa do danas, težimo poslovanju u skladu sa svim evropskim propisima. S obzirom na to da već nekoliko godina uspješno poslujemo u Švedskoj, u skladu sa zahtjevima i standardima Evropske unije i međunarodnim propisima, naši radnici prolaze brojne obuke i stiću potrebne sertifikate za rad.

ESA TRENING

Svi radnici Elnos Grupe po dolasku u Švedsku moraju da polože ESA trening, obavezan prema zakonu Unije švedskih poslodavaca i električara. Treningom su obuhvaćene osnovne obuke za rad na ovom tržištu, od profesionalnih, bezbjednosnih, do obuka o pravima i obavezama zaposlenika.

RAPID RAIL

Jedan od standarda u Evropi je korišćenje Rapid Rail-a, čeličnog bezbjednosnog užeta koji se postavlja na svaki stub. S obzirom na to, jedna od obaveznih obuka je i za instaliranje Rapid Rail-a. Ovo bezbjednosno uže se pravi posebno za svako stubno mjesto i osigurava svakog montera, bilo da je on na visini od pet ili 50 metara.

RUKOVANJE EKSPLOZIVNIM SPOJNICAMA

Još jedan od kurseva koji pohađaju naši radnici u Švedskoj je obuka za rukovanje i instalaciju ekspl

zivnih linjskih spojica na provodnicima. Na linijskim spojnicama se mjeri otpor paralelnim klemama, tako da je u okviru obuke i rukovanje uređajem za njegovo mjerjenje, Metrelom.

RAD U BLIZINI VJETROELEKTRANA

S obzirom na to da često učestvujemo u projektima koji su u vezi sa vjetroparkovima, neophodno je da naši monteri budu obučeni i za rad u njihovoj blizini. Obuka "Work in the vicinity of Wind-Power Plant" (Rad u blizini vjetroelektrana) obično se održava na gradilištu prije izvođenja radova i obuhvata sve rizike koje nosi rad u blizini vjetroelektrana.

EN Ever since our company has been established, when we started to create our name and rating, up to now, we strive to work in line with all the European regulations. Due to the fact that we have been successfully working in Sweden for several years, in accordance with demands and standards of the European Union and international regulations, our workers are attending numerous trainings and acquiring certificates necessary for work.

ESA TRAINING

Upon arrival to Sweden, all employees within Elnos Group have to pass ESA training, which is mandatory pursuant to the Law of Swedish Employers and Electricians' Union. Training comprises basic courses

for work in this market – from professional, safety, up to courses on employee's rights and obligations.

RAPID RAIL

One of standards in Europe is use of Rapid Rail, steel safety rope, which is set on each tower. Considering this, one of the mandatory trainings is Rapid Rail installation. This safety rope is created separately for each tower point and provides safety for each fitter, regardless he is at height of 5 or 50 meters.

HANDLING EXPLOSIVE JOINTS

Another course our employees attend in Sweden is training for handling and installation explosive line joints of conductors. Line joints are used for measuring electrical resistance of parallel terminals, so the training includes handling Metrel, instrument for its measuring.

WORK IN VICINITY OF WIND-POWER PLANT

Considering the fact we often take part in project that are connected to wind-farms, it is necessary that our fitters are trained for work in their vicinity. Training "Work in the vicinity of Wind-Power Plant" is usually held at the construction site before the works start and includes all the risks of work in the vicinity of wind-power plant.

Uniplom III

Plastična kodirano-sigurnosna plomba

Plastic coded - security seal



NOVA GENERACIJA

NEW GENERATION

*Jednostavan, siguran i efikasan
Simple, safe and efficient*



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