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ELNOS
GROUP

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THE NEW ENERGY LANDSCAPE OF THE REGION

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SNAGA ENERGETSKE TRANSFORMACIJE

THE POWER OF ENERGY TRANSFORMATION





HVDC DolWin 5, Njemačka
HVDC DolWin 5, Germany

Riječ urednika

Editors letter

SR Dragi prijatelji, poštovani partneri,

Dok se globalno suočavamo s najvećim izazovima u energetskom sektoru, postaje sve važnije da se fokusiramo na izgradnju održive budućnosti. U skladu s tim, Elnos Grupa još snažnije drži kurs inženjeringu koji donosi pozitivne promjene.

Kroz projekte obnovljivih izvora energije (OIE), postavljamo nove standarde u zelenoj tranziciji. Naši timovi su ključni igrači u izgradnji više od 800 megavata kapaciteta iz OIE širom regije i Europe, s impresivnim portfoliom od 1.200 megavata instaliranih kapaciteta iz OIE do sada.

Neprestano postavljamo nove rekorde. Sa 18 članica i prisutnošću na 14 tržišta, ponosni smo na podršku lokalnim zajednicama kroz stvaranje novih radnih mesta i poticanje ekonomskog rasta. Naš fokus na održivost nas čini liderima u industriji, priznatim po kvalitetu, inovacijama i društvenoj odgovornosti.

U ovom časopisu, predstavljamo projekte koji mijenjaju našu industriju i pozitivno utiču na živote ljudi širom Europe. S ponosom ističemo da je to rezultat našeg cijelokupnog tima, koji broji više od 650 zaposlenih.

Hvala vam na podršci i uživajte čitajući.

EN Dear friends and partners,

As we globally confront the most significant challenges in the energy sector, it becomes increasingly imperative to focus on building a sustainable future. In line with this, Elnos Group is steadfastly steering the course of engineering that heralds positive change.

Through renewable energy projects (RES), we are setting new standards in the green transition. Our teams are pivotal players in building capacities that will generate over 800 megawatts from RE sources across the region and Europe, adding up to our present and most impressive portfolio of a total of 1.200 megawatts of installed renewable energy capacity.

We are continually setting new records. With 18 members and a presence in 14 markets, we take pride in supporting local communities by creating new jobs and fostering economic growth. Our commitment to sustainability positions us as leaders in the industry, recognized for our quality, innovation, and social responsibility.

In this magazine, we showcase projects that are reshaping our industry and positively impacting lives across Europe. We take pride in emphasizing this achievement, a direct result of the dedicated teamwork of over 650 of our employees.

Thank you for your support, and enjoy reading.



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Sa više od 90 radnika na terenu u samom finišu poduhvata, Elnos Grupa uspješno je okončala poslove na izgradnji vjetroparka Krivača (103 MW).

With more than 90 workers on the site at the very end of the project, Elnos Group successfully completed works on the construction of wind park Krivača (103 MW).



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INTERVJU
RAD, RED, REZULTAT

INTERVIEW
WORK, ORDER, RESULT

Biljana Krunić, novi član Uprave za finansije Elnos Grupe, naš kolektiv ojačala je energijom, odlučnošću i spremnošću da svoje znanje ugradi u nove poslovne uspjehe kompanije.

Biljana Krunić, a new Elnos Group Board Member for Finance has strengthened our team with energy, decisiveness and readiness to integrate her expertise into future successful endeavors of our company.



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**JAČAMO POZICIJE NA
EVROPSKOM TRŽIŠTU**

THREE NEW MEMBERS
**STRENGTHENING OUR POSITION
IN THE EUROPEAN MARKET**

Elnos Češka, Elnos Danska i Elnos Rumunija postale su naše nove članice, a ovim pojačanjem proširili smo svoje poslovanje na 18 država regije i Evrope.

Elnos Czech Republic, Elnos Denmark, and Elnos Romania have become our new members, expanding our business to 18 countries in the region and Europe.



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NA OBALI
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SUCCESS STORIES
ON THE SHORES OF
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Uzbudljivi kraj projekta izgradnje HVDC interkonekcije DolWin 5 je priča o nevjerojatnoj snazi prirode i ljudskom i inženjerskom dostignuću za pamćenje.

A thrilling conclusion of the DolWin 5 HVDC interconnection project is a tale of incredible natural forces and a noteworthy human engineering achievement.



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U SLUŽBI ZAJEDNICE
TU SMO KADA JE
NAJPOTREBNIJE

SERVING THE COMMUNITY
WE ARE HERE WHEN IT
MATTERS MOST

Najveće poplave koje su ikada zadesile Sloveniju bile su veliki test hrabrosti i nesrebričnosti za ekipe naše članice u ovoj zemlji.

The worst floods to ever hit Slovenia were a stern test of courage and selflessness for our teams in the country.



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HIGH SPEED 2
ZADIVLJUJUĆIM BRZINAMA
U BUDUĆNOST

HIGH SPEED 2
SOARING INTO THE FUTURE
AT AN ASTOUNDING SPEED

I ove godine smo uspješna i važna karika velike mašinerije koja u Velikoj Britaniji gradi ultrabruzu željeznicu nove generacije – High Speed 2.

Once again, this year, we find ourselves as a successful and crucial component in the colossal machinery constructing ultra-speed new generation railway in the United Kingdom – High Speed 2.





SNAGA ENERGETSKE TRANSFORMACIJE

THE POWER OF ENERGY TRANSFORMATION



SR Obnovljiva energija ima potencijal da do 2030. godine na efikasan način zadovolji više od trećine energetske potražnje u jugoistočnoj Evropi, navode iz Međunarodne agencije za obnovljivu energiju (IRENA).

Ipak, impresivan potencijal je moguće aktivirati samo ukoliko regija još dinamičnije bude usmjerila djelovanje ka realizaciji nacionalno određenih ciljeva za obnovljivu energiju. Rezultat ove istražne predanosti će u budućnosti donijeti ključnu zelenu transformaciju i ostvarenje vizije regije u oblasti zelene energije.

Ispunjavajući zahtjeve energetski održive budućnosti, rad Elnos Grupe je 2023. godine bio aktivno usmjeren na povećanje obnovljivih energetskih kapaciteta i stvaranje infrastrukture koja podržava integraciju nove zelene energije u elektroenergetske sisteme.

Godinu na izmaku za našu grupaciju obilježilo je učešće u projektima koji će donijeti nove vrijedne zelene megavate u oblasti hidro, vjetro i solarnih elektrana. To su izgradnja hidroelektrana Dabar i Perućica u Bosni i Hercegovini i Crnoj Gori, vjetroparkova Krivača u Srbiji i Perun u Sjevernoj Makedoniji, te izgradnju solarnih elektrana Vidukin Gaj, Medeno polje i Perkovci u BiH i Hrvatskoj.

EN Renewable energy has the potential to efficiently meet over a third of the energy demand in Southeast Europe by 2030, according to the International Renewable Energy Agency (IRENA).

However, this impressive potential can only be unlocked if the region more dynamically aligns its efforts with the realization of nationally defined goals for renewable energy. The outcome of this steadfast commitment will give rise to a crucial green transformation, bringing to life the region's aspirations in the domain of green energy.

In line with the requirements of an energetically sustainable future, Elnos Group's focus in 2023 was actively directed towards increasing renewable energy capacities and creating infrastructure that supports the integration of new green energy into power systems.

From our group's perspective, the year almost behind us was characterized by participation in projects that will bring valuable new green megawatts in the areas of hydro, wind, and solar power plants. These include the construction of hydro power plants Dabar and Perućica in Bosnia and Herzegovina and Montenegro, the wind parks Krivača and Perun in Serbia and North Macedonia respectively, and the development of solar power plants Vidukin Gaj, Medeno Polje, and Perkovci in Bosnia and Herzegovina and Croatia.

MEGAPROJEKAT HE DABAR MEGaproject HPP DABAR

NOVO ENERGETSKO LICE REGIJE

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BUDUĆNOST SE NE GRADI SAMO U

VELIKIM GRADOVIMA. Često se ono što će u najvećoj mjeri unaprijediti naše sutra gradi veoma daleko od urbanih centara.

Ovo se posebno odnosi na oblast energetike – i posebno u BiH. Na samom jugu zemlje, tik uz granicu sa Hrvatskom i Crnom Gorom, nastaje hidroelektrana Dabar – energetska prekretnica regije.

HE Dabar nije obična elektrana, već kamen temeljac projekta „Gornji horizonti“, koji će značajno doprinijeti povećanju udjela obnovljive energije u energetskom miksu cijele regije.

THE FUTURE IS NOT SOLELY BUILT WITHIN

BUSTLING CITIES. Oftentimes, what will significantly enhance our future is constructed far away from urban centers.

This is particularly true in the field of energy, especially in Bosnia and Herzegovina. In the southernmost part of the country, right on the border with Croatia and Montenegro, hydro power plant Dabar is taking shape—a true regional energy milestone.

HPP Dabar is not just an ordinary power plant; it serves as the cornerstone of the “Upper Horizons” project, poised to make a substantial contribution to increasing the share of renewable energy in the entire region’s energy mix.

HE Dabar (159,15 MW) je najznačajniji korak ka ostvarenju vizije „Gornji horizonti“
HPP Dabar (159,15 MW) is a major step towards the "Upper Horizons" vision

TITLE THEME **NASLOVNA TEMA**

SR HE DABAR

Kao najveći hidroenergetski projekat u ovom dijelu regije, hidroelektrana Dabar izaziva divljenje i strahopoštovanje. Svojom projektovanom godišnjom proizvodnjom od 251,80 GWh električne energije, ona oduševljava i struku i javnost, a jedina stvar koja uspijeva da zasjeni ovu impozantnu cifru je kompleksnost radova koji predstoje da bi ona postala stvarnost. Biće to istinski tehnički i logistički izazov za pamćenje.

Timovima Elnos Grupe povjerena je realizacija kompleksnih etapa radova koje se odnose na: projektovanje, isporuku, montažu i puštanje u rad kompletne elektromotorske opreme u mašinskoj zgradi HE Dabar te elektroopreme na nivou cijele elektrane. Ovim etapama radova biće unesen život u hidroelektranu. U pitanju je vrlo složen posao, a evo i zašto.

IMPRESIVNA I JEDINSTVENA

Akumulacioni bazen za HE Dabar biće formiran branom Pošćenje, smještenom u donjem dijelu Nevesinjskog polja, gdje se takođe završava nadzemni tok rijeke Zalomke.

„Specifičnost buduće HE Dabar leži u činjenici da je njena akumulacija kilometrima udaljena od njene buduće mašinske zgrade, što zahtijeva izgradnju posebnog sistema za dovođenje vode do turbina. Dovodni tunel, vodostan i cjevovod pod pritiskom čine ključne elemente ovog sistema koji omogućuju da voda dopre iz akumulacije do mašinske zgrade HE Dabar. Posebno je interesantno da je već pomenuti dovodni tunel, čija dužina iznosi 12,14 kilometara, jedan od najvećih tunela ovog tipa u Evropi“, rekao je Marko Mijić, član Uprave za tehničke poslove Elnos Grupe.

Ovaj dovodni tunel počinje ulaznom gradevinom iz nevesinjskog sela Biograd, na lokaciji udaljenoj tri kilometra od brane Pošćenje, a završava se na vodostanu u brdu na sjevernoj strani Dabarskog polja.

Mašinska zgrada hidroelektrane nalaziće se na sjeveroistočnom obodu Dabarskog polja. Ona ima podzemni i nadzemni dio. U mašinskoj zgradi biće smještene tri Pelton turbine i sinhroni generator posljednje generacije.

PROJEKTOVANJE

Naši timovi posljednjih šest mjeseci aktivno su posvećeni fazi projektovanja. Potrebno je izvesti složena geodetska i geološka istraži-

vanja i hidroenergetske analize i proračune te analitičkim pristupom odabrati optimalno rješenje za izgradnju brane Pošćenje, nasipa Grebak i Vranjača, akumulacije Nevesinje, derivacionog tunela, vodostana, cjevovoda pod pritiskom, mašinske hale, razvodnog postrojenja, dalekovoda, kanala za odvođenje voda kroz Dabarsko polje te tunela Dabar-sko polje – Fatničko polje.

Naš fokus je na kompletnoj elektromašinskoj fazi što znači da ćemo kroz niz radnih sastanaka, diskusija, prezentacija, proračuna i razmjena dokumentacije tražiti optimalna tehnička rješenja, harmonizovati opremu i tehnološke cjeline s ciljem dobijanja funkcionalnog hidroenergetskog objekta sa maksimalnim performansama u datim uslovima.

Razumjevanju koncepta objekta su posebno doprinjeli 3D modeli kao i mogućnosti simulacija režima rada, hidrauličkih pojava i dizajniranja koje obezbeđuju moderni softveri.

PROJEKT MENADŽMENT

“U toku pripreme za realizaciju projekta je izazovno bilo upravo formiranje projektног tima i ogromne strukture kakvu ovakav tip projekata zahtjeva počevši od nadzornih komiteta, strukture na nivou projekt menadžmenta, eksperta, savjetnika i konsul-

tanata iz različitih oblasti te vodećih inženjera i projektantskih struktura po oblastima i fazama. Ključni izazov ove faze jeste prepoznati neophodan obim i kvalifikacije tima te postaviti strukturu sa dovoljno specijalističkih znanja koja može da iznese izazov projektovanja, nabavke opreme, izgradnje i puštanja u rad te pratećih rizika u ovom multidisciplinarnom projektu u toku narednih 4-5 godina”, rekao je Mijić.

ELNOS GRUPA I VOITH HYDRO

Elnos Grupa i Voith Hydro su evropska komponenta ovog projekta, a zajedničko učešće u realizaciji projekta HE Dabar kruna je našeg dosadašnjeg partnerstva.

Naime, Elnos Grupa sa ovim vodećim svjetskim proizvođačem generatora i turbine velikih snaga učestvuje u ugovoru sa kompanijom China Gezhouba Group Corporation (CGGC), koja je glavni izvođač projekta izgradnje HE Dabar.

Elnos i Voith imaju dugogodišnju uspješnu saradnju u oblasti hidroenergije, čiji su najbolji primjer zajednički rezultati koje smo napravili kroz projekte revitalizacije HE Zvornik (125 MW) u BiH i revitalizacije HE Piva (342 MW) u Crnoj Gori, a uskoro ulazimo i u realizaciju velikog poduhvata rekonstrukcije hidroelektrane Perućica (307 MW).



BORKO TORBICA
izvršni potpredsjednik
Uprade Elnos Grupe
Executive Vice President
of Elnos Group

„Hidroelektrana Dabar je prva velika greenfield investicija u oblasti elektrana u BiH u posljednje tri decenije. Ona predstavlja pokretanje najvećeg investicionog ciklusa, sa posebnim naglaskom na regiju istočne Hercegovine. Sa svojih gotovo 160 MW na primarnom nivou proizvodiće 250 GWh električne energije godišnje, međutim na sekundarnom nivou će praviti daleko veći rezultat od 460 GWh električne energije, jer ovu vodu koriste i elektrane u Trebinju i Dubrovniku te buduća elektrana u Bileći. Jedno je sigurno, izgradnjom hidroelektrane Dabar zonu Hercegovine pretvorićemo u veliko investiciono područje ogromnih mogućnosti.“

“Hydro power plant Dabar represents the first significant greenfield investment in the power plant sector in Bosnia and Herzegovina in the last three decades. She marks the initiation of the largest investment cycle, with a particular focus on the region of eastern Herzegovina. With nearly 160 MW at the primary level, it will produce 250 GWh of electricity annually. However, at the secondary level, it will yield a much greater result of 460 GWh of electricity as the water is also utilized by power plants in Trebinje and Dubrovnik, as well as the future power plant in Bileća. One thing is certain: the construction of the Dabar hydro power plant will transform the Herzegovina region into a vast investment area with enormous potential.”

Elnos Grupa realizuje kompletну elektro i mašinsku fazu radova
Elnos Group is performing all electrical and mechanical works



EN HPP DABAR

As the largest hydro power project in the region, hydro power plant Dabar evokes admiration and awe. With a projected annual output of 251,80 GWh of electrical power, it captivates both experts and the public, and the only thing that manages to overshadow this impressive figure is the complexity of the upcoming works required to turn it into a reality. It will be a truly memorable technical and logistical challenge.

The teams of the Elnos Group have been entrusted with the implementation of complex stages of works, including the design, delivery, installation, and commissioning of both the overall electromechanical equipment in the powerhouse of the HPP Dabar and the electrical equipment throughout the entire power plant. These work stages will breathe life into the hydro power plant. It is an extremely complex task, and here is why.

IMPRESSIVE AND UNIQUE

The accumulation for the HPP Dabar will be formed behind dam Pošćenje, located in the lower part of the Nevesinje karst field, where the above-ground course of the Zalomka River ends. "The uniqueness of the future HPP Dabar lies in the fact that its accumulation is kilometers away from its future powerhouse, necessitating the construction of a specialized system to convey water to the turbines. The intake tunnel, the surge tank, and the pressure pipeline constitute the key elements of this system, enabling water to travel from the accumulation to the powerhouse of the HPP Dabar. The aforementioned intake tunnel, with a length of 12,14 kilometers, is of particular interest as it will become one of the largest tunnels of this kind in Europe," stated Marko Mijić, Elnos Group Board Member for Technical Affairs. This intake tunnel starts with an intake structure in the village Biograd near Nevesinje, 3 km away from Pošćenje dam, and ends with a surge tank uphill on the north side of Dabar field. The powerhouse of the hydro power plant will be situated on the northeastern edge of the Dabar field, comprising both underground and above-ground sections. The powerhouse will house three Pelton turbines and state-of-the-art synchronous generators.

DESIGN

In the past six months, our teams have been actively engaged in the design phase. It is necessary to conduct complex geodetic and geological surveys, hydropower analyses and calculations and then to apply an analytical approach in defining optimal solutions

for the construction of the dam Pošćenje, embankments Grebak and Vranjača, accumulation Nevesinje, derivation tunnel, surge tank, pressure pipeline, machine hall, distribution facility as an integral part of the powerhouse, transmission lines, channels for water drainage through Dabar field, and Dabar – Fatnica tunnel.

Our focus is on the entire electromechanical phase. This means that through a series of working meetings, discussions, presentations, calculations, and an extensive document exchange we will be seeking optimal technical solutions and harmonizing equipment and technological components, aiming to create a functional hydro power facility that operates at maximum performance within the given conditions.

This project is colossal in scale and demands monumental efforts. Understanding of the facility concept has been greatly enhanced by 3D models and the designing capabilities of modern software that can simulate various operational regimes and hydraulic phenomena.

PROJECT MANAGEMENT

This complex design phase currently runs simultaneously with a demanding project management process.

"During the preparation for project implementation, a significant challenge lay in assembling the project team and setting up the vast structure required for this type of project. This includes supervisory committees, the organizational hierarchy at the project management level, experts, advisors, and consultants from various areas, as well as lead engineers and design teams for specific areas and phases. The key challenge in this phase is recognizing the necessary scope and qualifications of the team and establishing a structure with sufficient level of highly specialized knowledge capable of meeting the challenges of design, equipment procurement, construction, commissioning, and risk management in this multidisciplinary project over the next 4-5 years," stated Mijić.

ELNOS GROUP AND VOITH HYDRO

Elnos Group and Voith Hydro are European components of this project, and their collaborative involvement in the realization of the HPP Dabar project marks the pinnacle of our ongoing partnership.

Specifically, Elnos Group, in collaboration with this leading global manufacturer of high-capacity generators and turbines, par-

ticipates in a contract with China Gezhouba Group Corporation (CGGC), the main contractor for the construction of the HPP Dabar.

Elnos and Voith have a longstanding and successful collaboration in the domain of hydropower, exemplified by our joint achievements in the revitalization of HPP Zvornik (125 MW) in Bosnia and Herzegovina and HPP Piva (342 MW) in Montenegro. Additionally, we are soon embarking on the ambitious endeavor of reconstructing the Perućica hydro power plant (307 MW).

UPPER HORIZONS AND HPP DABAR

The concept of "Upper Horizons" entails the construction of a total of seven hydro power plants and six accumulations in the system of eastern Herzegovina.

The megaproject "Upper Horizons" is built upon the substantial water potential and cascading distribution of karst fields in eastern Herzegovina, geographical positioning of which enables the optimal utilization of the water potential.

„GORANJI HORIZONTI“ I HE DABAR

Koncept „Gornji horizonti“ podrazumijeva izgradnju čak sedam hidroelektrana i šest akumulacionih bazena u sistemu istočne Hercegovine.

Megaprojekat „Gornji horizonti“ zasniva se na velikom vodnom potencijalu i kaskadnom rasporedu kraških polja istočne Hercegovine, čiji geografski položaj omogućava da se potencijal vode koristi u svom optimumu.

WIN-WIN PRIČA WIN WIN STORY

VJETROPARK KRIVAČA

WIND PARK KRIVAČA



Vjetropark Krivača (103 MW)
Wind park Krivača (103 MW)

JUNSKA RAVNODNEVNICA obilježila je vrhunac naših napora u izgradnji vjetroparka Krivača (103 MW) ove godine. U tom periodu, naš tim od preko 90 radnika i inženjera posvećeno je radio na šest do sedam različitih lokacija ovog velikog projekta.

THE JUNE SOLSTICE marked the culmination of the efforts we invested in the construction of the Krivača Wind Park (103 MW) this year. During the period, our team of over 90 workers and engineers worked tirelessly at six to seven different locations, all within the scope of this vast project.



SR Naša uloga bila je jedna od ključnih. Bili smo uključeni u sve etape radova, od projektovanja, nabavke elektroenergetske opreme, izvođenja građevinskih i elektrontomontažnih radova pa sve do testiranja i puštanja u rad.

Ovog ljeta operativa četiri članice Elnos Grupe, predvođena kolegama iz beogradskog Elnosa, punom parom istovremeno je gradila elektroenergetske objekte zahvaljujući kojima je vjetropark priključen na 110 kV elektroenergetsku mrežu.

ZAJEDNO DO CILJA

Udruženim snagama na realizaciji projekta radili su zaposleni iz divizija za elektrane, trafostanice, građevinu, infrastrukturu i dalekovode te tima za relejnu zaštitu i upravljanje iz članica iz Srbije, BiH, Crne Gore i Sjeverne Makedonije. Gradili su temelje, formirali čelične stubove, ugrađivali i povezivali elektroenergetsku opremu. Obrisi novog vjetroparka bili su iz dana u dan vidljiviji.

Saveznik su nam, s obzirom na period godine, bili povoljni vremenski uslovi, koji su nam pomogli da do izražaja dođe pun potencijal Elnosovih mogućnosti na izgradnji trafostanica i dalekovoda.

UDARNI PERIOD

Prema riječima Stefana Golubovića, našeg projekt menadžera na VE Krivača, tokom vrhunca radova, radni dan je, u zavisnosti od lokacije, počinjao između sedam i osam časova ujutro, a završavao se nerijetko u 18 sati ili kada se zao-kruži posao planiran tog dana. Udarni period je bio od marta do jula, a sam pik u junu, kada je broj radnika na svim gradilištima bio blizu 100. Golubović kaže da koordinacija velikog broja radova različitih po tipu i tehnologiji izvođenja predstavlja i veliki izazov i značajan poduhvat. Sve se to može postići efikasnom organizacijom.

„Dobrom organizacijom, podjelom posla i koordinacijom aktivnosti uspjeli smo sve naše radove i svako gradilište da snabdijemo dovoljnim resursima – ljudima, mehanizacijom, materijalom i alatima“, ističe Golubović.

NAŠI RADOVI

Na projektu ovog vjetroparka, ekipe Elnos Grupe angažovane su kao glavni ugovarač koji gradi Balance of Plant – BoP, odnosno putnu infrastrukturu u prvoj fazi projekta, i Connection Works – CW, odnosno priključke ovog vjetroparka na prenosnu mrežu u prvoj i drugoj fazi projekta.

To podrazumijeva izgradnju 13 kilometara internih puteva, objekta transformacije 33/110 kV vjetroelektrane Krivača, 110 kV priključno-razvodnog postrojenja (PRP Krivača), proširenje dvije postojeće 110/35 kV trafostanice Veliko Gradište i Neresnica, izgradnju dva 110 kV dalekovoda, kao i polaganje 10 kV kabla za napajanje postrojenja sopstvene potrošnje (PRP-a).

VJETROPARK KRIVAČA

Vjetropark Krivača je prva vjetroelektrana u Srbiji koja je izgrađena južno od Save i Dunava. Udaljena je svega šest kilometara od Đerdapske klisure i rumunske granice, a prostire se na 242 hektara brdovitog Braničevskog okruga. U vjetroparku su izgrađene 22 vjetroturbine nominalne snage 4,8 MW. Njegova planirana godišnja proizvodnja iznosiće 310 GWh električne energije.

Ljeto na terenu Summer on the site



EN Our role was pivotal, involving us in all stages of the project, from design, procurement of electrical equipment, and execution of civil engineering and electrical assembly works, to testing and commissioning. This summer, operational teams of four Elnos Group members, led by our Belgrade colleagues, simultaneously ran at full speed to build the electrical power facilities that connect the wind park to the 110 kV electrical power network.

TOGETHER TOWARDS THE GOAL

Power plants, substations, civil engineering, infrastructure and transmission lines divisions from Serbia joined their forces with respective divisions from Bosnia and Herzegovina, Montenegro and North Macedonia. Relay protection and control teams from these four countries also joined in. Together, they built foundations, assembled steel towers and installed and connected electrical equipment. The contours of the new wind park became more visible with each passing day.

Favorable weather conditions were an ally, helping us unleash the full potential of Elnos' capabilities in the construction of substations and transmission lines.

PRODUCTIVE SURGE

According to Stefan Golubović, our Project Manager on WP Krivača, during the peak of the construction, workdays began between seven and eight in the morning, often concluding at 6 PM or when the tasks planned for the day were completed. This intensive period extended from March to July, reaching its zenith in June when nearly 100 workers were spread across all project construction sites. Golubović notes that coordinating such massive works that vary in their type and technology of execution poses both a significant challenge and a notable achievement. Yet, it can all be accomplished with effective organization.

