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VIII regionalna konferencija: INDUSTRIJSKA ENERGETIKA I ZAŠTITA ŽIVOTNE SREDINE U ZEMLJAMA JUGOISTOČNE EVROPE

International Conference **IEEP 2022**

VIII Regional Conference: INDUSTRIAL ENERGY AND ENVIRONMENTAL PROTECTION IN THE COUNTRIES OF SOUTHEAST EUROPE

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POZIV / INVITATION

Poštovane kolegice i kolege,

Industrija u zemljama Jugoistočne Evrope ima slične probleme u vezi energetske efikasnosti i zaštite životne sredine. Preduzeća sa malom energetsom efikasnošću i sa zastarelim industrijskim postrojenjima, našla su se na otvorenom tržištu. Učešće potrošnje energije u ukupnim troškovima preduzeća je toliko veliko da se svaka ušteda u ovoj oblasti direktno odražava na ukupnu produktivnost, a time i konkurentnost privrednog subjekta. Investicije u oblast racionalne potrošnje energije i zaštite životne sredine spadaju u veoma efikasna ulaganja. Investiciona sredstva za ovu oblast su, zahvaljujući brojnim fondovima međunarodnih institucija, dostupnija i znatno povoljnija od kredita poslovnih banaka.

Konferencija će biti povod za poslovne susrete sponzora i izlagača konferencije koji će industrijskim preduzećima predstaviti najnoviju tehnologiju koja doprinosi energetske efikasnosti i zaštiti životne sredine.

Pozivamo vas da svojim aktivnim učešćem na IEEP konferenciji doprinesete ostvarenju njenih ciljeva.



Prof. Goran JANKES, PhD

Predsednik Organizacionog odbora i potpredsednik
Društva termičara Srbije /
Organizing Committee President & Vice President of
the Society of Thermal Engineers of Serbia

Dear Colleagues,

The industry of the Southeast European countries is facing numerous problems, similar within the entire region and wider, in terms of energy efficiency and environmental protection. Outdated industrial facilities with low energy efficiency are confronted with open market economies. Energy consumption costs make a substantial part of the total expenditure of enterprises, so any savings in this area will have a direct influence on productivity and the competitive capacity of enterprises. Investments into rational energy consumption and environmental protection are seen as very effective investments. Due to the number of funds available through international institutions, investments in this area are more accessible and favourable than, for example, credits from commercial banks.

The Conference will provide an opportunity for business meetings of sponsors and exhibitors presenting to the industry the latest technology that enhances energy efficiency and environmental protection.

Therefore, we take this opportunity to invite you to actively take part and contribute to the goals of the IEEP Conference.



Prof. Milan RADOVANOVIC, PhD

Predsednik Društva termičara Srbije /
President of
the Society of Thermal Engineers of Serbia

TEMATSKE CELINE / SUBJECT AREAS

1. Energetska politika, zakonodavstvo i podsticaji

- Energetska politika zemalja regiona
- Nacionalni i regionalni programi energetske efikasnosti
- Podsticajne mere za unapređenje energetske efikasnosti
- Modeli finansiranja energetske efikasnosti
- Zakonska regulativa

2. Energetska efikasnost i energetska menadžment u industriji i zgradarstvu

- Energetska efikasnost i održivi razvoj industrijskih preduzeća
- Energetska efikasne tehnologije
- Problemi i mogućnosti korišćenja kogeneracije i trigeneracije
- Korišćenje otpadne toplote i otpadnih materijala
- Revitalizacija tehnoloških energetske sistema u industrijskim preduzećima
- Programi energetske menadžmenta
- Analize stanja i metode optimizacije u industrijskoj energetici
- Merenje, upravljanje i vizuelizacija procesa

3. Zaštita životne sredine i održivi razvoj

- Zaštita vazduha, vode i tla i održivi razvoj industrijskih preduzeća
- Tretman i korišćenje otpadnih materijala
- Studije uticaja na životnu sredinu, IPPC preporuke, BAT i BREF (najbolje raspoložive tehnologije)
- Primena međunarodnih standarda
- Aktivnosti i inicijative u svetlu borbe protiv klimatskih promena
- Koncepti i projekti čistije proizvodnje
- Primena analiza životnog veka proizvoda

4. Korišćenje obnovljivih izvora energije

- Korišćenje obnovljivih izvora energije
- Korišćenje otpadnih materija kao goriva u industriji
- Korišćenje lokalnih