"Thanks to a proper organization, delegation of assignments and coordination of project activities, we managed to provide sufficient resources- manpower, mechanization, materials and tools to all our project sites", emphasizes Golubović.

OUR WORKS

In this wind park project, Elnos Group teams were engaged as the main contractor for Balance of Plant (BoP) – i.e. road infrastructure, and Connection Works (CW) – i.e. connection of the wind park to the power distribution net-



Gradimo „krvotok“ vjetroparka Krivača (103 MW) We are constructing the "bloodstream" of wind park Krivača (103 MW)

work in the first and the second phase of the project. This implies the construction of 13 kilometers of roads, the 33/110 kV transformation facility for the Krivača wind park, the 110 kV connection and distribution plant (CDP Krivača), the expansion of two existing 110/35 kV substations Veliko Gradište and Neresnica, the construction of two 110 kV transmission lines, as well as laying 10 kV cable to provide power supply for own consumption of 110 kV (CDP).

Brojke

Key figures

4

članice Elnos Grupe
učestvovale
Elnos Group Members
participated

7

gradilišnih lokacija
site locations

WIND PARK KRIVAČA

Wind park Krivača is the first wind park in Serbia to be built south of the Sava and Danube rivers. Located just six kilometers from the Đerdap Gorge and the Romanian border, it spans 242 hilly hectares of the Braničevo District. The wind park comprises 22 wind turbines each with a nominal capacity of 4,8 MW. Its planned annual production will reach 310 GWh of electrical energy.

NOVI VJETROPARK U S. MAKEDONIJI
NEW WIND PARK IN NORTH MACEDONIA

ENERGIJA VJETRA MIJENJA OIE SCENU

**WIND ENERGY IS CHANGING
THE RES SCENE**

SJEVERNA MAKEDONIJA

krupnim koracima ulazi u epohu zelene energije. U toj oblasti, jedan za drugim, redaju se značajni projekti. Na tom putu veliki trag ostavljaju i vrijedne ekipe Elnosa iz Skoplja.

NORTH MACEDONIA

is making confident strides into the era of green energy. Major green projects follow one another providing opportunity for hard-working teams of Elnos Skopje to leave their mark.

SR Naš tim je smješten na samoj granici sa Grčkom, gdje nastaje vjetropark Perun (30 MW). „Krvotok“ budućeg vjetroparka gradiće naši zaposleni.

ISKUSTVO NA NAŠOJ STRANI

Elnos Sjeverna Makedonija je, treba napomenuti, prethodnih godina bio važna karika u izgradnji vjetroparkova u ovoj zemlji. Naše ekipe su, zajedno sa brojnom operativnom, uspješno završile izgradnju vjetroparka Bogdanci, a potom to bogato iskušto pretočile u još jedan veliki projekat - vjetropark Bogoslovec.

Ovaj put, naš angažman je daleko značajniji, jer obuhvata i izgradnju nove trafostanice 110 kV, što predstavlja veliki poduhvat. Radovi su

počeli sredinom jula 2023, biće završeni tokom 2024.

„Ovaj vjetropark lociran je u opštini Bogdanci, u selu Stojakovo. Planirana površina budućeg vjetroparka je 515.736 metara kvadratnih“, pojašnjava Kristijan Ainovski, direktor Elnosa S. Makedonija.

SЛОЖНИ ПОСЛОВИ

„Radovi obuhvataju kompletну elektroenergetsku infrastrukturu, a u to spadaju izgradnja 2x110 kV priključnog dalekovoda na oko četiri kilometra, sa 19 stubova, izgradnja kompletne nove 110/33 kV TS Perun, izgradnja srednjonačinske mreže (33 kV SN kablova) za povezivanje



turbine te izrada uzemljenja vjetrogeneratora“, istakao je Ainovski.

Dodao je da će najveći izazov biti da svi ovi radovi budu završeni predviđenom dinamikom, što znači da ćemo za nešto manje od godinu dana trebati da izvršimo nabavku, ugradnju i puštanje u rad svih spomenutih objekata. Za vrijeme realizacije ovog projekta biće angažovano i do 60 Elnosovih radnika.

EN Our teams are currently stationed at the very border with Greece, where a new wind park Perun (30 MW) is to be built. The bloodstream of the future wind park will be built with electrical power connections made by our employees.



Brojke

Key figures

30
MW

snaga vjetroparka
capacity of the wind park

5

vjetroturbina
wind turbines

WITH EXPERIENCE ON OUR SIDE

It is worth mentioning that, throughout previous years, Elnos North Macedonia played an essential role in the construction of major wind parks in the country. Our teams, equipped with extensive machinery and reliable manpower, successfully completed the construction of wind park Bogdanci. The experience gained on the project was soon after used on another major endeavor – the construction of wind park Bogoslovec.

This time, however, our involvement is far more significant as it also includes the con-

struction of a new 110 kV substation. This substantially amplifies our role in the project. The works started in mid-June 2023 and will be completed during 2024.

"This wind park is located on the territory of municipality Bogdanci, in a village named Stojakovo. The wind park is planned to occupy an area of 515.736 square meters", explains Kristijan Ainovski, Director of Elnos North Macedonia.

COMPLEX WORKS

"The works cover overall power infrastructure. This includes the construction of a

2x110 kV connecting transmission line in the length of approximately 4 kilometers with 19 towers, followed by the construction of new 110/33 kV SS Perun and the middle-voltage network (33 kV MV cables) to connect the turbine, and finally, grounding of the wind turbine", Ainovski pointed out.

He added that timely completion of all these works will be the greatest challenge on the whole project because, according to the time schedule, procurement, installation and commissioning of all the above-mentioned elements is to be finished in less than a year.



SOLARNA REVOLUCIJA

SOLAR REVOLUTION



SR Izgradnja solarnih elektrana bukvalno eksplodira postajući najpopularniji izvor novog generisanja električne energije. Veliki talas implementacije solarnih projekata dolazi u nikad bitnijem trenutku, jer nas ekološki sat upozorava da vrijeme za zadržavanje globalnog zagrijavanja ispod 1,5 °C ističe.

Solarna energija je najbrže rastući segment energetike u 2023. godini, sa procijenjenim globalnim porastom od 20-30 odsto u odnosu na prethodnu godinu. Kao takva, ona je prepoznata kao vitalni resurs zelene transformacije.

Zvanične procjene kažu da će zemlje jugoistočne Evrope do 2025. udvostručiti svoje solarne kapacitete. Solarna energija dostigla je snagu od skoro 3,2 GW i sada drži udio od 14 odsto u OIE regionalnom miksnu.

U godini na izmaku, naši timovi postali su važni akteri regionalne solarne transformacije. Solarni projekti čiji smo aktivni dio ne samo da ilustruju tehničku izvodljivost i ekonomsku isplativost solarnih elektrana, već i njihov potencijal da transformišu naše društvo i način na koji razmišljamo o energiji. Ovo je naša solarna priča...

EN The construction of solar power plants is experiencing an explosive surge, emerging as the most popular method of energy production. This large wave of solar projects comes just at the right time as the clock is rapidly ticking down to keep the global temperature charge under 1,5°C.

Solar energy is the fastest-growing segment of the energy sector in 2023 with an estimated global increase of 20-30 percent compared to the year before. Recognized as a vital resource for green transformation, solar energy is becoming the cornerstone of our sustainable future.

Official estimates indicate that Southeast European countries will double their solar capacities by 2025. Solar energy has now reached a capacity of nearly 3,2 GW, holding a 14 percent share in the regional renewable energy mix.

Throughout the past year, our teams have become key players in the regional solar transformation. The solar projects we are actively involved in not only showcase the technical feasibility and economic viability of solar power plants but also highlight their potential to transform our society and reshape our perspective on energy. This is our solar story.

SR U POJASU ZLATNOG SPLITA

Na obroncima blizu Splita, najvećeg grada Dalmacije, počela je uzbudljiva solarna priča. Zvuk bušilica odjekuje kroz nepristupačnu krašku regiju, dok timovi radnika marljivo rade na izgradnji solarne elektrane Vidukin Gaj (25 MWp). Nedaleko od ovog terena naši timovi su uspješno realizovali projekat izgradnje solarne elektrane Bukovica (6,25 MWp).

Ova solarna elektrana nastaje na površini od 24,8 hektara, a njena očekivana godišnja proizvodnja iznosi 27,4 GWh električne energije. Ona je najveći solarni projekat na kojem je Elnos Grupa radila do sada.

Prvi i osnovni uslov koji u velikoj mjeri diktira realizaciju projekata iz oblasti solara je geografija područja, a ona je u ovom konkretnom slučaju nepristupačna, kraška.

„Radi se o zahtjevnom terenu“, objašnjava Petar Todorović, inženjer Elnos Grupe koji vodi ovaj projekat: „Zemljište je stjenovito, što znači da se veći dio građevinskih radova realizuje bušenjem, a svakoj fazi bušenja pretihode ozbiljne statičke procjene. Samo na ovom terenu treba da izbušimo više od 23.330 rupa u koje se postavljaju stubovi. Ipak, ovakvu situaciju imali smo prilikom izgradnje solarne elekt-

trane Bukovica, takođe u Dalmaciji, tako da nam ona nije strana.“

Ekipa Elnosa zadužena je za bušenje rupa, ugradnju stubova, njihovo betoniranje, montažu potkonstrukcije za solarne panele, panela i invertora, zatim za nabavku i polaganje srednjonaponskih, niskonaponskih i DC kablova, ispitivanje solarne elektrane te montažu četiri transformatorice, od kojih su dvije 6,6 MVA 35/0,8 kV, a druge dvije 3,3 MVA 35/0,8 kV.

Planirano vrijeme završetka projekta je april 2024., a radovi su započeli početkom oktobra ove godine. U pitanju je projekat koji nosi visok stepen zahtjevnosti u oblasti projekt menadžmenta.

„Detaljna organizacija projekta je ključna“, ističe Todorović: „Na vrhuncu radova moraćemo uskladiti rad oko 50 ljudi na terenu. Ekipa će raditi širok spektar faza radova, od bušenja i montiranja stubova do betoniranja i montiranja panela. Više timova će raditi istovremeno, a svaki tim će imati svoje jasno definisano vrijeme i poziciju svog zadatka.“

Sa ovim projektom, regija Dalmacije pokazuje i odlučnost da iskoristi svoj nevjerojatan potencijal u prelasku na obnovljivu energiju.

SE Vidukin Gaj

Lična karta projekta

Najveća projektovana snaga: **25 MWp**

Izlazna AC snaga: **19,9 MW**

Broj panela: **44.512**

Površina: **24,8 ha**

Godišnja proizvodnja: **27,4 GWh**

KROVOVI KAO NOVI IZVORI ENERGIJE

Korištenje energije Sunca postavljanjem solarnih panela na krovove svjetski je trend broj jedan, a u sve većoj mjeri ovaj trend hvata zamah i u BiH. Naša kompanija ove godine završila je izgradnju pet krovnih solarnih elektrana na privrednim objektima na području Laktaša i Čelinca, čija ukupna projektovana snaga zbirno iznosi 712 kWp. U planu je izgradnja još tri solarse elektrane u Banjaluci i regiji.

Projekte izgradnje krovnih solara realizujemo po principu „ključ u ruke“, od projektovanja, preko izvođenja do puštanja u rad.

Na terenu - SE Vidukin Gaj (25 MWp) On site - SPP Vidukin Gaj (25 MWp)



Izgradnja SE Medeno polje, BiH Construction of SPP Medeno Polje, BiH



U SLAVONSKOJ RAVNICI

Dok se kod Splita bore sa stjenovitim terenom, tim Elnosa radi na još jednom projektu u Brodsko-posavskoj županiji, gdje su uslovi dosta drugačiji. U pitanju je projekat izgradnje solarne elektrane Perkovci (4,89 MWp).

„Slavonija i Dalmacija su zaista veliki kontrast u svijetu rada“, kaže Todorović i dodaje: „Tlo na kojem nastaje solarna elektrana, prije nego što je postalo građevinski teren, bilo je poljoprivredno, te kada kiša počne padati, voda lako doseže i do koljena. Upravo zbog toga smo nabavili i koristimo specijalizovanu mašinu za pobijanje stubova montažne konstrukcije, što u ogromnoj mjeri ubrzava i olakšava proces izgradnje elektrane.“

Solarna elektrana Perkovci nastaje u opštini Vrpolje, južno od naselja Stari Perkovci, prostiraće se na površini od 5,36 hektara. Strukturu solarnog parka činiće 8.976 panela, a njegova godišnja proizvodnja će iznositi 5,39 GWh električne energije. Umjereni topli kišna klima, sa prosječnom godišnjom količinom padavina od 700-800 mm i velikim brojem sunčanih sati godišnje, samo su neki od prirodnih preduslova koji su odredili lokaciju nove solarne elektrane baš na ovom području.

Ekipe Elnosa su u okviru realizacije ovog projekta zadužene za pobijanje stubova, montažu potkonstrukcije za solarne panele, panela i invertora, nabavku i polaganje niskonaponskih i DC kablova, ispitivanje solarne elektrane te nabavku i polaganje SN kabla i optike od solarne elektrane do 110/20 kV trafostanice Donji Andrijevci.

Planirano vrijeme završetka oba projekta je prvi kvartal 2024. godine. Bez obzira na terenske izazove, bilo da je riječ o stjenovitom terenu kod Splita ili poljima Slavonije, Elnos Grupa je spremna da nastavi solarnu putanju u oblasti zelene energije.

SE Perkovci

Lična karta projekta

Najveća projektovana snaga: **4,89 MWp**

Izlazna AC snaga: **4 MW**

Broj panela: **8.976**

Površina: **5,36 ha**

Godišnja proizvodnja: **5,39 GWh**

NA SUNČANOJ STRANI MEDENOGL POLJA

Nakon Hrvatske, naša solarna priča seli se u BiH ili, da budemo precizniji, u njen zapadni dio, u blizini Bosanskog Petrovca. Od marta do septembra ove godine, ekipe Elnosa na području 5,23 hektara kraškog Medeno polja gradile su istoimenu solarnu elektranu.

Sa ukupno 7.448 solarnih panela, solarna elektrana Medeno polje (4,91 MWp) predstavlja jedan od prvih većih solarnih projekata u Bosni i Hercegovini, što označava značajan iskorak za Elnos Grupu u oblasti obnovljivih izvora energije na domaćem terenu.

Elnos Grupa izgradila je ovu solarnu elektranu po principu „ključ u ruke“, od projektovanja do puštanja u rad. Naši timovi na terenu su postavili sve elemente koji danas formiraju solarnu elektranu.

Realizovali su: montažu solarnih panela, zatim montažu pripadajućih im potkonstrukcija i invertora, kao i polaganje AC i DC kablova na potezu od invertora prema trafostanicama, te fazu ispitivanja rada solarne elektrane i njeno puštanje u rad.

„Svi kablovi pažljivo su položeni, AC i DC mreže povezane, a svaki dio sistema temeljno je ispitivan kako bi se osiguralo besprijekorno

funkcionisanje solarne elektrane. Naše ekipe postavile su panele i pripadajuće potkonstrukcije, osiguravajući da svaki panel bude čvrsto pričvršćen i optimalno orientisan prema Suncu“, rekao je Nenad Marjanović, projekt menadžer Elnos Grupe na ovom poduhvatu.

Realizacijom novog poduhvata iz oblasti solara Elnos je osnažio svoj portfolio u ovoj sve dominantnijoj oblasti obnovljivih izvora energije u BiH.

„Bilo mi je zadovoljstvo na terenu voditi timove koji u BiH stvaraju jedan ovako sjaj projekat iz oblasti čiste energije. Za mene lično, ovo je važna prilika da doprinесем nečemu što će imati dugoročno pozitivan uticaj na budućnost“, rekao je Marjanović.

SE Medeno polje

Lična karta projekta

Najveća projektovana snaga: **4,91 MWp**

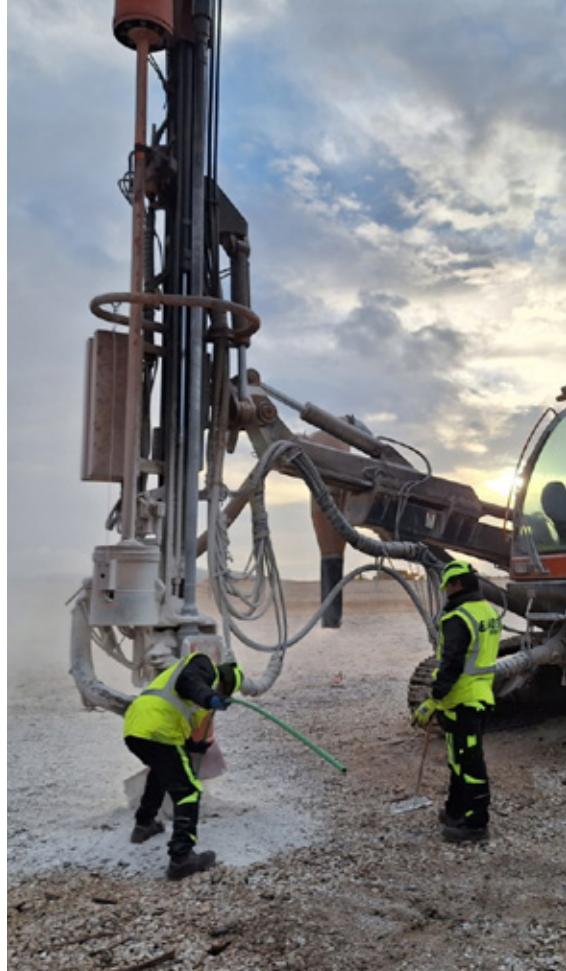
Izlazna AC snaga: **4 MW**

Broj panela: **7.448**

Površina: **5,23 ha**

Tip projekta: „**ključ u ruke**“

Godišnja proizvodnja: **6,15 GWh**



Timovi u akciji
Teams in action

Svaki dan donosi novi izazov
Every day brings a new challenge





EN IN THE GOLDEN EMBRACE OF SPLIT'S COASTLINE

An exciting solar tale is unfolding near Split, the largest city in Dalmatia. The echoing sounds of drills reverberate through the rugged karst region, where teams of workers diligently work on the construction of the solar power plant Vidukin Gaj (25 MWp). Not far from this site, our teams successfully implemented the construction project of the Bukovica solar power plant (6.25 MWp).

This solar power plant sprawls across 24,8 hectares and is expected to produce 27,4 GWh of electrical energy per year. It stands as the largest solar project undertaken by the Elnos Group to date.

The primary challenge that in many ways dictates the way any solar power project will be implemented is the geography of the area. In this particular case, it's the rugged and inaccessible karst landscape.

"It's a demanding terrain," explains Petar Todorović, an engineer from the Elnos Group leading this project. "The land is rocky, meaning a significant portion of construction work involves drilling, and each drilling phase is preceded by serious static testing. In this terrain alone, we need to drill more than 23.330 holes to install the supports. However, we have encountered a similar situation during the con-

struction of the solar power plant Bukovica, also in Dalmatia. This goes to say that we are familiar with the prevailing circumstances." The Elnos team is tasked with drilling holes, installing supports, concrete works for the supports, assembling substructures for solar panels, panels, and inverters, as well as procuring and laying medium-voltage, low-voltage, and DC cables. The responsibilities extend to testing the solar power plant and assembling four substations, two of which are 6,6 MVA 35/0,8 kV, the remaining two being 3,3 MVA 35/0,8 kV. Time for completion is set for April 2024, with work commencing in early October 2023. As far as project management is concerned, this project is considered highly demanding.

"Detailed project organization is crucial," emphasizes Todorović. "At the peak of operations, we will need to coordinate the work of around 50 people on-site. Teams will be engaged in a broad spectrum of work phases, from drilling and installation of supports to concrete works and panel assembly. Multiple teams will work simultaneously, with each team having clearly defined time and location for their assignments."

With this project, the Dalmatian region underscores its determination to harness its incredible potential in transitioning to renewable energy.

Budućnost je „na krovu”
The future is “on the roof”



SPP Vidukin Gaj

Project ID card

Maximum design capacity: 25 MWp

Output AC power: 19,9 MW

Number of panels: 44.512

Area: 24,8 ha

Annual production: 27,4 GWh

ROOFS AS NEW SOURCES OF ENERGY

Harnessing solar energy by installing solar panels on rooftops is the global trend number one, and increasingly, this trend is gaining momentum in BiH.

This year, our company completed the construction of five rooftop solar power plants on industrial facilities in the areas of Laktaši and Čelinac, with a combined design capacity of 712 kWp. Additionally, we have plans for the construction of three more solar power plants in Banja Luka and region.

We execute rooftop solar construction projects on a turn-key basis, from design to execution and commissioning.

IN SLAVONIAN PLAINS

While one Elnos team grapples with rocky terrain near Split, the other one is engaged in another project in the Brod-Posavina County, where conditions are significantly different. This project involves the construction of the solar power plant Perkovci (4,89 MWp).

Slavonia and Dalmatia truly present a stark contrast in the context of how works are executed," says Todorović, adding, "Before becoming a construction site, the ground on which the solar power plant is emerging was agricultural land. So, when the rain starts to fall, water reaches knee-high in no time. That is precisely why we have acquired and are utilizing a specialized machine for the installation of the supports for the prefabricated structures, greatly expediting and facilitating the construction process."

The solar power plant Perkovci is being built near the municipality of Vrpolje, south of the settlement of Stari Perkovci, spanning an area of 5,36 hectares. The solar power plant will comprise 8,976 panels, with an annual production of 5.39 GWh of electrical energy. The climate is moderately warm and rainy, with an average annual rainfall of 700-800 mm and a significant number of sunny hours per year. These natural conditions are some of the factors that have determined the location of the new solar power plant.

Within this project, Elnos teams are responsible for the installation of the supports (pile driving), assembling the substructure for solar panels, panels, and inverters, procuring and laying low-voltage and DC cables, testing the solar power plant, as well as procuring and laying MV cable and optics from the solar power plant to the 110/20 kV substation Donji Andrijevići.

The planned completion time for both projects is the first quarter of 2024. Regardless of the challenges encountered on the site, whether rocky terrain near Split or the fields of Slavonia, the Elnos Group is eager to continue its solar journey in the realm of green energy.

SPP Perkovci Project ID card

Maximum design capacity: **4,89 MWp**
Output AC power: **4 MW**
Number of panels: **8.976**
Area: **5,36 ha**
Annual production: **5.39 GWh**

ON THE SUNNY SIDE OF MEDENO POLJE

After Croatia, our solar journey takes us to Bosnia and Herzegovina, more precisely to its western part, near Bosanski Petrovac. From March to September of this year, Elnos teams have been constructing a solar power plant occupying 5,23 hectares of a karst field named Medeno Polje. The plant has been named after the location, solar power plant Medeno Polje.

With a total of 7,448 solar panels, the solar power plant Medeno Polje (4,91 MWp) represents one of the first major solar projects in Bosnia and Herzegovina, marking a significant leap forward for the Elnos Group in the field of renewable energy on home turf.

Elnos Group built this solar power plant on a turn-key basis, from design to commissioning. Our teams installed all the elements on site that now form the solar power plant. They carried out the assembly of solar panels, followed by the installation of their respective substructures and inverters, as well as the laying of AC and DC cables from the inverters to the substations. Our teams also conducted the testing phase of the solar power plant's operation and its commissioning.

"All cables have been carefully laid, AC and DC networks connected, and every part of the system thoroughly tested to ensure the flawless operation of the solar power plant. Our teams positioned the panels and their corresponding substructures, ensuring that each panel is securely fastened and optimally oriented towards the sun," said Nenad Marjanović, Project Manager at Elnos Group assigned to this project.

With the implementation of this new solar project, Elnos has strengthened its portfolio in this increasingly dominant field of renewable energy in BiH.

"It was a pleasure to lead the teams working on such a fantastic project in BiH in the field of clean energy. Personally, this is an important opportunity for me to contribute to something that will have a long-term positive impact on the future," stated Marjanović.

SPP Medeno polje Project ID card

Maximum design capacity: **4,91 MWp**
Output AC power: **4 MW**
Number of panels: **7.448**
Area: **5,23 ha**
Project type: „turn-key“
Annual production: **6.15 GWh**



SE Bukovica – prvi veliki izazov u Hrvatskoj
SPP Bukovica – the first major challenge in Croatia

SE Medeno polje (4,91 MWp)
SPP Medeno polje (4,91 MWp)



ЗНАЕМЕ ДА УПРАВУВАМЕ СО ЕНЕРГИЈА
СРЕДИСТВОМ ЗНАЊА



Red, rad, rezultat

WORK, ORDER, RESULT

„UČENJE JE KLJUĆ USPJEHA, A JA SAM IMALA SREĆU DA UČIM OD NAJBOLJIH. *Najznačajnija lekcija koju sam naučila je da donošenje odluke ne trpi čekanje. Odluke moramo donositi, ali i biti istrajni. Uz red i rad stiže i rezultat”, ističe Biljana Krunić, član Uprave za finansije Elnos Grupe. Krunićeva ima bogato profesionalno iskustvo, a naš kolektiv ojačala je energijom, odlučnošću i spremnošću da svoje znanje ukleše u nove poslovne uspjehe Elnos Grupe.*

“LEARNING IS THE KEY TO SUCCESS, AND I HAVE BEEN FORTUNATE TO LEARN FROM THE BEST. *The most important lesson I have learned is that decision-making leaves no room for hesitation. Decisions need to be made, and we must be persistent. Discipline and hard work bring results,” emphasizes Biljana Krunić, Elnos Group Board Member for Finance. With a rich professional background, Krunić brings additional energy and determination to our team, complemented by a readiness to embed her knowledge into future successful endeavors of Elnos Group.*

SR Prije dolaska u Elnos Grupu ostvarili ste bogato iskustvo u širokom spektru privrednih oblasti. Šta je za Vas bila prekretnica koja Vas je usmjerila ka elektroenergetici?

Volim izazove. Shodno tome, iskustvo sam sticala u modernim i dinamičnim privrednim djelatnostima, farmaceutskoj industriji i telekomunikacijama. Te oblasti karakterišu brzi razvoj i konstantno praćenje svjetskih tren-dova. Upravo to me je privuklo i energetici. Pratila sam razvoj i evropski uspjeh koji je Elnos Grupa napravila u ovoj oblasti. Elektroenergetika je bazna grana privrede i zaista je izazov biti dio ovakve kompanije u vrijeme tranzicije ka obnovljivim izvorima energije. Sa svojim dugogodišnjim iskustvom i inovativnim pristupom, ova kompanija predstavlja pravog lidera u energetskoj industriji. U tom kontekstu, izuzetno je ispunjujuće biti profesionalni dio ovakve impresivne priče.

U vremenu iza nas postali smo internacionalni koncern koji svake godine pravi sve značajnije ino-iskorake i realizuje rast na regionalnim

tržištima. Gdje, prema Vašem mišljenju, „leže“ snaga i razvojne prilike Elnos Grupe? Dobitna kombinacija je jednostavna. Imamo bogatu tradiciju i vrsne stručnjake, koji svoje znanje nesebično prenose mладим profesionalcima. Spremnost naših kolega da konstantno uče je naš ključ uspjeha. Oni su zaslužni za izrstanje Elnos Grupe u internacionalni konkern. Zato danas možemo da se pohvalimo tradicijom poslovanja dugom gotovo 80 godina, uz konstantan rast i razvoj na tržištu. Reference poslovanja u 18 zemalja, mogućnost razmjene kapaciteta i iskustva su naša prednost koju treba da nastavimo koristiti za širenje poslovanja na postojećim i novim tržištima. Svaka zemlja puna je poslovnih prilika i mogućnosti, ali i izazova koje naši zaposleni svakodnevno prevazilaze.

Mislim da su velike razvojne prilike kompanije u kontinuiranom praćenju tehnološkog razvoja i novih dostignuća te njihovoj implementaciji u Elnos Grupi, kao i spremnosti za prilagodavanje Elnosa tržištu i novim tehnologijama.

Kako se osjećate danas dok stojite pred novim izazovima? Šta Vas najviše motiviše u vezi sa Vašim poslom?

Srećna sam što mi ne padaju teško svakodnevni izazovi. U vrijeme kada se globalna ekonomija suočava sa recesijom, rastom cijena energenata, ulaznih komponenti, rastom kamatnih stopa, prvenstveno i najvažnije je održati finansijsku stabilnost Grupacije. Ekonomsko-finansijski sektor je podrška inženjeringu i prodaji, a lična motivacija je da unaprijedim taj sektor naše grupacije u smislu podrške upravljanju i razvoju biznisa, izvještavanju, upravljanju rizicima i internim kontrolnim postupcima. Cilj je njegovati kulturu finansijske osviješćenosti tako da se svaka odluka donosi sa jasnim razumijevanjem finansijskog učinka.

Šta je ono što Vam se lično najviše dopada u elektroenergetici?

Danas, kada je svijet na prekretnici i kada moramo razmišljati ne godinu, nego decenijama unaprijed, svako novo zeleno rješenje od istorijskog je značaja. Sigurna sam da će nam

generacije koje dolaze na tome biti zahvalne. Na nama je odgovornost. Moramo da pravimo velike korake ka postizanju klimatskog i energetskog balansa. Svako od nas to može, i pojedinci, i kompanije. To je ono što me inspiriše – doprinos boljoj budućnosti. Zar nije sjajno kada kroz svoj poslovni angažman možete uticati na to da naša planeta bude bolja? Imamo i „zvijezdu vodilju“, principi su zacrtani. Mi smo spremni.

Kako sve značajnija uloga žena u energetici i menadžmentu oblikuje dinamiku i industriju elektroenergetike?

Citiraču jednu poznatu izreku koja glasi: „Žena je poput vrećice čaja – nikad ne znaš koliko je jaka dok se ne nađe u vrućoj vodi.“ Nikad se nisam osjećala inferiorno u odnosu na muškarce – ni u ambicijama, ni u ponašanju, ni u razgovoru. Raduje me što to prepoznam i kod ostalih koleginica našeg velikog kolektiva – svjesne su koliko vrijede, ali, isto tako, znaju da su njihovi kvaliteti cijenjeni u našoj grupaciji. Energija koju imamo i te kako utiče na radnu atmosferu. A kada je radna atmosfera pozitivna, zdrava, onda prepreke koje se nametnu sa lakoćom budu savladane. Jedna od kadrovskih prednosti Elnos Grupe je sva-kako to što imamo elokventne, obrazovane i uspješne profesionalanke.

Kako biste opisali svoj menadžerski stil i da li smatrate da je u poslovnom okruženju važnije biti timski igrač ili individualac?

Disciplina. U tu riječ bih sažela sve one osobine koje treba da ima lider svakog tima, bilo da je riječ o sportskom, poslovnom ili nekom trećem kolektivu. Kada imate cilj i prema njemu idete snažno, dajete sve od sebe, rezultat je tada zagarantovan. Tu nema mesta kompromisu. Moj životni, pa i menadžerski stil podrazumijeva da ličnim primjerom pokažem posvećenost, odgovornost i stručnost u postupanju i radu. Poseban smisao u ostvarivanju rezultata daje upravo timski rad i specifičan doprinos svakog pojedinca u ostvarivanju rezultata. Ključna uloga lidera je napraviti pobjednički tim. Ili, da budem konkretnija – solisti su možda dobri za umjetnost, ali ne i za biznis.

U kojim trenucima Vaše karijere ste najviše učili i koja iskustva su Vam pružila najvrednije lekcije? Koji je Vaš lični poslovni moto?

Teško da na poslovnom ili životnom planu možete računati na uspjeh ako se konstantno ne usavršavate. Znate kako kažu – radite na sebi, tu uvijek ima posla. Imala sam sreću da učim od kvalitetnih profesora i mentora u

poslovanju i priliku da stečeno znanje primijenim i unaprijedim u različitim poslovnim sistemima. Promjena djelatnosti je period kad najviše učim. Najznačajnija lekcija koju sam naučila je da donošenje odluke ne trpi čekanje. Odluke je važno donositi, a to je i najteže. Treba preuzimati odgovornost, mijenjati sebe i okolinu koliko je to moguće. Ustrajnost i upornost u inicijativi, red i rad za vrhunske rezultate!

Pobornik ste zdravog načina života i polamaratonac. Možete li podijeliti sa nama dio Vaše motivišuće strategije zdravog života?

Da, volim trčanje i, kada mi vrijeme dozvoljava, učestvujem u maratonu. Kada trčim, osjećam se potpuno rasterećeno i punim baterije. U pravu su oni koji kažu – u zdravom tijelu takav je i duh. Trčanje bih svakome preporučila, pogotovo zato što živimo u vremenu kada mnogima svakodnevica donosi stres, probleme, teške situacije. Vjerujte, kada istražite svoju zacrtanu dijinicu, osjećaćete se preporođeno. Nije to tako samo u sportu. Tako je i u životu. Život ispunjen zdravim navikama naprosto je onaj pametnji izbor koji možete napraviti.

EN Before joining Elnos Group, you had gained extensive experience in a wide range of industries. What was the turning point that led you into the field of electrical engineering?

I love challenges. As a consequence of such an inclination, I gained experience in modern and dynamic sectors, including the pharmaceutical industry and telecommunications. These areas are marked by rapid development and a need to constantly follow global trends. This is what drew me to electrical engineering. I closely followed the progress and European success of Elnos Group in this domain. Moreover, electrical engineering is a fundamental branch of industry, and it is a real challenge to be part of a company such as this one during the world's transition to renewable energy sources. With its extensive experience and innovative approach, this company stands as a true leader in the industry. Being a part of such an impressive story is extremely fulfilling from a professional point of view.

We have grown to become an international company, making constant growth in regional markets and stepping forward more boldly with each year to come. In your opinion, where do Elnos Group's strengths and development opportunities lie?

The winning combination is simple. We have a rich tradition and excellent experts who

selflessly pass on their knowledge to their younger colleagues. The willingness of the company's employees to keep learning is the key to our success. They are the ones who made Elnos Group's grow into an international company. Today, we can boast nearly 80 years of business tradition, with constant growth and development in the market. Our references span 18 countries, and the opportunity for capacity and experience exchange is an advantage that we need to continue to use for expanding our business in existing and new markets. Every country is full of business opportunities and possibilities, as well as challenges that our employees overcome daily. I think the company's growth opportunities lie in staying in the loop with technological advancements and innovations and implementing them in Elnos Group. Readiness to adapt to the market and new technologies is a must in the modern era.

How do you feel today as you face new challenges? What motivates you the most in your work?

I am happy that I don't find daily challenges difficult. In a time when the global economy faces recession, rising energy prices, increased input costs, and higher interest rates, it is essential to maintain the financial stability of the Group. The economic and financial sector is a support to engineering and sales, and my personal motivation is to improve this sector within our Group in terms of management and business development, reporting, risk management, and internal control procedures. The goal is to nurture a culture of financial awareness so that every decision is made with a clear understanding of its financial impact.

What do you personally appreciate most about electrical engineering?

The world is at a turning point. This means that when thinking ahead, we need to think not in years but in decades because every new green solution we make today will have a historical significance in future. I am confident that future generations will be thankful for our efforts. The responsibility is on our shoulders. We need to take big steps towards achieving the climate and energy balance. Everyone can contribute, both individuals and companies. That is what inspires me - contributing to a better future. Isn't it great when, through your business involvement, you can make the world become a better place? Our guiding star shines bright and our principles are set. We are ready.



Ključna uloga lidera je napraviti pobjednički tim The key role of a leader is to create a winning team

What are your thoughts on the growing role of women in the power sector and management and how it is reshaping the dynamics of electrical engineering as an industry?

I will quote a famous saying: "A woman is like a tea bag - you never know how strong she is until she gets in hot water." I have never felt inferior to men - not in ambitions, behavior, or conversation. I am pleased to see this same confidence in my female colleagues within our large team. They are aware of their worth, and they know that their qualities are appreciated within our group. The energy we possess significantly influences the working atmosphere. When the working atmosphere is positive and healthy, the obstacles that arise are easily overcome. One of the human resources advantages of Elnos Group is, without a doubt, that we have eloquent, educated, and successful female professionals.

How would you describe your management style, and in a business environment, do you believe it is more important to be a team player or an individual?

Discipline. This word I believe summarizes all the qualities a leader of any team, whether in sports, business, or any other sphere, should possess. When you have a goal and pursue it

vigorously, giving all in, success is practically guaranteed. There is no room for compromise in this equation. My personal, and even managerial style involves setting an example by demonstrating dedication, responsibility, and expertise in actions and work. Yet, it is the teamwork and the distinctive contributions of each member that significantly enhance the overall sense of accomplishment in achieving the results. The key role of a leader is to create a winning team. To be more specific – while soloists might excel in the arts, they may not be the best fit for business.

At which moments of your career did you learn the most, and which experiences provided the most valuable lessons? What is your personal business motto?

You can hardly count on success in business, or life in general unless you devote yourself to constant improvement. As the saying goes – when you work on yourself, there is always room for improvement. I have been fortunate to learn from top-quality professors and mentors in the field of business, with the opportunity to apply and refine the knowledge I have gained in various business systems. Transitioning between different fields has been one of the periods where I have learned the most.

The most significant lesson I have learned is that when it comes to decision-making, there is no room for hesitation. It is of paramount importance to make decisions, and that is often the most challenging aspect. You need to take responsibility and adapt both yourself and the surrounding environment as much as possible. Perseverance and tenacity in pursuit of our initiatives, coupled with diligence and a commitment to excellence, are the keys to achieving outstanding results!

You are an advocate for a healthy lifestyle and a half-marathon runner. Could you share a part of your motivating strategy for maintaining a healthy life?

Absolutely, I love a good run, and whenever time permits, I participate in marathons. When I am out on the track, I feel completely relieved and recharged. It is true what they say – a healthy body nurtures a healthy mind. I would recommend running to everyone, especially in times when daily life brings stress, challenges, and tough situations. Believe me, once you have crossed your predetermined finish line, you will feel reborn. And this isn't just about sports; it is a philosophy that extends to life itself. A life filled with healthy habits is simply the smarter choice.

ONI SU *ELNOS NORDIC AB* **TIM**

HERE THEY ARE - OUR ELNOS NORDIC AB TEAM

U DINAMIČNOM SVIJETU ELEKTROENERGETIKE
veoma je važno imati tim čije članove, pored stručnosti, čvrsto povezuje dobra energija. Ispred vas je (ne)formalna priča o jednom takvom timu. Zavirite iza kulisa i upoznajte se s njima...

„Mislim da je kombinacija predanosti poslu, timskog rada i postavljanja uvijek novih ciljeva najbolja formula za uspjeh“



IN THE DYNAMIC REALM OF ELECTRICAL ENGINEERING,
having a team whose members are connected not only by their expertise but also by good energy is crucial. Here is an (in)formal story about one such team. Take a peek behind the scenes and get to know them...

NENAD
VUKOMANOVIĆ

direktor Elnos Nordica

Director of Elnos Nordic

“I believe that a combination of dedication to work, teamwork, and continually setting new goals is the best formula for success”

SR „Motivacija i osjećaj pripadnosti ključne su karike za uspjeh svakog, pa i našeg tima”, kaže Nenad Vukomanović, lider Elnos Nordic tima, koji je prije tri godine adresu u BiH zamijenio novom, Švedskom.

Njegov stav je jasan – tim na čijem je čelu je mali, ali odabran i teži ka tome da u budućnosti bude veoma značajan centar Elnos Grupe za skandinavsku regiju.

Prve tri asocijacije koje mu padnu na um pri pomenu Elnos Nordica su: Švedska, energetika i napredak.

„Mislim da je kombinacija predanosti poslu, timskog rada i postavljanja uvijek novih ciljeva najbolja formula za uspjeh“, naglašava on.

Svojevrstan reset od svakodnevnih obaveza najviše pravi kada se vrati u rodni kraj. Ipak, veoma mu se dopadaju švedska kultura i stil života. Kao svoj omiljeni švedski običaj izdvojio je – švedsku fiku! Ovaj kratki dnevni predah, uz kafu i kolač, koji je Švedska učinila globalnim, istinsko je zadovoljstvo.

EN “Motivation and a sense of belonging are crucial for success of any team, including ours,” says, Nenad Vukomanović, leader of the Elnos Nordic team, who switched residence from Bosnia and Herzegovina to Sweden three years ago.

His position is clear – the team he leads is “small but carefully selected” and aims to become a prominent hub for the Elnos Group in the Scandinavian region in the future. The first three words that come to his mind in connection with Elnos Nordic are Sweden, energy, and progress. “I believe that a combination of dedication to work, teamwork, and continually setting new goals is the best formula for success,” he emphasizes.

Returning to his homeland is a sort of reset from daily obligations. However, he greatly appreciates Swedish culture and lifestyle. As his favorite Swedish tradition, he highlights the “Swedish fika”. This short daily break with coffee and pastries that Sweden has made global is a true pleasure.

„Biti jedini član tima koji pripada drugoj kulturi sjajno je iskustvo. Istinski uživam u učenju o srpskoj tradiciji, ali i širenju švedskih običaja“



ANNICA LEJONBERG

menadžer administracije

Administration Manager

“Being the only team member who belongs to a different culture is a fantastic experience. I genuinely enjoy learning about Serbian traditions while sharing Swedish customs”

SR Jedina je Švedanka i jedina žena u Elnos Nordic timu. Ova specifična pozicija Annici Lejonberg daje originalno mjesto u Elnos Nordic timu. Rođena je u Västeråsu, gradu u centralnoj Švedskoj, koji je duže od decenije centrala Elnos Nordica. Dio našeg tima je već sedam godina. Sa pozicije menadžera administracije, Anicca obavlja širok spektar zadataka koji su ključni za uspješno funkcionisanje kompanije, kao što su finansije, računovodstvo, plaćanje poreza... „Biti jedini član tima koji pripada drugoj kulturi sjajno je iskustvo. Istinski uživam u učenju o srpskoj tradiciji, ali i širenju švedskih običaja“, kaže Anicca. Njen entuzijazam sjajna je inspiracija za mnoge. Možemo reći da je ona neformalni ambasador multikulturalnih odnosa kompanije. Anicca ističe da je sloboda u poslu koju Elnos dozvoljava neprocjenjivo važna. „Srećna sam jer i danas, kada se približavam kraju profesionalne karijere, moj svaki radni dan ima svrhu. Uživam u svom poslu“, kaže ona.

EN As the sole Swede and only woman in the Elnos Nordic team, Annica Lejonberg holds a unique position. Born in Västerås, a city in central Sweden that has served as the Elnos Nordic headquarters for over a decade, she has been part of our team for seven years. In her role as Administration Manager, Annica takes on a broad spectrum of tasks crucial to the company's smooth operation, including finance, accounting, and tax payments. “Being the only team member who belongs to a different culture is a fantastic experience. I genuinely enjoy learning about Serbian traditions while sharing Swedish customs,” says Annica. Her enthusiasm serves as a great inspiration for many, making her an informal ambassador for the company's multicultural relationships. Anicca emphasizes that the freedom Elnos gives to its workers is absolutely priceless. “I am happy that even today, as I approach the end of my professional career, every day I spend at work has a purpose. I truly enjoy what I do!” she adds.

„Na poslu mi najveće zadovoljstvo predstavlja svakodnevni kontakt sa kolegama i završetak projekata bez povreda“



DRAGAN ZORIĆ

BZR koordinator

HSE Coordinator

“For me, the greatest satisfaction comes from daily contact with colleagues and the completion of projects without injuries”

Karijera Dragana Zorića u Elnisu ove godine dočekala je svoje punoljetstvo. Prvu deceniju radio je na domaćem terenu, nakon čega je postao dio Elnos Nordica. Profesionalni put ovog BZR koordinatora obilježen je brojnim uspjesima. Među projektima koji su bili dio njegovog poslovnog puta posebno mjesto posvećuje uspješnoj realizaciji modernizacije trafostanice Vietas. Ovaj poduhvat odvijao se u fantastičnim predjelima sjevera Švedske, u oblasti Arktičkog polarnog kruga. Do sada je obišao veći dio Švedske, ali ipak kaže da je za njega posebno mjesto grad Kiruna, gdje je prvi put u životu imao priliku da vidi auroru borealis. Zorić vjeruje da ne postoji sudbina, osim one koju sami stvaramo. „Na poslu mi najveće zadovoljstvo predstavlja svakodnevni kontakt sa kolegama i završetak projekata bez povreda“, ističe on. Slobodno vrijeme najčešće posvećuje plivanju, svom novom hobiju. „Naučio sam da plivam u 47. godini, na to sam jako ponosan“, kaže Zorić.

Dragan Zorić's career in Elnos reached adulthood this year. He spent the first decade working as part of the home team before becoming a valuable member of Elnos Nordic. The professional journey of this HSE coordinator is marked by numerous successes. One of the projects that he treasures deeply in his illustrious career is the successful modernization of the substation Vietas. This endeavor took place in the fantastic landscapes of northern Sweden, in the area of the Arctic Polar Circle. He has traveled most of Sweden so far, but for him, the city of Kiruna remains a very special place. It was here that he witnessed the aurora borealis for the first time in his life. Zorić believes that there is no destiny other than the one we create for ourselves. “For me, the greatest satisfaction comes from daily contact with colleagues and the completion of projects without injuries,” he emphasizes. In his leisure time, he dedicates himself to swimming, a newfound passion. “Learning to swim at the age of 47 is an accomplishment I take great pride in,” says Zorić.

„Najveće zadovoljstvo u poslu mi predstavlja postizanje željenih rezultata uz dobru radnu rutinu, kolegijalnost i poštovanje bezbjednosnih protokola“



DEJAN INĐIĆ

projekt menadžer

Project Manager

“For me, the greatest satisfaction in work comes from achieving desired results through a good work routine, collegiality, and compliance with safety protocols”

SR Dejan Indić je projekt menadžer u Elnos Nordic timu. Cijenjeni je član tima sa bogatim iskustvom, koje je ranije stekao kao sajt inženjer. Njegovo stručno znanje i posvećenost čine ga ključnim igračem ovog dinamičnog tima.

Kao jedan od najznačajnijih projekata u karijeri izdvaja izgradnju dalekovoda Hurva–Sege. „Bio je to novi iskorak za Nordic tim na švedskom tržištu“, kaže Indić.

„Najveće zadovoljstvo u poslu mi predstavlja postizanje željenih rezultata uz dobru radnu rutinu, kolegijalnost i poštovanje bezbjednosnih protokola“, kaže Indić.

Indićev životni i poslovni moto je da čovjek treba da teži sopstvenom usavršavanju radeći ono što voli.

Od svih gradova u Švedskoj, najviše ga je oduševio Göteborg. „U ovom gradu proveli smo jedan nezaboravan adrenalinski dan u najvećem zabavnom parku u Švedskoj – Lisebergu. Bilo je sjajno“, rekao je on. U slobodno vrijeme bavi se različitim sportskim aktivnostima, uključujući trčanje, biciklizam i plivanje.

EN Dejan Indić is a Project Manager in the Elnos Nordic team. He is a highly regarded team member with extensive experience, having previously worked as a site engineer. His expertise and dedication make him a key player in this dynamic team.

As one of the most significant projects in his career, he highlights the construction of the transmission line Hurva – Sege. “It was a new step forward for the Nordic team in the Swedish market,” says Indić.

“For me, the greatest satisfaction in work comes from achieving desired results through a good work routine, collegiality, and compliance with safety protocols,” Indić states.

His motto, both in life and business, is that one should pursue self-improvement through the pursuit of their passions.

Among all the cities in Sweden, Göteborg has impressed him the most. “In this city, we spent an unforgettable adrenaline-packed day when we visited Liseberg, the largest amusement park in Sweden. It was fantastic,” he said. In his free time, he engages in various sports activities, including running, cycling, and swimming.

„Od svih krajeva Švedske posebno mi se dopada grad Kalmar. On me podsjeća na primorske gradove naših prostora“



ĐORĐE TRBIĆ

poslovođa

Site Manager

“Of all the parts of Sweden, I especially like the city of Kalmar. It reminds me of the coastal towns of our region”

SR On je iskusni profesionalac u rukovođenju poslovima u oblasti trafostanica. Godinama unazad iza njega se nižu uspješni projekti. A među onima za koje smatra da će ih uvijek pamtitи je rekonstrukcija trafostanice Älmhult.

„Ova trafostanica napaja istoimeni mali grad na jugu Švedske, u kojem se nalazi središte IKEA korporacije. Taj projekat bio je poduhvat za pamćenje koji se odvijao kroz mnogo važnih etapa“, ističe Đorđe.

Od svih krajeva Švedske, zemlje koja mu je drugi dom, posebno mjesto daje gradu Kalmar, koji ga podsjeća na primorske gradove naših prostora.

Kada nije zauzet, najviše uživa u pecanju. Ovaj hobi za njega je način opuštanja i povezivanja sa prirodom, što ga čini idealnim predstavnikom skandinavske filozofije života – jednostavno, mirno i u skladu sa prirodom. Đorđe je istinski profesionalac u svom poslu, ali istovremeno i čovjek koji zna kako da pronađe ravnotežu između posla i lijepog provodenja slobodnog vremena.

EN He is seriously professional in managing works on substation projects. For years now, he has been at the forefront of numerous successful projects.

One such project, the one he believes he could never forget, is reconstruction of substation Älmhult.

“This substation powers a small town in southern Sweden which bears the same name, known for being home to the headquarters of the IKEA corporation. It was a memorable undertaking that unfolded through many crucial stages,” emphasizes Đorđe.

Of all the corners of Sweden, a place he calls his second home, Kalmar has a special spot in his heart, as it reminds him of the coastal towns of his home region.

When not immersed in work, he finds the utmost joy in fishing. This hobby serves as a way to relax and connect with nature, embodying the essence of the Scandinavian philosophy of life - simple, serene, and in harmony with nature. Đorđe is a true professional in his field, yet at the same time, a person who knows how to maintain a balance between work and leisurely pursuits.

„Svaki uspješno realizovan posao veliki je izvor motivacije za nove poslovne pobjede“



RADOVAN SPASOJEVIĆ

projekt inženjer

Project Engineer

“Every successfully completed project is an outstanding source of motivation for new business victories”

SR Prvi dan ove godine bio je zvaničan datum na koji je Radovan postao dio Elnos Nordic tima. Njegova stručnost i predanost brzo su od novog napravile važnog člana ove dinamične ekipe.

Jedan od projekata na kojem je radio u Švedskoj i koji za njega ima posebno mjesto je ovogodišnja velika rekonstrukcija trafostanice Tuna. „Ovaj poduhvat otkrio je koliko smo zapravo spremni da se nosimo sa izuzetno velikim izazovima“, kaže Radovan.

Tokom boravka u Švedskoj, poseban utisak na njega ostavio je Stockholm.

Prema njegovim riječima, ova metropola za njega je mnogo više od jednog glavnog grada – ona je centralni simbol ove zemlje.

Za kraj nam je rekao da je za njega svaki uspješno realizovan posao veliki izvor motivacije za nove poslovne pobjede.

EN Radovan officially became a member of Elnos Nordic team on the first day of this year. Yet, thanks to his expertise and dedication, he swiftly transformed from a newcomer to an extremely important member of this dynamic team.

One of the standout projects during his time in Sweden, holding a very special place in his resume, is this year's extensive reconstruction of the substation Tuna. “This endeavor revealed just how prepared we are to handle extreme challenges,” notes Radovan.

The place that left a lasting impression on him during his stay in Sweden is Stockholm. According to Radovan, this metropolis is more than a capital – it is an iconic symbol of the whole country.

In conclusion, he shared that every successfully completed project is an outstanding source of motivation for new business victories.

“Posebna privlačnost Švedske leži u njenom visokom standardu života, netaknutoj prirodi, bogatoj kulturnoj raznolikosti te opštoj otvorenosti i toleranciji”



SAŠA MILOŠEVIĆ

menadžer prodaje za dalekovode

Sales Manager for Transmission Lines

“Sweden's speciality lies in its high standard of living, untouched nature, rich cultural diversity, and general openness and tolerance”

SR Saša Milošević, najmlađi član Elnos Nordic tima, nedavno se preselio iz Banjaluke u centralnu Elnos Grupu u Švedskoj. Iako je tek postao dio tima, on je do sada kao važna karika sistemske prodaje Elnosa BL ostvario mnoga uspješnih poduhvata upravo na tržištu Švedske.

Jedan od projekata koji mu posebno ostaje u sjećanju je Jugozapadni link 2, DV 400 kV Hallsberg-Barkeryd. „Ovaj projekt je bio ključan za napredak kompanije, ali i za moj lični i profesionalni razvoj“, ističe on.

Saša je tek stigao u Švedsku, a ono što ga najviše privlači su kvalitet života, prirodna ljepota, kulturna raznolikost i opšta otvorenost i tolerancija ove zemlje. Njegov životni i poslovni moto glasi - Nikada ne odustajte od svojih ciljeva.

Najveće zadovoljstvo u poslu predstavlja mu postizanje ciljeva, lični i profesionalni razvoj te rad u timu. U slobodno vrijeme voli druženje s dragim ljudima i gledanje dobrih serija.

EN Saša Milošević, the youngest member of the Elnos Nordic team, recently moved from Banja Luka to the headquarter of the Elnos Group in Sweden. Although he has just become part of the team, he has so far achieved many successful ventures in the Swedish market as an important link in the system sales of Elnos BL.

One of the projects that particularly remains in his memory is The South-West Link 2, TL 400 kV Hallsberg-Barkeryd. “This project was crucial for the progress of the company, but also for my personal and professional development,” he points out.

Saša has just arrived in Sweden, and what attracts him the most are the quality of life, natural beauty, cultural diversity, and general openness and tolerance of this country. His life and business motto are - Never give up on your goals.

The greatest satisfaction in his work is the achievement of goals, personal and professional development, and teamwork. In his free time, he likes hanging out with nice people and watching quality series.

NOVE ČLANICE, NOVI USPJESI
NEW MEMBERS, NEW ACHIEVEMENT

JAČAMO POZICIJU NA EVROPSKOM TRŽIŠTU

STRENGTHENING OUR
POSITION IN THE
EUROPEAN MARKET

ELNOS ČEŠKA, ELNOS DANSKA I ELNOS

RUMUNIJA postale su naše nove članice, a ovim pojačanjem proširili smo poslovanje na 18 država regije i Evrope.

ELNOS CZECH REPUBLIC, ELNOS DENMARK,

AND ELNOS ROMANIA have joined our ranks, expanding our operations to 18 countries in the region and Europe.



SR Nova tržišta i rad na izazovnim i kompleksnim projektima postaju formula koja Elnos Grupu čini jednim od lidera u sektoru elektroenergetike.

Branko Torbica, potpredsjednik Elnos Grupe, naglašava: „Ovo je godina u kojoj smo nastavili pričati svoj dio priče o građenju energetike budućnosti. U Češkoj i Rumuniji već su realizovani prvi projekti, dok su u jeku pripreme za prvi projekat u Danskoj, koji startuje početkom naredne godine. Cilj nam je proširenje poslovanja i pružanje visokokvalitetnih usluga partnerima u regiji i Evropi.“

S ponosom ističemo više od deset godina internacionalnog poslovanja, podstaknutog primjenom najnovijih tehnologija. Naši iskoraci na evropskom tržištu svjedoče o uspjehu koji

proizlazi iz visokih inženjerskih standarda i striktnog poštovanja procedura projekt menadžmenta.

„Kompanije koje potiču s ovih prostora, a sada su poželjni partneri u EU, najbolji su ambasadori pozitivne poslovne klime u Bosni i Hercegovini“, zaključuje Torbica.

EN This reinforcement positions Elnos Group as a leader in the field of electrical power engineering, driven by our engagement in new markets and challenging, intricate projects.

Branko Torbica, Vice President of Elnos Group, emphasizes, “This is the year where we continue to contribute to the narrative of building the energy future. In the Czech Republic and Romania, the initial projects have already been

realized, while preparations are underway for our first project in Denmark set to commence early next year. Our goal is to expand our business and deliver high-quality services to partners in the region and Europe.”

We proudly highlight over a decade of international business, driven by the adoption of cutting-edge technologies. Our strides in the European market stand as evidence of our success stemming from high engineering standards and strict adherence to project management procedures.

“Companies originating from this region, now desirable partners in the EU, are the best ambassadors of a more positive business climate in Bosnia and Herzegovina,” concludes Torbica.

Kontinuirana izvrsnost Continuous excellence

TREĆI PLATINASTI BONITET ZA ELNOS BL

Third Platinum Creditworthiness Certificate for Elnos BL

SR Elnos BL je ponovo, treći put zaredom, dobio platinasti sertifikat bonitetne izvrsnosti. Ovaj sertifikat je najviša ocjena vrijednosti poslovanja, ekonomskog kvaliteta i izvrsnosti kompanije. Priznanje dodjeljuje evropska sertifikacijska kuća Bisnode, a njime smo ponovo svrstani u najviši vrh uspješnijih kompanija u Bosni i Hercegovini, koji je osvojilo 2,5 odsto kompanija u državi.

EN Elnos BL has once again, for the third consecutive time, received the platinum creditworthiness certificate of excellence. This certificate represents the highest rating for business value, economic quality, and overall company excellence. Awarded by the European certification house Bisnode, it places us once again among the top-performing companies in Bosnia and Herzegovina, achieved by only 2,5 percent of companies in the country.



Nove kancelarije u Švedskoj New offices in Sweden

Kruna 11 godina poslovanja Crowning 11 years of business

SR Elnos Nordic presepio se na novu adresu u Västeråsu, u veći, moderni prostor. Ovaj potez je potvrda rasta kompanije i podsjetnik na naporan rad i predanost svih zaposlenih angažovanih na tržištu Švedske. Uvjereni smo da će novi prostor Elnos Nor-

dica biti odlična baza predstojećih uspjeha našeg vrijeđnog tima u Švedskoj.

EN Elnos Nordic has moved to a new address in Västerås, into a larger and more modern space. This move is a confirmation of the company's growth and a reminder

of the hard work and dedication of all employees engaged in the Swedish market. We are confident that the new premises of Elnos Nordic will serve as an excellent base for the upcoming successes of our dedicated team in Sweden.

Nastavak rasta Continued growth

Elnos Trade

osnažuje kapacitet

Elnos Trade strengthens capacities

SR Elnos Trade, naša članica i vodeća kompanija u BiH za prodaju i distribuciju elektronomaterijala, jača kapacitet poslovnih centara u Bijeljini i Doboju novim poslovnim i skladišnim prostorima. Ovim već snažna mreža sa šest poslovnih centara u pet gradova Republike

Srpske omogućava Elnos Tradeu da dodatno zadovolji potrebe svojih kupaca širom regije.

EN Elnos Trade, our member and the leader in the sales and distribution of electrical material in the BiH market, is enhancing the capaci-

ties of business centers in Bijeljina and Doboju with new business and storage spaces. With an already robust network featuring six business centers in five cities in the Republika Srpska, Elnos Trade is positioned to meet the needs of its customers across the region.

HVDC interkonekcija DolWin 5

HVDC interconnection DolWin 5

NA OBALI SJEVERNOG MORA

ON THE SHORE OF THE NORTH SEA



KADA VAM SE SUPROTSTAVE

SNAŽNI VJETROVI, u savezništvu sa neumornim kišama, a pritom radite uz samu obalu Sjevernog mora, znate da je u pitaju angažman na impozantnom projektu. Izgradnja HVDC interkonekcije DolWin 5 je priča o nevjerovatnoj snazi prirode i ljudskom inženjerskom dostignuću.

WHEN YOU ARE OPPOSED BY

FIERCE WINDS, ALLIED WITH

RELENTLESS RAIN, while working right along the North Sea coast, you know you're engaged in a remarkable undertaking. The construction of the HVDC interconnection DolWin 5 is a tale of incredible natural forces and human engineering achievement.

SR HVDC interkonekcije su zaslužne za transfer velikih količina energije, na impresivnim razdaljinama, uz smanjene gubitke. Na takva tri projekta svoj pečat utisnula je Elnos Grupa. Bili smo dio HVDC projekata NordLink i MONITA, a ove godine finalizovali smo radove na HVDC projektu DolWin 5 u Njemačkoj, gdje se lokacija gradilišta prostire na impresivnih 20.000 metara kvadratnih.

Fokus naših radova bio je na konvertorskoj staniči Emden, instalirane snage 900 MW i naponskog nivoa +/- 320 kV DC. Između ove konvertorske stанице i offshore vjetroparka Borkum Riffgrund 3 gradi se interkonekcija DolWin 5. Zadatak Elnosa bio je da u njoj, kao podizvodac kompanije Hitachi Energy, realizuje kompletne elektromontažne radove.

ZAHTJEVNO TRŽIŠTE

Vrijedne ruke naših stručnjaka još jednom su pokazale umijeće na ovom zahtjevnom tržištu. Zanimljivo je da je na samom početku realizacije ovog projekta vrijeme bilo dosta kišovito, a pljuskovi i grmljavina su nas periodično pratili i tokom ljeta. To nas nije obeshrabrilo.

Obim našeg posla najbolje ilustruje činjnika da je, primjera radi, zaključno sa krajem septembra, položeno više od 95.000 metara kablova svih tipova, od optičkih, komunikacionih, signalnih, kontrolnih do napojnih, kao i srednjonaponskih. Aktivnosti u sklopu našeg osnovnog ugovora završene su krajem septembra, s tim što je dio naše ekipe na terenu ostao i nakon toga.

MOĆ MODERNE OPREME

Milenko Jajčanin, inženjer Elnos Grupe i rukovodilac gradilišta na ovom projektu, kaže da smo najviše radnika angažovali u junu. Maksimalno angažovanje je, dodaje, bilo zbog paralelne organizacije rada na montaži visokonaponske opreme, polaganju i vezivanju kablova i montaži ispravljačkih modula. Jajčanin ističe da smo na ovom projektu najvećim dijelom angažovali ljude iz divizija za trafostanice i elektrane, a bilo je i kolega iz divizije za infrastrukturu.

Govoreći o fazama koje su bile tehnički najzahtjevниje za rad, on ističe da je montaža kalemova bila izazovna, jer je to oprema sa najvećom masom. Prema njegovim riječima, tehnički najzanimljivija i najkompleksnija faza je bila montaža ispravljačkih modula (BiGT tranzistora), koja je trajala tri mjeseca i na kojoj je konstantno bilo uposleno 10 montera, kao i veći broj platformi za rad na visini.

„Izdvojio bih i fazu polaganja optičkih kablova i njihovo povezivanje, koje je zahtijevalo zavarivanje optičkih vlakana, takozvano splajsovanje. Ova faza je zahtjevna zbog osjetljivosti na mehanička oštećenja samih optičkih kablova koji su polagani po nepristupačnim trasama unutar hale sa ispravljačkim modulima, kao i zbog velike količine optičkih vlakana koja je trebalo zavarivati na strani upravljačkih ormara koji su ‘mozak’ sistema“, kaže Jajčanin.

ZADATAK TEŽAK 420 TONA

Ispravljački moduli pete generacije (BiGT tranzistori), ukupne mase preko 420 tona, montirani su odozgo prema dole na krovnu konstrukciju. Montaža je uključivala 12 kompleta ispravljačkih modula po polu, svaki komplet težak oko 20 tona. Tokom cijelog procesa, hala je održavana pod natpritiskom kako bi se spriječio ulazak prašine i sitnih čestica, uz održavanje zadane vlažnosti. Uprkos zahtjevnoj montaži, zahvaljujući jasno definisanim fazama i upotrebi specijalizovane mašine za podizanje, organizacija je bila na visokom nivou.

EN HVDC interconnections are responsible for transferring vast amounts of energy over impressive distances with minimal losses. Elnos Group has left its mark on three such projects. We were part of the HVDC projects NordLink and MONITA, and this year, we completed the works on the HVDC project DolWin 5 in Germany, with a construction site spanning an impressive 20,000 square meters.

Our focus was on the Emden converter station, with an installed power of 900 MW and a voltage level of +/- 320 kV DC. The DolWin 5 interconnection is being built between this converter station and the offshore wind park Borkum Riffgrund 3. Elnos's task was to carry out overall electrical assembly works as a subcontractor for Hitachi Energy.

CHALLENGING MARKET

The skilled hands of our experts once again demonstrated their mastery in this demanding market. They did not let themselves get put off by adverse weather conditions at the beginning of the project with heavy rains, downpours and thunderstorms persisting even into the summer.

The extent of our work is best illustrated by the fact that, as of the end of September, we had laid over 95,000 meters of various types of cables, including optical, communication, signaling, control, power, and medium-voltage cables. Activities under our main contract were completed by the end of September, with a portion of our team remaining on-site thereafter.

POWER OF MODERN EQUIPMENT

Milenko Jajčanin, an engineer at Elnos Group and the site manager for this project, said that we had the highest number of workers on board in June. Maximum engagement, he added, was necessary due to the parallel organization of

work involving the assembly of high-voltage equipment, cable laying and termination, and the installation of rectifier modules. Jajčanin emphasized that for this project, we primarily employed individuals from the Substation and Power Plants Division, with colleagues from the Infrastructure Division also joining the effort.

Regarding the phases that were technically most demanding, Jajčanin pointed out that the assembly of the coils was challenging due to their substantial mass. According to him, the most technically intriguing and complex phase was the assembly of the rectifier modules (BiGT transistors), which lasted for three months and consistently involved 10 fitters and a substantial number of elevated work platforms.

“I would also highlight the phase of laying optical cables and their connecting, which required welding of optical fibers, commonly known as splicing. This phase is demanding due to the sensitivity to mechanical damage of the optical cables themselves, which were laid in inaccessible routes within the hall with rectifier modules, as well as the large number of optical fibers that needed to be spliced on the control cabinet side, which is the ‘brain’ of the system,” said Jajčanin.

A TASK WEIGHING 420 TONS

Fifth-generation rectifier modules (BiGT transistors), with a combined weight of over 420 tons, were mounted from top to bottom onto the roof structure. The assembly involved 12 sets of rectifier modules per pole, each set weighing approximately 20 tons. Throughout the entire process, the facility was maintained under positive pressure to prevent the ingress of dust and fine particles while maintaining the specified humidity levels. Despite the challenging assembly, well-defined stages of operation and the use of specialized lifting equipment ensured a high level of organization.

Brojke

Figures



obuhvata lokacija gradilišta
of site area



kablove položeno
of cables laid



maksimalan broj montera na terenu
maximum number of fitters on site

OTKRIVANJE POTENCIJALA RUMUNIJE

UNVEILING ROMANIA'S POTENTIAL



Željezara Tenaris-Silcotub, Kalařeši Steel plant Tenaris-Silcotub, Călărași

FLEKSIBILNOST, PROFESIONALIZAM I DINAMIČNA STRATEGIJA RAZVOJA DOBITNA JE KOMBINACIJA

koja je Elnos Grupu pozicionirala na svjetska tržišta. Brz odgovor na zahtjeve tržišta i profesionalni odnos prema klijentima odveli su nas ove godine u Rumuniju, gdje smo još jednom potvrdili svoj internacionalni razvoj i reputaciju.

FLEXIBILITY, PROFESSIONALISM, AND A DYNAMIC DEVELOPMENT STRATEGY FORM A WINNING COMBINATION

that has positioned the Elnos Group in global markets. A swift response to market demands and a professional approach to clients led us to Romania this year, reaffirming our international growth and reputation.

U najvećoj zemlji u jugoistočnoj Evropi, za samo mjesec dana, realizovali smo projekat u službi stvaranja uslova pouzdanog napajanja električnom energijom željezare Tenaris-Silcotub, u gradu Kalařari. U pitanju je rekonstrukcija sekundarne opreme za 110/10 kV trafostanicu u okviru pomenute željezare. U ovom izazovnom roku završeni su i povjereni nam radovi u ukupno osamnaest 110 kV polja, uključujući i samo ispitivanje i puštanje u rad.

„Naš prvi projekat u Rumuniji, na koji smo posebno ponosni, podrazumijevao je rekonstrukciju sekundarne opreme: sistema el. zaštite i upravljanja, sistema sopstvene potrošnje te integracije SCADA sistema za svih 18 polja u 110/10 kV trafostanici koja se nalazi u Željezari“, rekao je Slobodan Banović, zamjenik direktora prodaje Elnosa Srbija.

Ono što je posebno zanimljivo i važno za ovaj projekat jeste da smo za potrebe rekonstrukcije trafostanice proizvodili zaštitno-upravljačke i razvodne ormare u našoj EMR radionici u Beogradu, a potom ih transportovali u Rumuniju, gdje smo ih ugradivali zajedno sa preostalom opremom i svim pratećim kablovima.

Kada se uzme u obzir cijeli projekat i vremenski okvir u kome smo uspjeli završiti ovako zahtjevan posao, možemo konstatovati da smo postigli veliki uspjeh, jer su Elnosovi razvodni ormari, nakon Holandije i Velike Britanije, sada iizašli i na tržištu Rumunije.

Specifično je i to što smo sistem upravljanja realizovali primjenom PLC-ova i profinet komunikacionog protokola. Ovo inače nije praksa u

110 kV razvodnim postrojenjima, gdje se obično koristi 61850 protokol, ali je u ovom slučaju to bio zahtjev investitora kako bi dobio što precizniji i pouzdaniji sistem.

EN In the largest country in Southeastern Europe, we successfully completed a project within just one month, aimed at ensuring reliable power supply for the steel plant Tenaris-Silcotub in the city of Călărași. This project involved the reconstruction of the secondary equipment for a 110/10 kV substation within the aforementioned steel plant. Within this challenging timeframe, we also completed the works assigned to us, in a total of eighteen 110 kV bays, including testing and commissioning.

“Our first project in Romania, of which we are particularly proud, entailed the reconstruction of secondary equipment: electrical protection and control systems, own consumption systems, and the integration of a SCADA system for all 18 bays in the 110/10 kV substation located within the steel plant,” stated Slobodan Banović, Deputy Sales Director at Elnos Serbia.

What is particularly interesting and significant for this project is that, for the purposes of substation reconstruction, we manufactured protection and control cabinets as well as distribution cabinets in our electrical assembly workshop (EMW) in Belgrade. These cabinets were then transported to Romania, where they were installed alongside the remaining equipment and all necessary cables.

Considering the entire project and the timeframe within which we successfully completed this demanding task, we can conclude that we achieved a significant success. Elnos distribution cabinets are now available in the Romanian market, following their presence in the Netherlands and the United Kingdom.

Of note is the fact that we implemented the control system using PLCs and the Profinet communication protocol, which is not the usual practice in 110 kV distribution facilities where the 61850 protocol is typically used. However, in this case, it was a specific requirement of the investor to ensure the utmost precision and reliability.

Naši razvodni ormari izašli i na tržište Rumunije Our distribution cabinets entered the Romanian market





Povezivanje trafostanice Tuna sa 400 kV linijom dalekovoda
Connecting substation Tuna with a 400 KV transmission line

Izazovi i rješenja: ČUVARI ENERGETSKOG BALANSA

Challenges and solutions:
GUARDIANS OF THE ENERGY BALANCE

KROZ INOVACIJU, STRUČNOST I NEPOKOLEBLJIVU PREDANOST,
naš tim je ključna spona u oblikovanju snažne energetske mreže Švedske.

THROUGH THEIR INNOVATION, EXPERTISE, AND UNWAVERING DEDICATION,
our team plays a pivotal role in shaping Sweden's strong power network.

SR NOVI MEGAVATI ZA STOKHOLM I UPSALU

Strateškim potezom u vidu grandiozne rekonstrukcije 400/220 kV trafostanice Tuna i njenim povezivanjem sa 400 kV linijom dalekovoda, regije Stokholma i Upsale dobiće impresivno povećanje napajanja za čak 320 MW.

Zahvaljujući ovoj novoj poveznici i povećanju kapaciteta trafostanica, biće stvorena druga direktna veza sa nuklearnom elektranom Forsmark, što će omogućiti da energija proizvedena u elektrani stiže u trafostanicu Tuna u znatno većem kapacitetu nego prije.

Ovaj energetski podvig ne samo da će učiniti komforntijim život stanovnika ovih regija, već će ostaviti duboki otisak na energetsku mapu Švedske.

NOVA TRAFOSTANICA TUNA

Prolaskom kroz veliku transformaciju, ova trafostanica dobija mnogo veću ulogu. Prije rekonstrukcije trafostanica Tuna imala je tri 400 kV

i četiri 220 kV polja. Po njenom završetku, ona dobija tri nova 400 kV polja, jedno novo 220 kV polje i kompletno novi sistem zaštite i upravljanja.

U saradnji sa Siemens Energy AB kao glavnim izvođačem zaduženim za kompletno projektovanje, imali smo privilegiju da preuzmemos poduhvat velike rekonstrukcije trafostanice.

„Ovaj projekat sa sobom je donio niz izazova, ali smo mi bili spremni da se s njima uhvatimo u koštač“, rekao je Radovan Spasojević, inženjer Elnos Grupe. „Radovi se realizuju prema striktno definisanom planu isključenja, što je posebno važno, jer se radi na vezama sa nuklearnom elektranom Forsmark“, istakao je on.

Prema Spasojevićevim riječima, za uspješnu realizaciju ovog projekta ključno je precizno planiranje svih radova, kako onih koji se obavljaju tokom isključenja, tako i onih koji se ne rade u tom periodu.

„Elnos Grupa je posvećena poštovanju ovih rigoroznih protokola i rokova, uz stalnu težnju

ka unapređenju energetske infrastrukture“, dodao je Spasojević.

Na ovom projektu ekipama Elnosa su povjereni kompletni elektromontažni radovi u tri nova 400 kV polja, kao i zamjena sekundarne opreme u postojećim 400 kV poljima. Mi smo, takode, zaduženi za izgradnju novog 220 kV polja i zamjenu sekundarne opreme u jednom od postojećih 220 kV polja.

Osim toga, timovi Elnosa izvode montažu i povezivanje sekundarne opreme u jednom starom i jednom novom 220 kV polju, a očekuje se da će se obuhvat posla proširiti na preostala tri 220 kV polja ove trafostanice.

Elnosove ekipe takođe sprovode sekundarno i primarno povezivanje novog energetskog transformatora, zamjenu sekundarne opreme na postojećem energetskom transformatoru i povezivanje visokih primarnih veza unutar trafostanice. Pored ovih zadataka, naši stručnjaci zaduženi su i za realizaciju izrade opštih instalacija unutar nove kontrolne zgrade trafostanice.

IZA KULISA – TIM ZA DALEKOVODE

Naši timovi za dalekovode angažovani su na ovom projektu. Oni će povezati trafostanicu sa 400 kV linijom dalekovoda. Ovaj izazovan zadatak uključuje preciznu integraciju 400 kV dalekovoda u trafostanicu, uz stratešku relokaciju već postojećeg 220 kV dalekovoda. Posebno intenzivni radovi odvijaće se u blizini nuklearne elektrane Forsmark, gdje je fokus na rekonstrukciji raspleta dalekovoda.

Ovaj projekat odvija se s najstrožim mjerama sigurnosti, kako u pogledu zaštite na radu, tako i u kontekstu zaštite okoline.

Planirano je da se rekonstrukcija trafostanice Tuna završi do juna 2024. godine, čime će se otvoriti novo poglavlje u energetskoj stabilnosti u ovoj regiji Švedske.

TRI NOVA ENERGETSKA ČVORA

Na jugu Švedske bili smo među ključnim akterima oblikovanja elektroprenosne mreže. Naš zadatak? Graditi tri nove 130 kV trafostanice – Horn, Gullringen i Södra Vi. Ove tri trafostanice postale su vitalni čvorovi u novoj 130 kV dalekovodnoj mreži koja povezuje gradove Vimerbi i Kisa.

Projekat poput ovog nije bio samo pitanje proširenja i poboljšanja elektroprenosne infrastrukture. On predstavlja rješenje pitanja napajanja rastućih potreba sve većeg broja domova, firmi i škola u ovoj regiji.

Projekat je realizovan u saradnji sa Siemens Energy AB kao glavnim ugovaračem zaduženim za kompletno projektovanje trafostanica.

„Sve tri trafostanice raspoređene su unutar kruga od 20 kilometara. Projektom je predviđeno da one budu čvorišta koja će biti povezana dalekovodom na 130 kV naponskom nivou. Realizacija radova počela je od trafostanice Gullringen. Pored nje smo gradili njenu modernu zamenu koja je, nakon energizacije, preuzeila postojeće korisnike. Paralelno s njom započeli smo i realizovali radove u trafostanici Horn, da bismo nakon toga prestrojili snage ka terenu izgradnje trafostanice Södra Vi“, objašnjava Dragan Jurošević, rukovodilac Divizije za trafostanice Elnosa BL.

Ekipe Elnos Grupe u sve tri trafostanice rješile su niz zadataka koji su bili važni za uspjeh ovog projekta. Realizovani su elektromontažni radovi koji su obuhvatili montažu primarne opreme u 130 kV poljima, instalaciju kompletne čelične konstrukcije, povezivanje sekundarnih kablova, instalaciju ormara zaštite i upravljanja, montažu i povezivanje SN postrojenja te montažu opštih instalacija, pomoćnih sistema napajanja.

Vremenski uslovi za vrijeme realizacije cijelog projekta bili su netipično dobri, a naši timovi pokazali su nevjerojatnu agilnost i završili sve poslove prije planiranog roka.

EN NEW MEGAWATTS FOR STOCKHOLM AND UPPSALA

A massive reconstruction of the 400/220 kV substation Tuna is a strategic move. The reconstruction itself and the connection of the reconstructed substation to the 400 kV transmission line will give the regions of Stockholm and Uppsala an impressive power boost of 320 MW.

A second direct link to the nuclear power plant Forsmark is established thanks to this new connection and enhanced substation capacity. The link will allow the energy produced in the power plant to reach the Tuna substation at a significantly higher capacity than before.

This feat not only enhances the quality of life for residents of these regions but also leaves a profound mark on Sweden's energy map.

NEW SUBSTATION TUNA

Undergoing a substantial transformation, the substation Tuna assumes a much larger role. Before the reconstruction, the substation featured three 400 kV and four 220 kV bays. Upon completion, it will incorporate three new 400 kV bays, one new 220 kV bay, and an entirely new protection and control system.

In collaboration with Siemens Energy AB as the main contractor responsible for complete design, we were privileged to undertake the venture of a major substation reconstruction.

“This project brought various challenges, but we were well-prepared to tackle them,” said Radovan Spasojević, an engineer at Elnos Group. “The works are performed in accordance with a strictly defined outage plan which is enormously important as we are working on connections with the nuclear power plant Forsmark,” he emphasized. According to Spasojević, precise planning of all tasks, whether performed during outages or not, is key to the successful execution of this project. “Elnos Group is committed to adhering to these rigorous protocols and deadlines while constantly striving to improve the energy infrastructure,” Spasojević added.

Within this project, Elnos teams have been entrusted with the entire electrical assembly works in three new 400 kV bays, as well as with the replacement of secondary equipment in existing 400 kV bays. The construction of a new 220 kV bay and the replacement of secondary equipment in one of the existing 220 kV bays are also under our jurisdiction.

Svaki dan je nova radna misija Every working day is a new mission





Rekonstrukcija 400/220 kV trafostanice Tuna Reconstruction of 400/220 kV substation Tuna

There is more. Assembly and connection of secondary equipment in one old and one new 220 kV bay are in our hands too. The scope of work is, however, expected to expand to the remaining three 220 kV bays of this substation. At the same time, Elnos teams are also to execute both secondary and primary connections of the new power transformer, the replacement of secondary equipment on the existing power transformer, and the connection of high primary circuits within the substation. On top of all these tasks, our experts are also entrusted with the general installations within the new control building of the substation.

BEHIND THE SCENES – TRANSMISSION LINE TEAMS

Projects like this imply the engagement of our transmission line teams. They are the ones responsible for connecting the substation to the 400 kV transmission line. This challenging task involves a precise integration of the 400 kV transmission line into the substation, including the strategic relocation of the existing 220 kV transmission line. Particularly intensive works are to take place in the direct vicinity of nuclear power plant Forsmark, where transmission line nodes will be reconstructed.

This project is being implemented in strict adherence with rigid safety measures, encompassing both occupational health and safety and environmental protection.

The reconstruction of the substation Tuna is scheduled for completion by June 2024, marking a new chapter in the energy stability of this Swedish region.

THREE NEW POWER NODES

We played a key role in shaping the electricity transmission network in southern Sweden. Our task? Building three new 130 kV substations – Horn, Gullringen, and Södra Vi. These three substations have become vital nodes in the new 130 kV transmission line network connecting the cities of Vimmerby and Kisa.

A project of this magnitude goes beyond the expansion and improvement of electrical infrastructure. It represents a solution to meet the growing power demands of an increasing number of homes, businesses, and schools in the region.

The project was realized in collaboration with Siemens Energy AB as the main contractor responsible for the complete design of substations.

"All three substations are within a 20-kilometer radius. The project envisions them as nodes connected by a 130 kV transmission line. Works began with the substation Gullringen, next to which we built a new modern substation, as a replacement, that took over existing users upon energization. Simultaneously, we commenced works at the substation Horn before redirecting our efforts to the construction site of substation Södra Vi," explained Dragan Jurošević, Head of the Substation Division at Elnos.

Elnos Group teams in all three substations accomplished a series of tasks crucial to the project's success. These tasks included electrical assembly works encompassing the assembly of primary equipment in the 130 kV bays, assembly and erection of the complete steel structure, connection of secondary cables, installation of protection and control cabinets, assembly and connection of medium-voltage equipment, and installation of general facilities and auxiliary power systems.

The project benefited from exceptionally favorable weather conditions throughout its implementation, and our teams displayed remarkable agility, completing all tasks ahead of schedule.

Pionirski poduhvat u Češkoj

A Pioneering Feat in the Czech Republic

U POJASU ZLATNOG PRAGA

IN THE STRIP OF GOLDEN PRAGUE



Rekonstrukcija 400 kV dalekovoda V-413 Reconstruction of 400 kV transmission line V-413

DOMAĆINSTVA I PRIVREDNI SUBJEKTI U ŠIREM PODRUČJU

PRAGA dobijaju sigurnije napajanje električnom energijom zahvaljujući rekonstrukciji 400 kV dalekovoda V-413, koja će se odvijati u etapama. Prva je već završena, a zasluge za to pripadaju Elnos Grupi.

HOUSEHOLDS AND BUSINESSES IN THE WIDER PRAGUE AREA

are now enjoying a more reliable supply of electrical energy, thanks to the reconstruction of the 400 kV transmission line V-413, which is progressing in stages. The first stage has already been completed, and the credit for this achievement goes to the Elnos Group.

SR Naša članica na češkom tržištu osnovana je krajem 2022. godine, a uspješno realizovan prvi dio našeg pionirskog projekta u Češkoj biće nam vjetar u ledu za naredni dvogodišnji period. Elnos se, naime, na ovaj teren vraća već u januaru 2024. godine, budući da će rekonstrukcija dalekovoda, koja predstavlja važnu kariku evropske dalekovodne mreže, biti rađena sve do 2025.

Posebno smo ponosni na činjenicu da smo upravo u Češkoj, a prvi put na evropskom tržištu, realizovali isporuku kompletног materijala i opreme i to u veoma kratkim definisanim rokovima.

NOVI STUBOVI

U prvoj fazi rekonstrukcije, naše ekipe su na 10,5 kilometara dugoj trasi izvršile demontažu postojećih i podigle 31 novi dalekovodni stub. Posao je bio poprilično izazovan, jer ova dalekovodna trasa prolazi kroz urbane dijelove Praga, preko rijeke Vltave i više saobraćajnica.

Nedeljko Vujičić, projekt menadžer Elnos Grupe na projektu u Češkoj, podsjeća da je dio ugovora koji se odnosi na 2023. počeo izvođenjem u zimskom periodu i završen je već polovinom maja.

„Iako se u ovom području snjegovi ne zadržavaju dugo, velike količine padavina su nas pratile od samog početka izvođenja radova. Nepovoljni vremenski uslovi su svakako otežavali rad i kretanje po pristupnim putevima, ali uz spremnost naših montera, kojih je u određenom periodu bilo do 80, uspjeli smo da završimo sve radove u zadatom roku. Dionica dalekovoda V-413, čiju rekonstrukciju izvodi Elnos, tehnički je zbog velikog broja ukrštanja sa drugim vodovima, cestama, rijekama, čak i sa željezničkom prugom i auto-putem zahtjevnija od ostalih dionica ovog dalekovoda koje se rekonstruišu. Radeći na njoj smo na dobar način pokazali šta sve umijemo“, pojašnjava Vujičić.

VELIKI ISKORAK

Kako zbog činjenice da nismo imali ranija iskustva na ovom tržištu, tako i zbog kratkih rokova za izvršenje dijela ugovora za 2023. godinu, on je Češku doživio kao veliki izazov, a naš dolažak u ovu zemlju nazvao je velikim iskorakom.

Inače, naša zaduženja u okviru ovog projekta obuhvataju demontažu kompletног dalekovoda, a zatim rekonstrukciju i izgradnju novog dalekovoda na istoj trasi u ukupnoj dužini 37,69 kilometara. Naši timovi uz još veće samopouzdanje ulaze u novu fazu.

EN Our subsidiary in the Czech market was established in late 2022, and the successful comple-

Brojke

Figures



dužina trase 1. faze rekonstrukcije
length of the route covered by
the first phase of reconstruction



novi dalekovodni stub
new transmission line towers



najveći broj radnika na terenu
maximum number of workers
on the site

tion of the initial phase of our pioneering project in the Czech Republic provides us with a strong tailwind for the upcoming two-year period. Elnos is set to return to the site in January of 2024, as the reconstruction of this transmission line, a crucial link in the European power grid, is slated to continue until 2025.

We take particular pride in the fact that it is here, in the Czech Republic, that we have accomplished our first delivery of complete materials and equipment, marking our debut in the European market, and all within tightly defined timeframes.

NEW TOWERS

In the first phase of reconstruction, our teams dismantled the existing infrastructure along a 10,5-kilometer stretch and erected 31 new transmission line towers. This was a challenging task, given that the transmission line passes through urban areas of Prague, over the Vltava River, and across several major roadways.

Nedeljko Vujičić, Project Manager on this Elnos Group's project in the Czech Republic, recalls that the works covered by the part of the contract envisaged for 2023 commenced in the winter months and were completed by mid-May.

“Despite the fact that snow does not linger in this region for long, we had to cope with significant rainfall from the very start of the project. Adverse weather conditions certainly complicated the works and made access roads more difficult to use, but thanks to the readiness of our fitters, who numbered up to 80 at certain points, we managed to complete all the works within the stipulated timeframe. Compared to other sections of the V-413 transmission line, the one being reconstructed by Elnos is technically more demanding due to its numerous intersections with other transmission lines, roads, rivers, and even a railway and highway. By working on it, we have effectively showcased our capabilities,” explains Vujičić.

A MAJOR STEP FORWARD

Due to both, our lack of prior experience in this market and the tight deadlines for completing the 2023 contract segment, the Czech Republic presented itself as a substantial challenge for Vujičić. When referring to our entry into this country, he said it was a major step forward.

In the context of this project, our responsibilities encompass the dismantling of the entire transmission line, followed by its reconstruction and the construction of a new transmission line along the same route, spanning a total length of 37,69 kilometers. The next phase of works is set to commence in, and our teams will approach it with even greater confidence.

Naš tim je realizovao radove na trasi dugoj 10,5 km
Our team has completed the works on a 10,5 km long route





Nastavljen niz uspješno realizovanih projekata u Njemačkoj
A sequence of successfully performed projects in Germany continues

NA SJEVEROISTOKU NJEMACKE

IN THE GERMAN NORTHEAST

TU JE ROĐEN ALBERT AJNSTAJN.

Ovdje nastaju neki od najpoznatijih brendova auto-industrije. Ova država ima najzahtjevnije standarde montaže tehničke opreme. Pogađate, riječ je o Njemačkoj, industrijskom srcu Europe, zemlji gdje je Elnos Grupa već realizovala više značajnih i zahtjevnih projekata.

THE BIRTHCOUNTRY OF ALBERT EINSTEIN.

The home to some of the world's most iconic car brands. A country known for the most rigorous standards in the assembly of technical equipment. As you may have guessed, we are talking about Germany, the core of industrial Europe, where Elnos Group also demonstrated its expertise by undertaking a series of challenging projects.



Demontaža dalekovoda izvedena uz podršku helikoptera
Disassembly of transmission line performed with support of a helicopter

SR Najnoviji projekat koji realizujemo u Njemačkoj je izgradnja novog 380 kV dalekovoda Berlikow-Neuenhagen. Predjeli na kojima radimo, locirane na sjeveroistoku zemlje, karakteriše stalni vjetar, a trasa se nekoliko puta ukršta sa prugom. Pritom, naši radnici moraju da se kreću precizno utvrđenim trasama. Sve to je podrazumijevalo specifično izvođenje poslova.

VRIJEDNE EKIPE

Dalekovodna dionica duga je 14,4 kilometra, a ekipama Elnos Grupe povjereni su kompleksni elektromontažni radovi. Naše vrijedne ekipe su 19. juna 2023. godine izšle na teren, koji obuhvata gradove u njemačkoj saveznoj državi Brandenburg – Angermünde i Schwedt Oder.

Naš tim je radio na ugradnji provodnika (dva sistema 380 kV) optičkog kabla i zaštitnog užeta. Kao i na svim dosadašnjim projektima u Njemačkoj, faza se sastoji od četiri provodnika, prečnika 22,43 mm ili 297 mm². Elnos je izvodio radove na 10 zateznih polja. Stubovi na kojim su izvođeni radovi su visine oko 40 metara.

SPECIFIČNI USLOVI

„Stalni vjetar je do sada otežavao izvođenje radova. Pritom, sama trasa se nekoliko puta ukršta sa prugom, što je iziskivalo specifične metode izvođenja radova, te je na tim lokacijama provodnik ugrađivan po principu jedna po jedna žica, a u ostalim slučajevima ugrađivan je u snopu“, kaže Branko Marković, projekt menadžer Elnos Grupe na ovom projektu.

Na projektu su, dodaje Marković, bila angažvana 34 radnika, dva seta mašina za vuču provodnika i dva kamiona. Na gradilištu se radilo konstantno, punom parom.

Interesantno je da se u Njemačkoj, za razliku od ostalih evropskih zemalja, 380 kV dalekovodi grade sa četiri provodnika po fazi.

EN Our most recent project in Germany is the construction of a new 380 kV transmission line Bertikow-Neuenhagen. Both the region and the route are challenging. The northeastern part of the country is famous for its constant winds and the route of the transmission line intersects

Brojke

Figures

14,4
km

dužina
dalekovodne dionice
length of the
transmission line section

34

broj radnika
number of workers

with the railway on several points. Moreover, our workers are required to navigate precisely defined paths. All of the above requires a highly specific approach to the execution of works.

HARDWORKING TEAMS

Elnos Group teams have been engaged to perform highly complex electrical assembly works on a 14,4 kilometers long transmission line route. The project site extends across territories of two cities in the German federal state Brandenburg - Angermünde and Schwedt Oder. Our hardworking crews commenced their operations on June 19th, 2023.

Our teams installed the conductors double circuit 380 kV, the optical cable and the earth wire.

As in all other previous projects in Germany, the phase consists of four conductors, 22,43 mm in diameter, i.e. 297 mm². Elnos performed works on 10 sections. Yet, the existing towers where the works were implemented stand at a height of approximately 40 m.

HIGHLY SPECIFIC CONDITIONS

“So far, the constant wind has made the work more difficult. At the same time, the route intersects with the railway at several locations which requires specific methods of execution of works. Namely, one conductor at the time installation method was applied on the intersections, while on the remaining parts of the route, the conductor was installed as a bundle”, says Branko Marković, Elnos Group Project Manager on the project.

Marković adds that 34 workers were engaged in the projects, along with two sets of cable-pulling machines and two trucks. All were continuously working at full speed.

It is interesting that in Germany, unlike other European countries, 380 kV transmission lines are built with four conductors per phase.

POD PRITISKOM

UNDER PRESSURE

MNOGIMA SU IZAZOVI PREPREKA.

Na nas djeluju motivaciono. Pokazali su to timovi Elnos Grupe još jednom u Njemačkoj, gdje su, uz poštovanje striktnih pravila, prije predviđenog roka, uspješno završili radove u okviru rekonstrukcije 380 kV dalekovoda Vöhringen–Füssen.

FOR MANY, CHALLENGES ARE FORMIDABLE

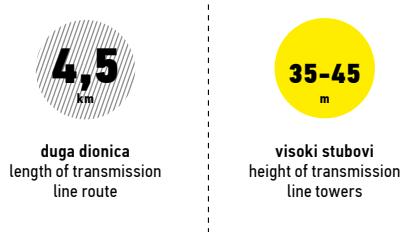
BARRIERS. Yet, for us, they serve as motivating forces, driving the teams of Elnos Group to excel, once more, on a project in Germany. Faced with stringent regulations, they successfully completed the reconstruction of the 380 kV transmission line Vöhringen–Füssen ahead of schedule.



Rekonstrukcija 380 kV dalekovoda Vöhringen–Füssen Reconstruction of 380 kV transmission line Vöhringen–Füssen

Brojke

Figures



SR Na taj način, u pokrajini Bavarska, na granici s Austrijom, na dionici dugoj 4,5 kilometara, podmlađeni su vitalni dijelovi dalekovoda i tako je produžen njegov životni vijek, jer su poslovi obuhvatili demontažu starog i montažu novog provodnika te zamjenu izolatorskih lanaca.

BESPRIJEKORNA ORGANIZACIJA

Radovi su počeli 22. maja, a završetak je planiran za 7. juli, ali su naše vrijedne ekipe svoj posao završile i ranije. Time smo ispunili ovo godišnji dio ugovora koji nam je povjeren, a obuhvata dva sistema, dok 2024. godine ulazimo u drugo „poluvrijeme“, odnosno radimo na sistemu broj dva.

Ključ svega je sjajna organizacija. Ovdje smo posebno morali voditi računa o pripremnim radovima kako bismo s poslom punom parom počeli od prvog dana. Kada je taj dan osvanuo, naši iskusni monteri pokazali su zašto su pravi majstori svog zanata.

VISOK RIZIK

Realizacija ovog projekta spada u kategoriju visokog rizika. Naše ekipe izvodile su radove na prvom sistemu dok je drugi bio pod naponom. Investitor je nalagao najviši stepen poštovanja mjera sigurnosti u oblasti zaštite na radu, na čemu smo konstantno držali fokus.

Pored toga, dio radova odvijao se po striktno utvrđenom planu za vrijeme perioda mrežnih isključenja, što je takođe zahtijevalo poseban oprez i umijeće.

„Projekat je obuhvatao rekonstrukciju, odnosno zamjenu provodnika i ovjesne opreme, a visina stubova iznosila je od 35 do 45 metara. Rok izvođenja radova bio je svega sedam sedmica. Ovaj 380 kV dalekovod izgrađen je sa četiri provodnika po fazi, pa smo morali primjeniti posebne metodologije pri instalaciji“, rekao je Branko Marković, projekt menadžer Elnos Grupe na ovom projektu.



Podmlađeni su vitalni dijelovi dalekovoda Vital parts of the transmission line rejuvenated

Zahvaljujući revitalizaciji ovog dalekovoda, osim što je produžen vijek njegove eksplotacija, obezbijedeno je i stabilno snabdijevanje potrošača električnom energijom.

EN In this fashion, within the Bavarian province, along the Austrian border, vital sections of a 4.5-kilometer stretch of transmission line were rejuvenated, thereby extending its operational lifespan. This endeavor encompassed the dismantling of the old conductor, the installation of a new one, as well as the replacement of insulator chains.

FLAWLESS ORGANIZATION

The works started on May 22nd. Their completion was planned for July 7th. However, our diligent teams concluded their tasks ahead of schedule, fulfilling this year's contractual obligations. This endeavor involves two distinct systems, so the second halftime i.e. works on system number two, starts in 2024.

Key to our success was impeccable organization. Meticulous attention to preparatory works enabled us to launch operations at full throttle from day one. As dawn broke on that momentous day, our seasoned fitters demonstrated why they are true masters of their craft.

NAVIGATING HIGH RISKS

This undertaking falls within the realm of high-risk ventures. Our teams executed their tasks on the first system while the second remained energized. The client mandated the utmost compliance with occupational health and safety measures, which remained our unwavering focus.

Moreover, a part of the works was carried out in strict accordance with the established outage plan, requiring heightened vigilance and skill.

“The project encompassed the reconstruction i.e. replacement of conductors and suspension equipment. The transmission line towers, standing between 35 to 45 meters in height, posed an additional challenge. The works were scheduled to be completed within no more than seven weeks. This 380 kV transmission line was constructed with four conductors per phase. This required application of highly specialized installation methodologies”, said Branko Marković, Project Manager at Elnos Group.

Thanks to the revitalization of this transmission line, its operational life has been significantly extended, ensuring thereby a stable power supply to consumers.



Modernizacija 110 kV DV Kidričovo-Ptuj-Formin Modernization of 110 kV TL Kidričovo-Ptuj-Formin

PROVODNIK SA SUPERMOĆIMA

CONDUCTOR WITH SUPERPOWERS

EKIPA ENS SLOVENIJE, NAŠE

SLOVENAČKE ČLANICE, uspješno je realizovala instalaciju ACCC® provodnika u sklopu projekta modernizacije 110 kV dalekovoda Kidričovo-Ptuj-Formin. Korištenje novougrađenog provodnika donosi impresivne benefite.

THE TEAMS OF OUR SLOVENIAN

MEMBER, ENS SLOVENIA, successfully completed the installation of ACCC® conductors as part of the modernization of the 110 kV transmission line Kidričovo-Ptuj-Formin. The use of the newly installed conductor brings impressive benefits.

SR STABILNOST MREŽE

Prije realizacije ovog projekta nekoliko ENS-ovih montera prošlo je obuku za instalaciju ACCC® provodnika i za to dobilo i licencu. Licenciranje osoblja koje instalira provodnik je obavezno, jer obezbeđuje garanciju proizvođača na materijal.

Nakon toga, naše kolege su se prihvatile posla. Radile su na dalekovodu izgrađenom sada već davne 1948. godine, na betonskim stubovima tipa Pi, gdje su bezbjednosne visine provodnika na projektu bile na granici dopuštenih, u nekim dijelovima i premales, tako da je problem riješen zamjenom starog provodnika novim - ACCC® provodnikom.

U pitanju je, inače, provodnik vrste HTLS, ali sa kompozitnim jezgrom. Dužina provodnika koji je u okviru ovog projekta ugrađen iznosi 62,37 kilometara, a ona je realizovana na dalekovodnoj trasi dugoj 20,4 kilometra.

Prednosti korištenja ACCC® provodnika, koji je internacionalno patentiran i registrovan proizvod kompanije CTC Global, su brojne. Jedna od značajnijih je ta što kad je izložen visokim temperaturama, ovaj provodnik ima znatno manji pad. Razlog tome je smanjena zatezna sila unutar samog provodnika, koja omogućava veću napetost OPGW provodnika i veću bezbjednosnu visinu provodnika.

VEĆA EFIKASNOST

Osim što smanjenjem zatezne sile doprinosi većoj bezbjednosti i stabilnosti mreže kroz očuvanje odgovarajućeg ugla zaštite, ACCC® značajno povećava efikasnost prenosa električne energije. Ovdje prvenstveno govorimo o povećanju kapaciteta dalekovoda.

Naime, zahvaljujući tome što je napravljen od znatno lakšeg materijala u odnosu na tradicionalne provodnike poput ACSR-a, ovaj provod-



Dužina provodnika ACCC® koji je ugrađen iznosi 62,37 km Length of the installed ACCC® conductor is 62,37 km

nik bolje provodi električnu energiju. U praksi, to znači povećanje kapaciteta dalekovoda bez zamjene stubova. Što je ogromna prednost samo po sebi.

Međutim, ako pogledamo širu sliku, ACCC® nije samo bolji provodnik. On je sigurniji, otporniji, jednostavniji, pouzdaniji i efikasniji način prenosa električne energije koji svojim ukupnim osobinama pomaže u ostvarivanju ciljeva održivosti i dekarbonizacije.

HTLS PROJEKAT U CRNOJ GORI

U susret 2024. godini, Crna Gora se priprema za poduhvat rekonstrukcije 110 kV dalekovoda Podgorica 1-Danilovgrad-Perućica. Ovaj ambiciozni projekat podrazumijeva i zamjenu klasičnog provodnika visokotemperaturnim HTLS provodnikom, te potpunu zamjenu izolatorskih lanaca i ovjesne opreme. Dužina dalekovodne trase će biti 35 kilometara, a novi provodnik, koji će zamjeniti stari na cijeloj dionici, omogućiće značajno veću propusnu moć, što će obezbijediti i do 30 odsto više prenesene energije iz Hidroelektrane Perućica u elektroenergetski sistem Crne Gore.

EN NETWORK STABILITY

Prior to the project's implementation, several ENS fitters underwent training for the installation of ACCC® conductors and obtained the

necessary licenses. Staff licensing for conductor installation is mandatory, providing the manufacturer's material warranty.

Right after the training, our hands were full. Our colleagues started working on transmission line built back in 1948, on Pi-type concrete towers. The safety clearances of the conductors were barely permissible, occasionally even falling below the permitted margin. This issue was resolved by replacing the old conductor with the new ACCC® conductor.

This new type of conductor is actually an HTLS conductor with a composite core. The length of the conductor installed in this project is 62,37 kilometers, on a 20,4 kilometer-long transmission line route.

The use of the ACCC® conductor, as an internationally recognized patent and a registered product of CTC Global, offers numerous advantages. One of the most significant ones is that when exposed to high temperatures, this conductor has significantly lower sag. This is a result of decreased tension force within the conductor allowing for a higher tension of the OPGW and a higher safety clearance.

GREATER EFFICIENCY

In addition to reducing tension force and contributing to greater safety and stability of the network by preserving the appropriate angle of protection, ACCC® significantly enhances the efficiency of electricity transmission. Here, we are primarily referring to the increase in the capacity of transmission lines.

Specifically, being made of a considerably lighter material compared to traditional conductors like ACSR, this conductor conducts electricity more efficiently. In practice, this means an increased capacity of transmission lines without the need to replace towers, which is a significant advantage in itself.

However, taking a broader perspective, ACCC® conductor is not only better. It is a safer, simpler, more resistant, more reliable, and more efficient way of power transmission that, considering its overall properties, contributes to achieving sustainability and decarbonization goals.

HTLS PROJECT IN MONTENEGRO

As we approach 2024, Montenegro is gearing up for the reconstruction of the 110 kV transmission line Podgorica 1-Danilovgrad-Perućica. This ambitious project involves replacing the conventional conductor with a high-temperature, low-sag (HTLS) conductor and a complete replacement of insulator chains and suspension equipment. The transmission line route will be 35 kilometers long, and the new conductor, replacing the old one along the entire section, will enable significantly higher throughput, providing up to 30% more transmitted energy from the Hydro Power Plant Perućica to Montenegro's power system.

Dalekovodi:

VEZE KOJE PRAVE RAZLIKU

**Transmission lines:
CONNECTIONS THAT MAKE A DIFFERENCE**

DALEKOVODI SU LINKOVI BEZ KOJIH MODERNA REALNOST NE BI POSTOJALA. Protežući se horizontima, oni povezuju naš svijet u jedinstvenu energetsku mrežu. Oni su veze koje zaista prave razliku. Ispred vas je priča o pet takvih veza.

TRANSMISSION LINES ARE LINKS WITHOUT WHICH MODERN REALITY AS WE KNOW IT COULD NEVER EXIST. Spanning across horizons, they intricately weave our world into a seamless network of power connections. They truly are the connections that make a difference. We give you stories of five of them.



**ŠVEDSKA:
NOVI LINK ZA ZELENE MEGAVATE**
Svojom zelenom formulom Švedska piše jednu od najboljih energetskih priča na svijetu. Broj OIE izvora u ovoj zemlji rapidno raste i elektroenergetsku mrežu treba spremiti za upлив nove zelene energije. Naši timovi bili su upravo u središtu jednog ovakvog zadatka.

Nakon što smo prošle godine završili izgradnju TS Hageskruv, koja je napravljena s ciljem prihvatanja nove energije vjetra u mrežu, našim ekipama je u blizini ovog elektroenergetskog objekta povjeren još jedan zadatak. On se odno-

sio na povezivanje nove trafostanice sa 400 kV dalekovodom. Ekipe su realizovale posao rasjecanja starog voda i uvođenja dalekovoda u novu TS Hageskruv te instalaciju OPGW-a na 70 kilometara nove trase.

Uprkos ovim izazovima, naši timovi završili su sav posao u veoma kratkom vremenskom periodu. Oni su precizno izveli planirane radove na sekcijama dalekovoda, ponekad više od 100 km udaljenim jedna od druge, kako bi zadovoljili stroge zahtjeve dinamike isključenja. Realizacijom ovog projekta osiguran je jedan važan link za upliv zelenih megavata novih vjetroparkova u 400 kV elektroenergetsku mrežu.

**SLOVENIJA:
80-GODIŠNJI DALEKOVOD
ODLAZI U ISTORIJU**

Jedan od najstarijih dalekovoda u Sloveniji Divača-Pivka-Ilijska Bistrica, koji je služio već 84 godine, odlazi u zasluženu penziju. Izgrađen uoči Drugog svjetskog rata, ovaj 110 kV dalekovod bio je vitalni element elektroenergetske infrastrukture južne Primorske regije.

Dalekovod prolazi impresivnom trasom dugom 30 kilometara. Nakon demontaže postojećeg dalekovoda, na istoj trasi biće izgrađen novi, moderni dvosistemski dalekovod.



Novi 400 kV DV za povezivanje TS Hageskruv na mrežu New 400 kV TL for connecting SS Hageskruv to the grid

Timovi naše slovenačke članice demontiraće cijelu trasu starog 110 kV dalekovoda i graditi dvije sekcije novog 110 kV dalekovoda na istoj trasi. To će biti veoma kompleksna misija.

Naime, cilj je da se rekonstrukcija dalekovoda izvede sa minimalnim isključenjima kako bi se osigurao njegov kontinuirani rad. Ovo dodatno povećava rizik, jer posao zahtijeva rad u blizini napona.

Uprkos ovim izazovima, očekuje se da će radovi na kompletnom projektu biti završeni do kraja 2025. godine.

ISLAND: ZADATAK ZA NAJVIŠU OCJENU

Snaga i stabilnost elektroenergetske mreže izuzetno je važan faktor elektroenergetskog sistema svake zemlje. Na Islandu je ispunjenje ovog faktora u odnosu na zemlje sa kontinentalnim klimatskim uslovima zadatak za „ocjenu više“.

Nakon što su godinu ranije uspješno završili radove 220 kV dalekovoda Kröflulína 3, ove godine naši timovi realizovali su radove rekonstrukcije 132 kV dalekovoda Kröflulína 2.

Oni su tokom ljeta na izuzetno strmom i izazovnom terenu izveli demontažu starih i podizanje

stubova dalekovoda nove generacije, dizajniranih i proizvedenih tako da odole najtežim vremenskim uslovima.

Ovi izdržljivi stubovi donose novu stabilnost energetskoj infrastrukturni na istoku zemlje. Izvođenje radova na izuzetno teškoj trasi, u često okrutnim vremenskim uslovima, zahtijevalo je vrhunsku vještina, preciznost i oprez. Realizujući ovaj projekat, naše ekipe na Islandu još jednom su potvrdile da su ekspertri svoje branše.

SRBIJA: BESKOMPROMISNA MISIJA

Energetska stabilnost regije zapadne Srbije ove godine postavljena je kao uslov čije rješavanje ne ostavlja prostor za polemiku. Aktuelna izgradnja 2×110 kV dalekovoda TS Kraljevo 3-TS Novi Pazar 1 ključna je stavka u rješavanju ovog izazova.

Ovaj ambiciozan projekat u brojkama znači sljedeće – na trasi dugoj 64 kilometra gradi se dalekovod TS Kraljevo 3-TS Novi Pazar 1. U okviru ovog poduhvata podižu se 223 stuba na trasi koji će spojiti dvije trafostanice.

Prelazeći desetine kilometara između dva grada, timovi Elnosa grade novi dalekovod. Zaduženi su za izvođenje cijelog spleta građevinskih i elektromontažnih radova. Ova investicija nije samo tehnički poduhvat, za njenu realizaciju potrebni su precizno planiranje i koordinacija na svim nivoima projekta. Izazovi ovog posla su veliki, a očekuje se završetak radova do jula 2024. godine. Ovaj projekat je pravi simbol dinamičnog razvoja energetske infrastrukture u Srbiji.

SJEVERNA MAKEDONIJA: U SREDIŠTU ZEMLJE

Sjeverna Makedonija napravila je veliki korak naprijed u poboljšanju svoje energetske infrastrukture kroz nedavno završenu rekonstrukciju ključnog 110 kV dalekovoda TS Veles-TS Ovče Polje.

Ovaj dalekovod, izgrađen prije više od pola vijeka, dužine 21 kilometar, sada je dobio novi život. Tokom ove godine, timovi Elnosa bili su zaduženi da budu dio njegove velike rekonstrukcije, koja je obuhvatala demontažu starih betonskih stubova i izgradnju novih na značajnom dijelu ove trase.

Ovo je bio poduhvat koji je tražio najvišu preciznost i posvećenost.

Rekonstrukcija ovog dalekovoda donijeće rješenje za konkretan problem – poboljšanje sigurnosti snabdijevanja električnom energijom u regijama Sv. Nikole i Velesa.

Pored ove, on ima drugu, veoma značajnu ulogu – omogućava efikasnu integraciju novih OIE u elektroenergetski sistem.



EN SWEDEN: NEW LINK FOR GREEN MEGAWATTS

With its green formula, Sweden is forming one of the world's most compelling energy narratives. The number of renewable energy sources in the country is rapidly increasing, demanding the adaptation of the electrical power network to embrace this influx of new green energy. Our teams found themselves at the heart of such a task.

Following the completion of the SS Hageskruv last year, which was built to integrate wind energy into the network, our teams were entrusted with another task near this power facility. This task involved connecting a new substation to a 400 kV transmission line. Elnos teams disconnected the old line and connected the 400 kV transmission line to the new SS Hageskruv. They also installed OPGW along a 70-kilometer-long new route.

Despite all the challenges, our teams completed all the work in a very short time period. They precisely executed the planned tasks on sections of the transmission line, sometimes more than 100 km apart, to meet the stringent requirements of the outage schedule. The successful completion of this project contributed to the formation of another crucial link for the influx of green megawatts from new wind parks into the 400 kV electrical power network.

SLOVENIA: A FAREWELL TO AN 80-YEAR-OLD TRANSMISSION LINE

One of the oldest transmission lines in Slovenia, Divača-Pivka-Ilirska Bistrica, which has faithfully served for 84 years, is gracefully retiring. Constructed before World War II, this 110 kV transmission line was a vital element of the power infrastructure in the southern Primorska region.

The transmission line traverses an impressive route spanning 30 kilometers. Following the dismantling of the existing line, a new, modern double circuit transmission line will be erected along the same route.

The teams from our Slovenian member will dismantle the entire route of the old 110 kV transmission line and construct two sections of the new 110 kV transmission line on the same route. The mission will be highly complex.

The goal is to execute the reconstruction with minimal outages to ensure continuous operation, adding an extra layer of risk as the works are to be performed near live lines.

Notwithstanding these challenges, the completion of the entire project is expected by the end of 2025.

ICELAND: A JOB FOR HIGH PERFORMERS

The strength and stability of the electrical power network are crucial for the power system of any country. Achieving the two on Iceland, unlike in countries with continental climates, is an A+ challenge.

Following the successful completion of the works on the 220 kV transmission line Kröflulína 3 the year before, this year our teams undertook the reconstruction of the 132 kV transmission line Kröflulína 2.

Rekonstrukcija 110 kV DV TS Veles-TS Ovče Polje Reconstruction of 110 kV TL SS Veles-SS Ovče Polje



Throughout the summer, they dismantled the old and erected new-generation transmission line towers on extremely steep and challenging terrain. The new towers are designed and manufactured to withstand the harshest weather conditions.

These resilient towers bring new stability to the energy infrastructure in the eastern part of the country. The execution of the project on an exceptionally difficult route, often facing harsh weather conditions, demanded top-notch skills, precision, and caution.

By completing this project, our teams in Iceland once again affirmed their expertise in transmission lines.

SERBIA: UNCOMPROMISING MISSION

The energy stability of the western Serbia region has been set as a non-negotiable condition this year, leaving no room for debate. The ongoing construction of the 2×110 kV transmission line SS Kraljevo 3-SS Novi Pazar 1 is a key element in addressing this challenge.

In numerical terms, this ambitious project translates into the following: a 64-kilometer-long

transmission line, connecting SS Kraljevo 3 and SS Novi Pazar 1 with 223 towers being erected along the route to connect the two substations.

Elnos teams are building this new transmission line, stretching across dozens of kilometers between the two cities. They are responsible for carrying out a comprehensive range of construction and electrical installation works.

This investment is not only a technical feat; its realization demands precise planning and coordination at all project levels. The challenges of this endeavor are significant, and the completion of the works is expected by July 2024. The project stands as a true symbol of the dynamic development of Serbia's energy infrastructure.

N. MACEDONIA: IN THE HEART OF THE COUNTRY

North Macedonia has taken a significant step forward in enhancing its energy infrastructure through the recently completed reconstruction of the 110 kV transmission line from SS Veles to SS Ovče Polje.

Rekonstrukcija 132 kV DV Kröflulína 2 Reconstruction of 132 kV TL Kröflulína 2



This 21-kilometer-long transmission line, built over half a century ago, has now been revitalized. Throughout this year, Elnos teams were a part of its extensive reconstruction, involving the dismantling of old concrete poles and the construction of new ones along a significant portion of its route.

This undertaking demanded the utmost precision and dedication.

The reconstruction of this transmission line will provide a solution to a specific problem - improving the reliability of power supply in the regions of St. Nikola and Veles.

In addition to this, it serves another highly significant role - facilitating the efficient integration of new renewable energy sources into the electrical power network.

High Speed 2

ZADIVLJUJUĆIM BRZINAMA U BUDUĆNOST

TURNING UP THE FUTURE AT AN ASTONISHING SPEED

IMPRESIVAN PROJEKAT NASTAJE U VELIKOJ BRITANIJI, MNOGI SU

SAGLASNI – to je infrastrukturno čudo. U pitanju je čuveni High Speed 2, ultrabrza željeznica nove generacije, koja će spojiti najveće britanske gradove. Ekipe Elnos Grupe bile su dio mašinerije koja piše istoriju.

IN THE UNITED KINGDOM, A PROJECT OF GRAND PROPORTIONS

IS UNDERWAY – an infrastructure masterpiece. It is the famous High Speed 2, the ultra-speed new generation railway set to connect the largest British cities. Elnos Group teams are an integral element of this mechanism charting the course of history.

Naš zadatak - napajanje tri velika gradilišta Our task - providing power supply for three major construction sites



Naša kompanija, u saradnji sa partnerskom britanskom kompanijom Emico, a posredstvom zajedničke kompanije EMEL Power iz Velike Britanije, bila je zadužena za posao projektovanja, izrade, isporuke i instalacije 47 distributivnih trafostanica koje su stavljenе u službu napajanja tri gradilišta ovog projekta – Vest Rajsliп, Atlas Roud i Viktorija Roud Krossover Boks u sjeverozapadnom Londonu.

NAJBOLJI STRUČNJACI

Naš tim isprojektovao je distributivne trafostanice od naponskog nivoa 11 kV/0,4 kV i snage 630 kVA do naponskog nivoa 11 kV/20 kV i snage 8 MVA, a njihova dužina seže od pet do 12 metara. Trafostanice su projektovane po striktnim britanskim standardima i odgovaraju najsvremenijim potrebama tržišta. One su, nakon projektovanja, a zatim i montaže, sukcesivno instalirane na velikim gradilištima.

Poznato je da Velika Britanija ništa ne prepушta slučaju, a to se ispostavilo i na ovom, mnogi kažu, projektu vijeka. Biti dio ovog megaprojekta značilo je ispuniti najviše standarde tržišta ove zemlje, a za Elnos Grupu to je bio veliki iskorak i izazov.

OPRAVDANO POVJERENJE

Očekivao je ovakav epilog Predrag Ivanović, projekt menadžer na ovom projektu.

„Naravno da sam vjerovao u naše obrazovane i elokventne ekipe. Nijednog momenta nisam pomislio da nećemo opravdati povjerenje koje nam je ukazano. Posao je uspješno završen i time smo dokazali da je naše najveće bogatstvo kadar, koji čine marljive i odgovorne kolege“, ističe Ivanović.



Instaliramo 47 distributivnih trafostanica We are installing 47 distribution substations

HIGH SPEED 2

Ovaj megaprojekat okupio je najbolje stručnjake brojnih kompanija. S razlogom, jer riječ je o najambicioznijem projektu tog tipa u Evropi, a njegovu složenost ilustruje činjenica da obuhvata čak i izmještanje vodotoka.

High Speed 2 će britanske gradove povezati vozovima koji će dostizati brzinu i do 400 km/h. U konačnici – vrijeme putovanja biće prepоловljeno. Realizacijom naših zadataka na ovom velikom projektu otvorili smo i vrata za nove značajne angažmane na tržištu Velike Britanije.

EN Together with our partner, British company Emico, or more precisely through our joint company EMEL Power from Great Britain, Elnos has been entrusted with the task of designing, producing, delivering, and installing 47 distribution substations crucial to powering three massive construction sites of this project—West Ruislip, Atlas Road, and Victoria Road Crossover Box in northwestern London.

TOP EXPERTS

Our team designed distribution substations with voltage and power levels ranging from 11 kV/0,4 kV and 630 kVA to 11 kV/20 kV and 8

MVA, and lengths spanning from five to twelve meters. The substations have been meticulously crafted in adherence to stringent British standards, meeting the most cutting-edge market demands. Following their design and assembly, the substations were successively installed at these massive construction sites.

Great Britain is known for its meticulous approach to business and not leaving anything to chance. This commitment has been evident in this project too, often referred to as the project of the century. Being a part of this mega-project meant living up to the highest market standards in this country, and for Elnos Group, it represented a significant challenge and a major leap forward.

JUSTIFIED TRUST

As far as Predrag Ivanović, our Project Manager on the project, is concerned, things are developing exactly as he believed they would. "Not for a moment did I doubt that we would live up to the trust placed in us. The task is being completed successfully, affirming that our greatest asset lies in the capabilities of our diligent and responsible colleagues," Ivanović declares proudly.

HIGH SPEED 2

This mega-project has brought together the finest experts from numerous companies and for a good reason. It is, after all, the most ambitious project of its kind in Europe, so complicated in its essence that it even implies relocation of watercourses.

High Speed 2 will connect British cities with trains capable of reaching speeds of up to 400 km/h. Ultimately, travel times will be halved. Completing our tasks on this major project has also paved the way for exciting new opportunities in the British market.

Brojke

Figures



distributivnih
trafostanica
distribution
substations



predviđena brzina
vozova
envisioned train
speed

Kontaktne mreže Contact networks

U SREDIŠTU SRBIJE

IN THE HEART OF SERBIA



**TIMOVI ELNOS SRBIJE KLJUČNI
SU AKTERI u izgradnji i rekonstrukciji
kontaktnih mreža širom Srbije. To su
potvrdili i ove godine realizujući niz
kompleksnih zadataka iz ove oblasti.**

**ELNOS SERBIA'S TEAMS ARE
PIVOTAL PLAYERS in the construction
and reconstruction of contact networks
throughout Serbia. This year, they once
again affirmed their competence by
undertaking a series of complex tasks in
this domain.**

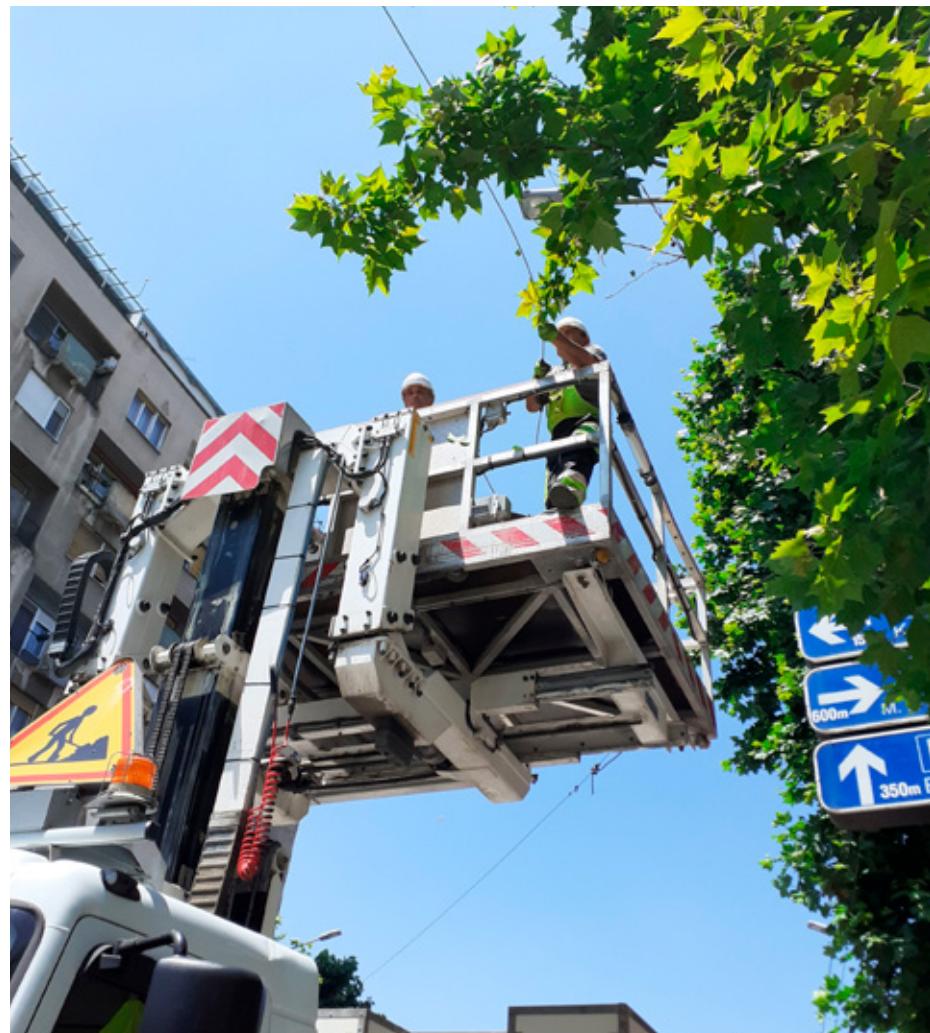
SR Projekat demontaže, izmještanja i rekonstrukcije infrastrukturnih kapaciteta na pruzi Topčider Putnička – Rakovica u Beogradu podrazumijeva demontažne rade na kompletnoj kontaktnoj mreži na ovom segmentu (demontaža voznih vodova, stubova portalna, noseće konstrukcije, temelja), sa pratećim sistemima poput signalno-sigurnosnih uređaja.

U okviru ovog projekta predviđena je i izgradnja nove TS 10/0,4 kV po principu „ključ u ruke“ za napajanje Željezničke stanice Topčider.

Investitor ovog projekta je Infrastruktura železnice Srbije, koja je bila investitor radova i na projektu sanacije temelja i montaži nosećih konstrukcija na dijelu pruge Mala Krsna–Požarevac. U okviru ovog projekta naši timovi demontirali su stare, dotrajale, te izradili nove temelje sa šipovima i stubove sa nosećom konstrukcijom za ovaj dio pruge (ukupno 58 stubova), čime je postignuta veća pouzdanost kontaktne mreže.

Elnos Srbija je svoj pečat ostavila i na rado-vima u okviru prve faze rekonstrukcije trolejbuske kontaktne mreže u Ulici kralja Milana u Beogradu. Radovi su se odvijali u centru Beograda, a visoka saobraćajna frekventnost ove lokacije komplikuje vremensku dinamiku realizacije projekta.

Ovaj projekat podrazumijeva demontažu trolejbuske kontaktne mreže, temelja, stubova i noseće konstrukcije, te montažu novih stubova i noseće konstrukcije sa novom kontaktom mrežom, na potezu od trga Slavija do Ulice kneza Miloša (ukupno 50 stubova).



Lideri u oblasti kontaktnih mreža Leaders in domain of contact networks

EN The project involving the dismantling, relocation, and reconstruction of infrastructure on the Topčider Putnička – Rakovica railway line in Belgrade entailed extensive dismantling work on the entire contact network on this section (removal of catenaries, catenary poles, supporting structures, and foundations) including associated systems such as signal and safety devices.

Construction of a new 10/0,4 kV substation on a turnkey basis to supply power to the Topčider Railway Station also falls within the scope of this project.

The project was commissioned by the Serbian Railways Infrastructure, which was also the investor for the foundation rehabilitation and the installation of supporting structures on the section between Mala Krsna and Požarevac. As part of this project, our teams dismantled old,

deteriorated foundations and constructed new ones with piles. They also erected poles with supporting structures for this railway section (a total of 58 poles), thereby enhancing the reliability of the contact network.

Elnos Serbia has also made its mark on the first phase of reconstruction of the trolleybus contact network in King Milan Street in Belgrade. The works were carried out in the city center, and the high traffic frequency at this location complicated the project's timeline.

This project encompassed the dismantling of the trolleybus contact network, foundations, poles, and supporting structures, as well as the installation of new poles and supporting structures with a new contact network, on the section spanning from Slavija Square to Kneza Miloša Street (a total of 50 poles).

ENS Slovenija u akciji nakon katastrofalnih poplava
ENS Slovenia responding to the call after catastrophic floods

TU SMO KADA JE NAJPOTREBNIJE

WE ARE HERE WHEN IT MATTERS MOST



Slovenija je doživjela najveću prirodnu katastrofu u istoriji zemlje Slovenia experienced the largest natural disaster in the country's history

**„TKO BRZO DA, DVA PUTA DA“,
GLASI SLOVENAČKA POSLOVICA,**
*a njeni značenje bi se moglo protumačiti
i kao: „Ko brzo priskoči u pomoć, dva puta
priskoči u pomoć.“ To je bio i moto naših
ekipa nakon katastrofalnih poplava u
Sloveniji.*

**THERE IS A SLOVENIAN PROVERB
THAT SAYS “THE ONE WHO IS QUICK
TO GIVE, GIVES TWO TIMES MORE”.**
*The meaning of the proverb could be
interpreted as – “The one who is quick to help,
helps two times more”. This very sentence was
the guiding principle of our teams after the
catastrophic floods in Slovenia.*

SR Juli 2023. godine. Jako nevrijeme protutnjalo je dijelom države te izazvalo poplave i brojne probleme mještanima. Nedugo nakon toga, već početkom avgusta, dolazi do najveće prirodne katastrofe u istoriji ove zemlje, koja je imala i ljudske žrtve. Vodene bujice nosile su sve pred sobom. Posljedice su bile vidljive na objektima, na saobraćajnoj infrastrukturi, na elektromreži.

NA RASPOLAGANJU

U takvoj situaciji, kada je svaki minut dragocjen, mi smo znali šta je naš zadatak. ENS Slovenija, naša članica u ovoj zemlji, uvijek je bila i biće na raspolaganju u teškim vremenima. Svoje resurse objeručke pružili smo onima kojima su bili potrebni kako bi posljedice bile što manje i kako bi bile otklonjene što prije.

Reagovali smo munjevito. Mi to možemo, znamo i imamo opremu. Svoje resurse stavili smo na raspolaganje preduzećima za prenos i distribuciju električne energije da što prije saniraju mrežu i obezbijede napajanje potrošača. Saradivali smo i sa vatrogasnim društвima – priskačуći u pomoć u spasavanju života i zaštiti imovine. Tako su naši zaposleni, koji su operativni vatrogasci, umjesto na posao, išli u spašavanje u momentima samih poplava, ali i neposredno nakon njih.

SANACIJA MREŽA

I to nije sve. Naši vrijedni radnici počeli su pomagati kolegama iz Elektro Maribora još 27. jula, gdje su štete nastale i prije dramatičnog 4. avgusta. Riječ je, prije svega, o sanaciji srednjonaponske i niskonaponske mreže na mjestima gdje su se zbog odrona zemlje rušili stubovi ovih mreža.

Treba napomenuti da smo, malo prije poplava, počeli raditi i na projektu električnog napajanja nove mašine za papir u fabrici papira MM Količev. Poplave su ovu fabriku jako oštetile. Naša ekipa je stoga ispumpavala vodu i čistila blato iz podruma gdje se nalazi i srednjonaponsko i niskonaponsko rasklopno postrojenje. Čistili smo i elektroormare i potom obavili testiranja ormara i opreme kako bi fabrika imala mogućnost ponovnog priključenja na električnu mrežu.

Nakon poplava, za slovenački Eles radili smo dva projekta sanacije. Na dalekovodu 2x110 kV Dravograd-Ravne na stubnom mjestu 29 montirali smo provodnike i rušili stari stub na području Željezare Ravne. Na dalekovodu 2x110 kV Slovenj Gradec-Velenje rušili smo stari stub na stubnom mjestu 94.

U ovakvim, vanrednim okolnostima, najveći izazov predstavljalje je pitanje bezbjednosti na radu, ali smo kvalitetnom pripremom i striktnim poštovanjem pravila besprijekorno ispunili naše zadatke. I sve to po principu: „U dobru je lako dobar biti, na muci se poznaju junaci.“

EN It was July 2023. Severe weather swept through parts of the country, causing floods and numerous problems for residents. Shortly thereafter, in early August, the largest natural disaster in the country's history occurred, resulting in human casualties. Torrential waters carried

everything in their path. The consequences were visible on buildings, transportation infrastructure, and the electrical power network.

ON STANDBY

In such a situation, where every minute counts, we knew what needed to be done. ENS Slovenia, our member in this country, has always been and will continue to be available in challenging times. We wholeheartedly offered our resources to those in need, aiming to minimize and swiftly eliminate the consequences.

Our response was swift. We have the capacity, the know-how and the equipment. Thus, we made our resources available to power transmission and distribution companies to quickly restore the network and ensure power supply to consumers. We also collaborated with teams, assisting in life-saving efforts and property protection. Our employees, who also serve as operational firefighters, went to the rescue during the floods and immediately afterward.

NETWORK RESTORATION

And that is not all. Our diligent workers began helping their colleagues from Elektro Maribor as early as July 27th, as damage occurred even before the dramatic events of August 4th. Primarily, this involved the restoration of medium-voltage and low-voltage networks in areas where landslides caused the collapse of towers.

It's worth noting that just before the floods, we had started working on the project of supplying electricity to a new paper machine at the MM Količev paper factory. The floods severely damaged this factory. Our team pumped water and cleaned mud from the basement, which houses both medium-voltage and low-voltage switchgear. We cleaned electrical cabinets and then conducted tests on cabinets and equipment to enable the factory to reconnect to the electrical power network.

After the floods, we worked on two rehabilitation projects for the Slovenian "Eles." On the 2x110 kV Dravograd - Ravne transmission line, we mounted conductors on tower location 29 and demolished an old tower in the area of Steel Plant Ravne. On the 2x110 kV Slovenj Gradec-Velenje transmission line, we demolished the old tower at location 94.

In such extraordinary circumstances, the greatest challenge was ensuring safety at work. However, we completed our tasks flawlessly, because we prepared for the job thoroughly and adhered to the rules strictly. In all following the principle: "It's easy to be good in times of prosperity; heroes are revealed in times of trouble."



U službi obnove SN i NN mreža
In service of restoration of MV and LV network

POUZDANO, SIGURNO I EFIKASNO - DIO SMO ENERGETSKOG RAZVOJA!

**RELIABLE, SECURE AND EFFICIENT -
WE ARE A PART OF ENERGY DEVELOPMENT!**

DK

NA NAJVEĆEM PROJEKTU ELEKTROENERGETSKE INFRASTRUKTURE ON THE LARGEST ELECTRICAL ENGINEERING INFRASTRUCTURE PROJECT

SR Početak izgradnje novih dvosistemskih 400 kV dalekovoda Endrup-Idmlund i Endrup-njemačka granica predviđen je za mart 2024. Ukupna dužina dalekovoda biće 150 km, a koristićemo stubove specijalno dizajnirane za ekološki osjetljive zone.

EN Construction of new 400 kV double-circuit transmission lines Endrup-Idmlund and Endrup-German border is scheduled for March 2024. The total length of the power lines will be 150 km. Specially designed poles for environmentally sensitive zones will be used.



CG

REKONSTRUKCIJA NAJVEĆE HIDROELEKTRANE – PERUĆICA RECONSTRUCTION OF THE LARGEST HYDRO POWER PLANT - PERUĆICA

SR Projekat obuhvata sveobuhvatnu rekonstrukciju tri agregata sa ključnim sistemima, kao i pet pomoćnih objekata, te izuzetno zahtjevnu implementaciju sistema za hidrauličko-hidrološka mjerjenja. Planirano trajanje projekta je pet godina.

EN The project encompasses a comprehensive reconstruction of three units with key systems, along with five auxiliary facilities and the highly demanding implementation of hydraulic-hydrological measurement systems. The project is planned to last five years.



PL

PRVE REFERENCE U NAŠOJ NOVOJ ČLANICI FIRST REFERENCES IN OUR NEW MEMBER

SR Nakon što je prošle godine Elnos Poljska postala članica Grupacije, već smo uspješno realizovali nekoliko projekata na tržištu ove zemlje. Fokusirani na projekte iz oblasti dalekovoda, naši timovi pokazali su stručnost na širokom polju poslova na naponskom nivou 110 kV.



EN After Poland became a member of the Group last year, we have successfully executed several projects in this market. Focused on transmission line projects, our teams demonstrated expertise across a wide range of tasks at the 110 kV voltage level.

RS



TE KOSTOLAC – REKONSTRUKCIJA SPOJNOG POLJA RP 110 KV TPP KOSTOLAC – RECONSTRUCTION OF JUNCTION FIELD IN 110 KV SWITCHYARD

SR Nakon angažmana u nizu projekata rekonstrukcije 110 kV rasklopog postrojenja, ove godine na red je došlo spojno potje. Naš zadatak na ovom projektu bio je isporuka i ugradnja VN opreme, isporuka i ugradnja ormara, kao i primarno i sekundarno povezivanje.

EN Following engagements in a series of 110 kV switchyard reconstruction projects, this year, the focus has shifted to the junction field. Our task on this project involved the delivery and installation of high-voltage equipment, the delivery and installation of cabinets, as well as primary and secondary connections.



BiH

SOFISTICIRAN INŽENJERSKI ZADATAK NA SOLARNOJ ELEKTRANI BILEĆA SOPHISTICATED ENGINEERING TASK ON THE SOLAR POWER PLANT BILEĆA

SR Najveća privatna solarna elektrana u BiH gradi se blizu Bileće. Sa snagom od 60 MWp, očekuje se da će godišnje proizvoditi oko 84 GWh električne energije. Povjereni su nam radovi iz oblasti zaštite, mjeranja i testiranja, koji će biti ključni za osiguravanje kvaliteta i pouzdanosti rada elektrane.

EN The largest privately owned solar power plant in Bosnia and Herzegovina is under construction near Bileća. With a capacity of 60 MWp, it is expected to produce about 84 GWh of electrical energy per year. We are entrusted with works related to protection, measurement, and testing, crucial for ensuring the quality and reliability of the power plant's operation.



SCADA – pametna, revolucionarna i uvijek nova

SCADA – smart, revolutionary and forever innovative

AUTOMATIZACIJA JE KLJUČNI ALAT MODERNE ENERGETIKE, a SCADA sistemi su njen revolucionarno važan partner. Oni jačaju efikasnost i pouzdanost upravljanja elektroenergetskim objektima, postavljajući nove standarde i donose presudno važne inovacije koje uzrokuju ubrzane promjene.

Ekipe Elnosa su ove godine postigle sjajne rezultate integriranjem naprednih SCADA sistema u složene elektroenergetske objekte.

AUTOMATION STANDS AS A PIVOTAL TOOL IN MODERN ENERGY SYSTEMS, with SCADA systems serving as its revolutionary ally. These systems enhance the efficiency and reliability of managing power facilities, setting new standards and bringing in crucial innovations that propel rapid advancements.

This year, the Elnos team achieved remarkable results by seamlessly integrating advanced SCADA systems into complex power facilities.



SR ULTRABRZA ŽELJEZNICA HIGH SPEED 2 (VELIKA BRITANIJA)

Izgradnja ultrabrzre željeznice High Speed 2 ubrzo napreduje, a nama su u okviru ovog mega-projekta povjereni projektovanje, izrada, isporuka i instalacija 47 distributivnih trafostanica za potrebe napajanja tri gradilišta u sjeverozapadnom Londonu.

U nizu složenih zadataka naši timovi realizuju i implementaciju lokalnih WEB SCADA sistema za svaku distributivnu trafostanicu te njihovo povezivanje na zajednički SCADA sistem gornjeg nivoa.

Da bismo ostvarili postavljene nam zahtjeve, koristili smo specijalni ABB AC500 komunikacijski protokol, obezbjeđujući tako efikasno upravljanje i nadzor svake trafostanice. U realizaciji smo koristili SCADA softver tipa Zenon, a integrisali PLC-ove kompanije ABB. Sve navedeno radimo i u skladu sa zahtjevnim britanskim standardima.

Do sada smo posao implementacije SCADA sistema gornjeg nivoa okončali na gradilišnim lokacijama West Ruslip i Atlas Road, dok nam na gradilištu Victoria Road ovaj posao predstoji u februaru 2024.

ŽELJEZARA TANARIS-SILCOTUB (RUMUNIJA)

U oblasti integracije SCADA sistema ove godine imali smo poseban zadatak u Rumuniji, u željezari Tanaris-Silcotub u gradu Kalarăși. U okviru poslova rekonstrukcija sekundarne opreme za 110/10 kV trafostanicu u okviru pomenute željezare bila nam je povjerena i integracija SCADA sistema za svih 18 polja u 110/10 kV trafostanicu.

Ono što je činilo ovaj projekat izuzetnim jeste činjenica da su upravljanje i nadzor trafostanice od 110 kV realizovani pomoću velikog broja PLC-ova koji su komunicirali preko profinet komunikacionog protokola. U pitanju je postupak karakterističan za industriju, veoma rijetko korišten u trafostanicama.

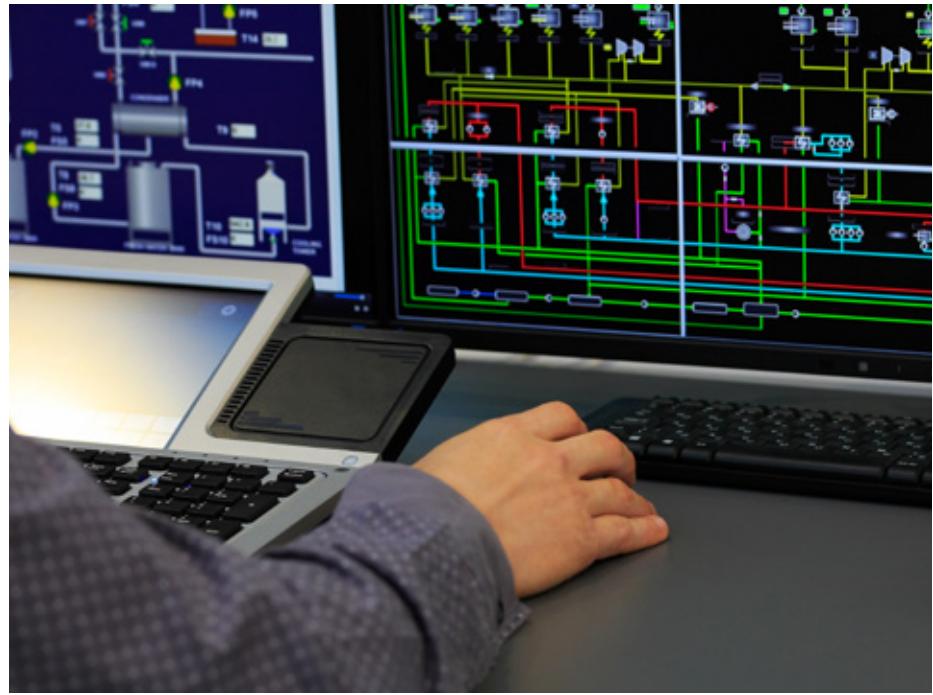
Izazov je bio dodatno otežan kratkim rokom za realizaciju, ali smo uspješno ispunili sve zahtjeve investitora.

Za realizaciju ovog projekta korišteni su SCADA softver tipa WinCC i PLC-ovi proizvođača Siemens. Elnos je ponosan što je bio dio ovog projekta i što je uspješno implementirao kompleksan SCADA sistem u trafostanicama.

SOLARNE ELEKTRANE BUKOVICA I MEDENO POLJE (HRVATSKA I BIH)

Rad solarnih elektrana je nezamisliv bez integracije SCADA sistema. Naši timovi uspješno su implementirali prve SCADA sisteme i u ovoj oblasti, i to u solarnim elektranama Bukovica (6,25 MWp) i Medeno polje (4,91 MWp).

Integracija SCADA sistema u oblasti solarne energije donosi veoma visok nivo kompleksnosti, a dva



Postignuti sjajni rezultati u integraciji SCADA sistema | Great results achieved in SCADA system integration

su ključna razloga zašto je ovaj posao složen. Prvi razlog leži u potrebi za povezivanjem velikog broja uređaja u solarnim elektranama. S obzirom na razmjere tih postrojenja i broj solarnih panela i drugih komponenti koje ih čine, SCADA sistem mora biti sposoban da efikasno nadzire i upravlja svakim pojedinačnim uređajem. Upravo zbog toga, za realizaciju sistema upravljanja solarnim elektranama se koristi Zenon SCADA softver, koji ima specijalno prilagođene alate i simbole za solarnu industriju.

Dруги razlog dolazi uslijed činjenice da zbog trenda sve većeg priključenja solarnih elektrana na distributivnu mrežu balansiranje energije postaje sve veći izazov. Distributivna preduzeća moraju uspostaviti komunikaciju sa svakom pojedinačnom solarnom elektranom kako bi efikasno upravljala tim procesom. Ovaj zahtjev za komunikacijom često se ostvaruje korištenjem protokola poput IEC 60870-5-104.

TRAFOSTANICA TREBINJE 1(BIH)

Timovi Elnosa važan su dio velike rekonstrukcije 110/35/10(20) kV trafostanice Trebinje 1. U okviru ovog projekta našim ekipama povjeren je i složen posao integracije SCADA sistema. Ovaj posao obuhvatao je kreiranje, implementaciju, testiranje i puštanje u rad SCADA sistema i sistema zaštite i upravljanja. Rekonstrukcija trafostanice odvijala se u nekoliko faza, što je

dodatao otežavalо posao implementacije SCADA sistema zahtijevajući česte izmjene na samom softveru.

Uspješan završetak ovog projekta potvrđio je našu sposobnost integracije SCADA sistema u trafostanicama naponskog nivoa 110 kV.

INOVATIVNA RJEŠENJA I PARTNERSTVA

Elnos Grupa aktivno prati trendove u oblasti automatičke. „U prilog ovome govori činjenica da smo jedna od prvih kompanija u regiji koja je prepoznala potencijal Zenon SCADA softvera i ostvarila partnerstvo sa firmom Copa-Data“, rekao je Radenko Škoro, vodeći inženjer Elnosovog proizvodno-logističkog centra.

On je podsjetio da je Elnosov tim koji je bio dio projekta u Rumuniji prošao Siemensovu obuku za WinCC SCADA sistem te dodao da kompanija generalno pruža obuke i tehničku podršku za sve projekte u čijoj realizaciji učestvuje.

„SCADA sistemi za solarne elektrane i trafostanice trenutno predstavljaju najveći dio našeg posla, ali očekujemo nove projekte u rudarskoj industriji i industriji prerade otpadnih voda. Posebno se radujemo realizaciji sistema upravljanja HE Dabar, koji će biti vrhunac svih naših dosadašnjih poslova. Smatramo da će ova implementacija biti presudna za naše nove uspjehe i iskorake u ovom segmentu posla“, istakao je Škoro.

EN ULTRA-SPEED RAILWAY HIGH SPEED 2 (GREAT BRITAIN)

The construction of the High-Speed 2 rail is progressing rapidly. Within this mega project, we have been entrusted with the design, production, delivery, and installation of 47 distribution substations to power three construction sites in northwest London.

In a series of intricate tasks, our teams are implementing local WEB SCADA systems for each distribution substation, connecting them to a common upper-level SCADA system.

To meet the requirements set before us, we implemented the specialized ABB AC500 communication protocol, ensuring efficient control and monitoring of each substation. We employed Zenon-type SCADA software and integrated ABB's PLCs. All these activities were carried following with stringent British standards.

So far, we have completed the implementation of the upper-level SCADA system at the West Ruislip and Atlas Road construction sites, with the task awaiting us at the Victoria Road construction site in February 2024.

STEEL PLANT TANARIS-SILCOTUB (ROMANIA)

This year marked a distinctive challenge in the realm of SCADA system integration, taking us to Romania and the steel plant Tanaris-Silcotub in the city of Călărași. As part of the secondary equipment reconstruction for the 110/10 kV substation within the plant, we were entrusted with the task of integrating a SCADA system for all 18 bays in the 110/10 kV substation.

What sets this project apart is the specific management and supervision of the 110 kV substation, achieved through a multitude of PLCs communicating via the Profinet communication protocol—a procedure characteristic of the industry but rarely employed in substations.

The challenge was further compounded by a tight implementation deadline. However, we managed to successfully meet all investor requirements.

The realization of this project involved utilizing WinCC SCADA software and Siemens PLCs. Elnos takes pride in being a part of this project and successfully implementing a sophisticated SCADA system within the substation.

SOLAR POWER PLANTS BUKOVICA AND MEDENO POLJE (CROATIA AND BIH)

The operation of solar power plants is inconceivable without the integration of SCADA systems. Our teams have successfully implemented our first SCADA systems in this domain, more spe-

cifically in the solar power plant Bukovica (6,25 MWp) and the Medeno Polje (4,98 MWp).

The integration of SCADA systems in solar facilities brings a high level of complexity, and two key reasons contribute to the intricacy of this task. The first lies in the need to connect a large number of devices in solar power plants. Namely, given the scale of these facilities and the multitude of solar panels and other components comprising them, the SCADA system must be powerful enough to efficiently monitor and manage each of those individual devices. This is precisely why the Zenon SCADA software is used for implementing control systems in solar power plants, as it offers tools and symbols tailored specifically for the solar industry.

The second reason arises from the increasing trend of connecting solar power plants to the distribution grid, which poses a growing challenge in energy balancing. Distribution companies must establish communication with each solar power plant to effectively manage this process. This communication requirement is often realized using protocols such as IEC 60870-5-104.

SUBSTATION TREBINJE 1 (BIH)

Elnos teams play a pivotal role in the extensive reconstruction of the 110/35/10(20) kV substation Trebinje 1. Within the scope of this project, our teams were assigned to the integration of the SCADA system. This endeavor encompassed the creation, implementation, testing, and commissioning of both the SCADA system and the protection and control system.

The reconstruction of the substation unfolded in multiple phases, adding complexity to the implementation of the SCADA system as frequent software modifications were required.

The successful completion of this project affirmed our expertise in integrating SCADA systems in substations operating at the 110 kV voltage level.

INNOVATIVE SOLUTIONS AND PARTNERSHIPS

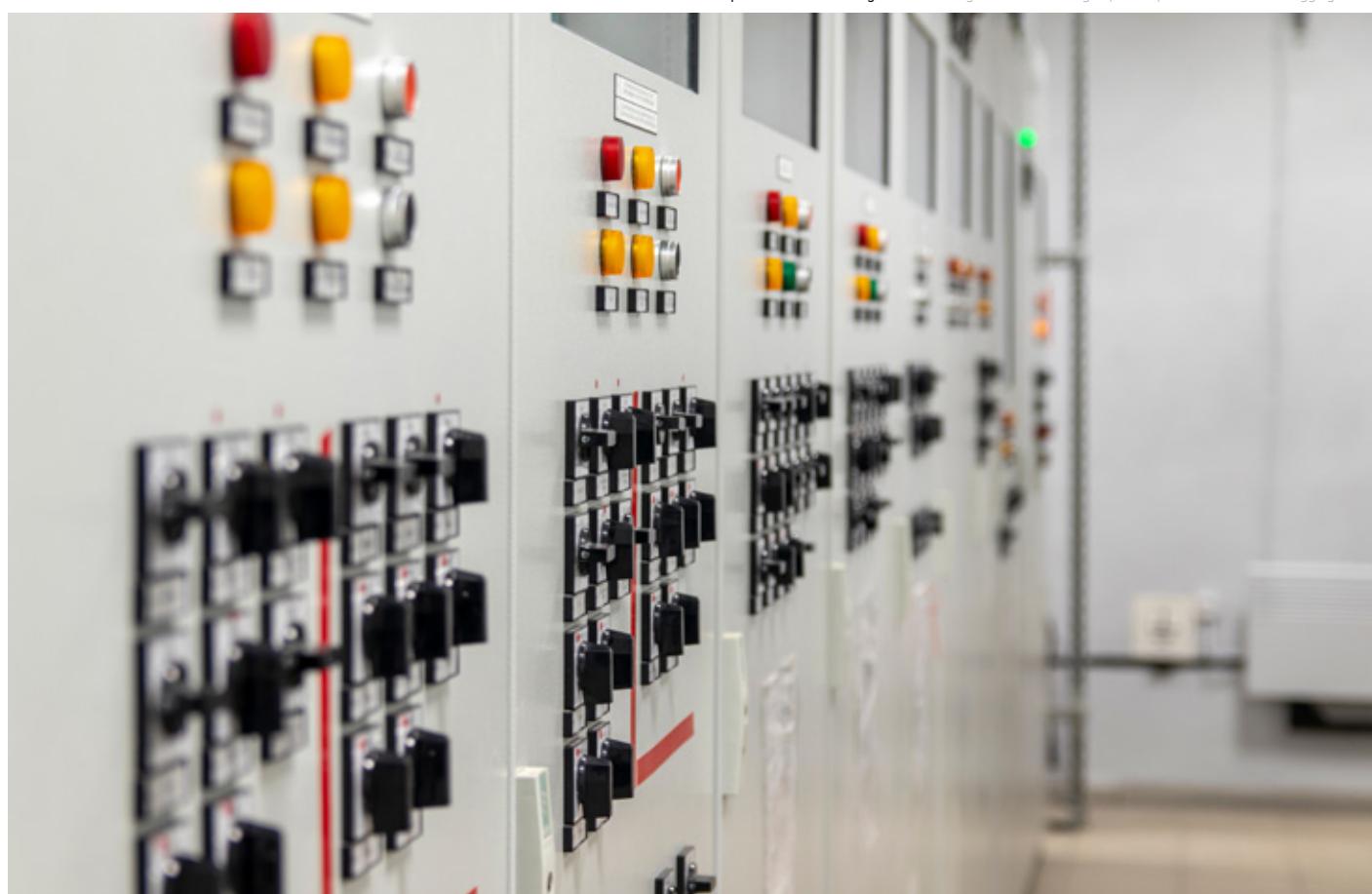
Elnos Group remains at the forefront of automation trends, proactively staying informed and engaged in the evolving landscape. "A testament to this is the fact that we are one of the first companies in the region to recognize the potential

of Zenon SCADA software and establish a partnership with Copa-Data," stated Radenko Škoro, the Senior Engineer at Elnos Production and Logistics Center.

He emphasized that the Elnos team that participated in the project in Romania, underwent Siemens training for the WinCC SCADA system. He added that the company provides training and technical support for all projects it engages in.

"SCADA systems for solar power plants and substations currently constitute the most significant portion of our work, but we anticipate new projects in the mining industry and wastewater treatment. We are particularly excited about the implementation of the control system for the hydro power plant Dabar which will be the zenith of all our past achievements. We believe this implementation will be crucial for our new successes and advancements in this segment of our work", Škoro highlighted.

SCADA sistemi su revolucionarno važan partner moderne energetike SCADA systems are critically important partner in modern energy systems





Kroz objektiv

THROUGH THE OBJECTIVE

ZA ELNOS GRUPU, OVOGODIŠNJI REGIONALNI I ANGAŽMAN U EU BIO JE IMPRESIVAN –
obuhvatio je učešće na 12 ključnih konferencija i sajmova.

SR Naše učešće na ESG samitu Zapadnog Balkana, prvom velikom regionalnom događaju posvećenom temama životne sredine, socijalnih pitanja i upravljanja, održanom u Porto Montenegruru, bilo je izuzetno inspirativno. Takođe smo bili dio konferencije „(Zelena) energija je ženskog roda“ u Beogradu i četiri velika CIGRE savjetovanja za električne mreže u Bledu, na Zlatiboru, u Budvi i Ohridu.

Naš angažman i prisustvo na Samitu energetike Trebinje, Jahorina ekonomskom forumu, najvećem sajmu energetike „Elfack“ u Geteborgu i „SEE Mobilityju“, najvećem regionalnom sajmu željezničke tehnologije u Beogradu, bili su takođe zapaženi. Bili smo aktivni i na Banjaluka energetskom forumu, „OIE Srbija 2023“ na Fruškoj Gori i Međunarodnom savjetovanju „Energetika 2023“ na Zlatiboru.

Foto-album pred vama predstavlja naše putovanje kroz ove događaje...

THIS YEAR, ELNOS GROUP MADE AN IMPRESSIVE MARK IN THE REGIONAL AND EU SCENE by actively participating in twelve significant conferences and fairs.

EN Our participation in the Western Balkans ESG Summit, the first major regional event dedicated to environmental, social, and governance issues, held at Porto Montenegro, was exceptionally inspiring. We were also part of the conference “(Green) Energy is a Feminine Word” in Belgrade and four major CIGRE conferences for electrical power networks in Bled, Zlatibor, Budva, and Ohrid.

Our engagement and presence at the Trebinje Energy Summit, the Jahorina Economic Forum, Elfack, the largest trade fair on energy and electrification held in Gothenburg, and SEE Mobility, the largest regional railway technology fair set in Belgrade, were also notable. We were active at the Banja Luka Energy Forum, RES Serbia 2023 in Fruška Gora, and International Conference Energetics 2023 on Zlatibor.

The photo album before you presents our journey through these events...



Banjaluka energetski forum
Banjaluka Energy Forum



CIGRE-CIRED Bled
CIGRE-CIRED Bled



CIGRE Budva
CIGRE Budva



CIGRE Ohrid
CIGRE Ohrid



CIGRE Zlatibor
CIGRE Zlatibor



„Elfack”, Geteborg
“Elfack”, Gothenburg



ESG samit Zapadnog Balkana, Portomontenegro
Western Balkans ESG Summit, Porto Montenegro



„OIE Srbija 2023”, Fruška Gora
“RES Serbia 2023”, Fruška Gora



Jahorina ekonomski forum
Jahorina Economic Forum



„Energetika 2023”, Zlatibor
“Energetics 2023”, Zlatibor



Samit energetike Trebinje
Trebinje Energy Summit



(Zelena) energija je ženskog roda, Beograd
(Green) Energy is a Feminine Word, Belgrade

Naša ljetna praksa

PRILIKA KOJA SE NE PROPUŠTA

DVADESET STUDENATA IZ PET GRADOVA, DESET NEZABORAVNIH DANA

I JEDAN POSEBNO KREIRAN PROGRAM PRAKSE – spoj je koji je budućim inženjerima elektrotehnike omogućio da se povežu sa bogatim iskustvom rada u Elnos Grupi.

SR Za prosječnog studenta poslovni svijet je velika nepoznanica, njegov korporativni jezik je nerazumljiv, a mnogobrojni poslovni procesi gotovo da spadaju u domen naučne fantastike. Na prekretnici između studija i karijere, oni se suočavaju s mnogo izazova. Kako bi im olakšala ulazak u profesionalnu životnu etapu, naša kompanija je i ove godine organizovala ljetnu praksu za studente završnih godina elektrotehničkih fakulteta.

Ljetna praksa okupila je talentovane studente iz čak pet gradova Srbije i BiH, i to iz Beograda, Novog Sada, Banjaluke, Istočnog Sarajeva i Brčkog. U toku deset dana oni su imali priliku iz prve ruke da vide i uče praktični dio posla i tako stiću kvalitetna znanja i vještine.

Studenti su imali priliku da sarađuju i prate rad na projektima kao što su: vjetropark Kričavač, solarna elektrana Medeno Polje, mini-hidroelektrana Bočac 2, termoelektrana Kostot-

lac i drugi. Po završetku prakse studentima su uručeni sertifikati o uspješno završenoj stručnoj praksi u Elnos Grupi.

„Kroz našu praksu studenti imaju mogućnost da se u relativno kratkom periodu upoznaju s tehnologijom i konceptom niza modernih elektroenergetskih objekata, kako kroz teoriju tako i kroz praksu. Upoznavanje sa različitim projektima, ispričano kroz zanimljiva iskustva naših inženjera, odličan je način da mladi, talentovani ljudi steknu utisak o izazovima inženjerske karijere i širokem spektru mogućnosti koje ona nudi“, rekao je Marko Mijić, član Uprave za tehničke poslove Elnos Grupe.

„Praksa u Elnos Grupi mi je pomogla da bolje shvatim posao jednog inženjera. Neizmjerno sam zahvalna zaposlenima kompanije koji su nam pričali o svakodnevnim izazovima sa kojima se inženjer u radu može susresti“,

rekla je Ivana Gojsović, studentkinja Elektrotehničkog fakulteta u Beogradu.

„Pohvalio bih spremnost i volju predavača da nam što bolje predstave projekte i prenesu znanja. Na mene su najveći utisak ostavile stručne posjete, koje su mi pružile neprocjenjiv uvid u stvarni svijet inženjerstva“, rekao je Nemanja Grbić, student Elektrotehničkog fakulteta u Banjaluci.

„Ljetna praksa kompanije Elnos na mene je ostavila snažan utisak i nosim veoma lijepe spomene. Inženjeri iz Elnosa nesebično su dijelili svoja znanja, a na sva naša pitanja odgovarali su na zanimljiv i nama razumljiv način. Moj savjet budućim generacijama je da ni slučajno ne propuste ovakvu priliku, jer pored znanja koje će steći, sigurno će proširiti i krug svojih prijatelja“, rekao je Marinko Kukolj, student Elektrotehničkog fakulteta u Istočnom Sarajevu.



Na terenu SE Medeno polje
On the site of SPP Medeno Polje



Na ETF-u u Banjaluci
Visiting Faculty of Electrical Engineering in Banjaluka



Obilazak mini-hidroelektrane Bočac 2
Visiting mini-hydro power plant Bočac 2

Our summer practical training OPPORTUNITY NOT TO BE MISSED

TWENTY STUDENTS FROM FIVE CITIES, TEN UNFORGETTABLE DAYS, AND A THOUGHTFULLY DESIGNED PRACTICAL TRAINING PROGRAM –
this fusion provided future electrical engineers with the opportunity to connect with the rich experience of working at the Elnos Group.

For an average student, the business world is a great unknown. The corporate language appears incomprehensible, and numerous operational processes seem to belong to the realm of science fiction. At the crossroads between their studies and careers, students face many challenges. To ease their transition into the professional phase of life, our company once again organized a summer practical training for senior students majoring in electrical engineering.

The summer practical training brought together talented students from five different cities in Serbia and Bosnia and Herzegovina, namely Belgrade, Novi Sad, Banja Luka, East Sarajevo, and Brčko. Over the course of ten days, the students had the opportunity to see and learn through firsthand experience the practical aspects of the job, gaining valuable knowledge and skills.

The students had the chance to engage, through direct observation and cooperation, in projects such as wind park Krivača, solar power plant Medeno Polje, mini-hydro power plant Bočac 2, thermal power plant Kostolac, and others. Upon completion, the students were awarded certificates for successfully completing their professional training at the Elnos Group.

"Through our training program, students have the opportunity to acquaint themselves with the technology and concept of a variety of modern power facilities in a relatively short period, both in theory and practice. Learning about different projects, through direct transfer of noteworthy experiences of our engineers, is an excellent way for young, talented individuals to gain insight into the challenges of an engineering career and the wide range of opportunities it offers", said Marko Mijić, Elnos Group Board Member for Technical Affairs.

"The training at the Elnos Group helped me better understand the job of an engineer. I am immensely grateful to the company's employees who generously shared with us the daily challenges that engineers may encounter," said Ivana Gojsović, a student at the Faculty of Electrical Engineering in Belgrade.

"I would like to comment the readiness and willingness of the instructors to present projects to us and convey knowledge as effectively as possible. The site visits left the biggest impression on me, providing me with invaluable insight into the real world of engineering," said Nemanja Grbić, a student at the Faculty of Electrical Engineering in Banja Luka.

"The Elnos company's summer training made a strong impression on me, and I carry very fond memories of it. Elnos engineers generously shared their knowledge and answered all our questions in an interesting and comprehensible manner. My advice to future generations is not to miss such an opportunity under any circumstances because, in addition to the knowledge they will gain, they will undoubtedly expand their circle of friends", said Marinko Kukolj, a student at the Faculty of Electrical Engineering in East Sarajevo.



Solar u fokusu
Solar energy in the focus



Dodjela diploma
Diploma ceremony



Ljetnu praksu je pohađalo 20 studenata
20 students took part in our summer practical training

Srednjoškolci u centru pažnje

Moć praktične nastave

High school students in the spotlight
THE POWER OF PRACTICAL TRAINING

RAZVIJATI PRAKTIČNE VJEŠTINE

MLADIH znači pripremiti ih za svijet koji ih čeka nakon škole. To je bila naša mala velika misija i ove godine.

FOSTERING THE PRACTICAL SKILLS

OF YOUNG INDIVIDUALS means preparing them for the world that awaits after school. That has been our small yet significant mission this year.



Kabinet praktične nastave u Politehničkoj školi, Banjaluka Practical training classrooms at the Polytechnic High School, Banjaluka

SK Zahvaljujući donacijama naše kompanije, kabineti praktične nastave u Politehničkoj i Elektrotehničkoj školi u Banjaluci prošli su kroz značajnu transformaciju.

Donirali smo sredstva za revitalizaciju 3D kabinet pratične nastave u Politehničkoj školi Banjaluka, zahvaljujući kojoj će u narednoj godini ovaj kabinet zasjati novim sjajem. Dodatno, ove godine smo nastavili naša kontinuirana ulaganja u opremanje kabinet Elektro-

tehničke škole u Banjaluci, gdje smo do sada pomogli obnovu šest kabinetova praktične nastave.

Ova investicija nije obezbijedila samo neophodnu opremu, već je stvorila bolje uslove za učenje, omogućavajući srednjoškolcima da steknu praktične vještine koje su ključne za njihov budući poziv.

Osim direktnih donacija, Elnos Grupa je nastavila da realizuje program stručnih praksi kroz koje učenici imaju mogućnost da svoje teoreti-

sko znanje povežu s praktičnim iskustvom. U proteklih 11 godina praktičnu nastavu u elektromontažnoj radionici (EMR) naše kompanije u Banjaluci pohadalo je više od 250 srednjoškolaca iz ove dvije škole.

Budućim generacijama stručnjaka poboljšanje uslova obrazovanja pružiće moderne resurse za sticanje znanja.

EN Thanks to the contributions from our company, the practical training classrooms at the Polytechnic High School and High School of Electrical Engineering Banja Luka have undergone a significant transformation.

We allocated funds to revitalize the 3D practical training classroom at the Polytechnic High School Banja Luka, ensuring it will shine with new brilliance in the coming year. Additionally, this year, we continued our ongoing investments in equipping the classrooms of the High School of Electrical Engineering in Banja Luka, where we have supported the renovation of six practical training classrooms.

This investment not only provided essential equipment but also created better learning conditions, enabling high school students to acquire practical skills crucial for their future professions.

In addition to direct donations, Elnos Group has continued to implement a vocational training program, giving students the opportunity to connect theoretical knowledge with practical experience. Over the past eleven years, more than 250 high school students from these two schools have attended practical training in the electrical assembly workshop (EMW) of our company in Banja Luka.

Improving educational conditions will provide future generations of experts with modern resources for acquiring knowledge.

U magičnoj Budimpešti

IN MAGICAL BUDAPEST

ŽENSKA EKIPA ELNOS GRUPE

nastavila je da njeguje sjajnu tradiciju osmomartovskih putovanja. Ovog proljeća naša destinacija bila je Budimpešta!

THE FEMALE TEAM OF ELNOS GROUP

continued the splendid tradition of the Women's Day excursion. This spring, our destination was Budapest!



Trenutak za pamćenje A memorable moment

SR Evropski gradovi nižu se na mapi osmomartovskih putovanja koja Elnos Grupa svake godine organizuje za pripadnice ženskog dijela kolektiva. Ovogodišnji Dan žena bio je prilika za posjetu veličanstvenoj Budimpešti, gradu kulture i umjetnosti, koji često nazivaju Pariz istoka.

U svoje nezaboravno putovanje utkale smo živopisne pejzaže, uspomene na znamenito-

sti grada, a sve to začinile smo smijehom naše vesele grupe. Obišle smo fantastične lokacije i zajedno provele nezaboravne dane kojih ćemo se dugo sjećati...

Poseban utisak na sve učesnice putovanja ostavili su veličanstvena Ribarska tvrđava, kolosalna zgrada mađarskog parlamenta, večernja vožnja Dunavom i živopisni izlet u Sent Andreju.

EN European cities get added, one after another, to the map of Women's Day excursions organized by Elnos Group each year for the female members of the team. This year's Women's Day was an opportunity to visit the magnificent Budapest, a city of culture and art often referred to as the Paris of the East.

In our unforgettable journey, we embraced the vivid landscapes and memories of the city's landmarks, all spiced it up with the laughter of our cheerful group. We visited fantastic locations and spent unforgettable days together that we will remember for a long time...

GIRL POWER

Although the electrical engineering industry is predominantly known as a "men's world," times are changing. Compared to the end of 2022, the number of women employed in Elnos Group has increased by an impressive 18 percent. From technicians to directors, from engineers to legal professionals, women have always brought a special touch and integrity to the positions they hold. One thing is certain, the diversity of roles performed in the Group adds an authentic dimension to our company's work.

The participants of the trip were especially impressed by the stunning Fisherman's Bastion, the grandeur of the Hungarian Parliament building, an evening cruise along the Danube, and a picturesque visit to Saint Andrew.

GIRL POWER

Iako je elektroenergetika poznata kao industrija koja je dominantno „muška”, vremena se mijenjaju. U odnosu na kraj 2022. godine, broj žena zaposlenih u Elnos Grupi povećao se za odličnih 18 odsto.

Od monterki do direktorki, od inženjerki do pravnica, žene su uvijek davale poseban pečat i integritet pozicijama na kojima rade. Jedno je sigurno, šarolikost poslova koje u Grupaciji obavljaju daje autentično obilježje radu naše kompanije.

Ključ je u prevenciji

THE KEY LIES IN PREVENTION



Primjena BZR mjera apsolutna obaveza Implementation of OHS measures is obligatory

NULA POVREDA NA RADU JE NAŠ BESKOMPROMISNI CILJ,
a najmoćniji instrument za njegovo postizanje je prevencija.

ACHIEVING ZERO OCCUPATIONAL INJURIES IS OUR UNWAVERING GOAL. The most powerful tool in reaching this goal is prevention.

SR „U osnovi naše svakodnevne posvećenosti stvaranju sigurnog radnog okruženja za naše zaposlene je sistematski pristup planiranju i izvođenju svih aktivnosti, konkretno, prevencija“, rekla je Stanislava Miščević, direktor QMS sektora Elnos Grupe.

S obzirom na visokorizičnu prirodu poslova Elnos Grupe, primjena mjera sigurnosti i zaštite na radu je na naglašen način naša svakodnevna i apsolutna obaveza.

Nula povreda na radu i odsustvo tolerancije u poštovanju mjera bezbjednosti i zaštite na radu (BZR) oduvijek je bio najvažniji princip kompanije.

Sektor bezbjednosti i zdravlja (BZR) naše kompanije ulaže veliki trud da operativnim upravljanjem obezbijedi zaštitu zdravlja i dobrobit svih zaposlenih. Oni su ove godine dodatno intenzivirali rad na unapređenju kulture bezbjednosti. Kompanija je sprovela niz dodatnih edukacija s posebnim usmjerenjem na tržišta EU.

„Mi u Elnos Grupi duboko vjerujemo da je sigurnost na radnom mjestu ne samo obaveza, već i moralna dužnost prema našim zaposle-

nima. Posvećenost politici nulte tolerancije na povrede na radu zahtjeva stalni rad na podizanju svijesti o bezbjednosti kod svih zaposlenih, te je kao takva jedan od postulata poslovanja“, zaključila je Miščevićeva.

Kao kompanija sa uspješno izgrađenom liderskom pozicijom, nastavljemo da investiramo u zdravlje i bezbjednost i da ulazimo dodatne resurse i napore te podizemo svijest na taj način radeći na ispunjavanju zahtjeva politike nulte tolerancije na povrede.

EN “A systematic approach to planning and executing all activities is at the core of our daily commitment to creating a safe working environment for our employees. This primarily means prevention,” said Stanislava Miščević, Director of the Quality Management System (QMS) at Elnos Group.

Given the high-risk nature of Elnos Group's operations, the implementation of occupational health and safety measures is our absolute daily obligation. Zero occupational injuries and a zero-tolerance approach to respecting

occupational health and safety measures (OHS) have always been the company's fundamental principles.

Our company's Occupational Health and Safety (OHS) sector invests significant efforts in ensuring the health and well-being of all employees through operational management. This year, they have intensified their work on enhancing the safety culture, with a particular focus on EU markets.

“At Elnos Group, we deeply believe that occupational safety is not just an obligation but also a moral duty towards our employees. Dedication to the policy of zero tolerance for occupational injuries requires continuous efforts to raise safety awareness among all employees, and as such, it is one of the fundamental principles of our business,” concluded Miščević.

As a company with a well-established leadership position, we will continue to invest in health and safety, allocate additional resources and efforts, and raise awareness as we work to fulfill the requirements of the zero tolerance for injury policy.

Svaki čovjek može biti heroj

EVERY PERSON CAN BE A HERO

„OSJEĆAJ DA STE NEKOME POMOGLI KAD MU JE BILO NAJTEŽE JE ODLIČAN i nastaviću da budem dobrovoljni davalac krvi dok god budem mogao i bio zdrav”, poručuje Borisav Novaković, sajt menadžer u Diviziji za dalekovode Elnosa BL Banjaluka.

“THE FEELING OF HAVING HELPED SOMEONE IN THEIR DARKEST HOUR IS GREAT, and I will continue to be a voluntary blood donor for as long as my health allows,” says Borisav Novaković, a Site Manager in the Transmission Line Division at Elnos BL Banja Luka.

SR Aktiv dobrovoljnih davalaca krvi Elnosa BL Banjaluka u martu ove godine uspješno je organizovao svoju prvu akciju dobrovoljnog davanja krvi te pokazao humanost i dao primjer drugima da ih slijede, zbog čega našim kolegama zahvaljujemo uz poruku: „Pokazali ste da svaki čovjek može biti mali heroj.“

Novaković, koji već desetak godina učestvuje u ovoj humanoj misiji, ističe da mu mnogo znači saznanje da je možda upravo on nekome spasio život.

„Jednom jedinicom krvi koju damo možemo spasiti čak tri života, što je svakako odličan motiv za svakoga da postane dobrovoljni davalac krvi“, rekao je Novaković.

Primjer svog kolege slijedi i Darko Krecelj, rukovodilac Proizvodno-logističkog centra u Elnosu Banjaluka.

„Prvi put sam dao krv u srednjoj školi, za vrijeme jedne od akcija. Od tada sam bio davalac petnaestak puta. Iako je moj doprinos mali, divan je osjećaj biti dio zajednice dobrovoljnih davalaca krvi. Uvijek sam imao stav da je opšte dobro iznad ličnih interesa. Dobro se osjećam kad znam da mogu da doprinesem tome“, kaže Krecelj.

Aktiv dobrovoljnih davalaca krvi broji 42 zaposlena, a među njima je značajan broj onih koji su krv darivali na desetine puta. Oni su nakon akcije organizovane u Zavodu za transfuzijsku medicinu RS pozvali sve koji su u prilici da postanu davaoci i upišu se u knjigu humanosti.

EN In March, this year, the Elnos BL Banja Luka Voluntary Blood Donors Group successfully organized its first blood donation drive,

demonstrating their humanity and setting an example for others to follow. We thank our colleagues with the message: “You have shown that every person can be a hero.”

Novaković, who has been participating in this humanitarian mission for about a decade, emphasizes the significance of knowing that he may have saved someone's life. “With a single unit of blood we donate, we can save up to three lives, which is undoubtedly a great motivation for anyone to become a voluntary blood donor,” says Novaković.

Darko Krecelj, the Manager of the Production-Logistics Center at Elnos Banja Luka, follows the example of his colleague. “I donated blood for the first time in high school during one

of the campaigns. Since then, I have been a donor about fifteen times. Although my contribution may be small, it's a wonderful feeling to be part of the community of voluntary blood donors. I have always believed that the common good is above personal interests. I feel good knowing that I can contribute to that,” says Krecelj.

The Voluntary Blood Donors Group consists of 42 employees, many of whom have donated blood dozens of times. Following the campaign organized at the Institute for Transfusion Medicine of Republika Srpska, they have called on everyone who is able to become donors and inscribe their names in the ledger of humanity.



Prva akcija dobrovoljnog davanja krvi Elnosa BL The first blood donation drive by Elnos BL

Punjjenje baterija na naš način!

THE WAY WE RECHARGE!



Ekipa iz Podgorice na Bjelašnici
Teams from Podgorica on Bjelašnica

ODLIČNO RASPOLOŽENJE, PUNO ZABAVE I SMIJEHA, ČINI SVAKI NAŠ TIM-BILDING DOŽIVLJAJEM ZA PAMĆENJE. *Tako je bilo i ove godine, kada su članice Elnos Grupe imale brojne tim-bildinge, kao i neformalna druženja obilježena veselom atmosferom.*

HIGH SPIRITS, LOADS OF FUN, AND LAUGHTER MAKE EVERY ONE OF OUR TEAM-BUILDING EXPERIENCES TRULY MEMORABLE. *This was the case again this year when the Elnos Group members enjoyed numerous team-building activities and informal get-togethers filled with a cheerful atmosphere.*



Elnos BL na izvorima Plive
Elnos BL at the springs of Pliva

SR Menadžment naše kompanije uživao je u neopisivoj ljepoti predjela i svježem planinskom vazduhu Fruške gore, nacionalnog parka u Srbiji koji obiluje prirodnim, kulturnim, istorijskim i turističkim vrijednostima.

Zaposleni Elnosa BL družili su se na izvorima Plive i Janjskim otocima – magičnim izletištima kod Šipova, gdje je, mnogi tvrde, nemoguće odgovoriti na pitanje da li je ukusnija vrhunска pastrmka ili čuveni janjski kajmak.

Kolege iz naše članice Elnos Trade posjetile su, nadomak Laktaša, Park prirode Jaružani, koji se može pohvaliti bogatim sadržajima za odmor i rekreaciju, a uživale su i u ljepotama obala Vrbasa kod Karanovca. Ekipa iz Podgorice uživala je na Bjelašnici, dok su se ekipe slovenačkog ENS-a odlučno okušale u adrenalinskohit rekreaciji – oviratlon.

Vremena za odmor i druženje imale su i kolege iz naše članice Elnos Nordic – iz prve ruke uvjerile su se kako izgleda Semmeldagen ili Fettisdagen, poznat i kao Debeli utorak, kada Švedani, pred hrišćanski post, ne propuštaju delikatese kojima se neće moći počastiti tokom posta.

Druženja su doživljaji za pamćenje, a bile su ovo prilike da se napune baterije za nove radne pobjede.

EN Our company's management enjoyed the indescribable beauty of the landscapes and the fresh mountain air of Fruška Gora, a national park in Serbia that abounds in natural, cultural, historical, and tourist attractions.

The Elnos BL employees gathered at the Pliva Springs and Janjske Otoke - magical excursion spots near Šipovo, where many claim it is impossible to decide whether top-notch trout or the famous janjski kajmak (cream) tastes better.

Colleagues from our member Elnos Trade visited the Jaružani Nature Park near Laktaši, which boasts rich amenities for relaxation and recreation. They also enjoyed the beauty of the Vrbas River banks near Karanovac.

The team from Podgorica had a blast on Bjelašnica, while the Slovenian ENS teams confidently tackled an adrenaline-pumping obstacle course known as the oviratlon.

Our colleagues from Elnos Nordic also had time for relaxation and socializing, experiencing Semmeldagen or Fettisdagen firsthand, known as Shrove Tuesday. Swedes indulge in delicacies before the Christian fasting period, savoring treats they won't enjoy during the fast.

These gatherings create lasting memories and provide the perfect opportunity to recharge our batteries for new triumphs at work.



Timbuilding Elnos Tradea
Elnos Trade teambuilding



Tim ENS-a na adrenalinskoj hit rekreaciji
ENS Teams on an adrenaline-packed recreational activity

Sjeverna Makedonija

NORTH MACEDONIA



POPULACIJA: 2.075.301

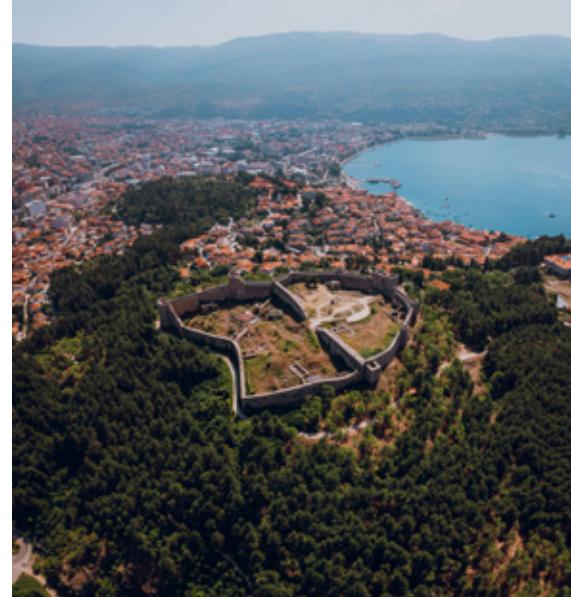
GLAVNI GRAD: Skoplje

JEZIK: makedonski

POPULATION: 2.075.301

CAPITAL: Skopje

LANGUAGE: Macedonian



ENERGETSKO TRŽIŠTE:

Sjeverna Makedonija je sprema za energetsku revoluciju! Ova zemlja čvrsto je utemeljila svoju viziju zelene energetske budućnosti. Oni ne samo da žele da osiguraju stabilnost i pouzdanost snabdijevanja energijom, već i da zaštite okolinu i riješe probleme klimatskih promjena. To je jedan ambiciozan plan koji će pokrenuti ekonomski razvoj zemlje ka novim visinama.

ELNOS SKOPJYE – NAŠA ČLANICA U SJEVERNOJ MAKEDONIJI:

Od svog osnivanja 2009. godine pa do danas, naša vrijedna članica Elnos Sjeverna Makedonija ostvarila je zavidan uspjeh na elektroenergetskoj sceni. Svojom nezaustavljivom snagom i posvećenošću, tim koji trenutno broji 45 zapo-

slenih ispisao je priču o uspjehu. Njihova kolegijalnost i prijateljstvo temelj su izvanredne produktivnosti. Oni su ekipa za koju nemoguće ne postoji i svaki izazov vide kao priliku za još veći trijumf.

ZANIMLJIVOSTI:

1. Prekrasno Ohridsko jezero jedno je od najstarijih, najvećih i najdubljih u Evropi.
2. Sjeverna Makedonija ima čak 34 vrha iznad 2.000 metara nadmorske visine!
3. Ova zemlja ima više od 300 sunčanih dana godišnje.
4. Makedonci su zvanično jedan od najljubaznijih naroda u Evropi.
5. U ovoj zemlji krije se Kokino, jedan od najstarijih opservatorijuma na svijetu, čija starost je preko 3.800 godina.



ENERGY MARKET:

North Macedonia is ready for an energy revolution! The country has firmly established its vision of a green energy future. Their ambitious plan not only aims to ensure stability and reliability in energy supply but also to protect the environment and address the challenges of climate change. It is an ambitious strategy set to propel the country's economic development to new heights.

ELNOS SKOPJYE – OUR MEMBER IN NORTH MACEDONIA:

Since its founding in 2009, our esteemed member Elnos North Macedonia has achieved remarkable success in the energy sector. With an unstoppable force and dedication, their team of 45 employees has built a narrative of triumph. Their camaraderie and friendship form the foundation of exceptional productivity. The word impossible does not exist in their dictionary, as every challenge is treated as an opportunity for even greater triumph.

FUN FACTS:

1. The beautiful Lake Ohrid is one of the oldest, largest, and deepest lakes in Europe.
2. North Macedonia boasts 34 peaks above 2000 meters above sea level!
3. This country enjoys more than 300 sunny days annually.
4. Macedonians are officially considered one of the friendliest peoples in Europe.
5. Hidden in this land is Kokino, one of the world's oldest observatories, dating back over 3.800 years.



SCAN ME!
SKENIRAJ ME!

**Budite dio dinamičnog svijeta elektroenergetike uz naš
YouTube kanal - jedinstveno mjesto inspiracije i novih informacija!**

Be a part of the dynamic world of electrical power engineering with our
YouTube channel - a unique place of inspiration and fresh information!

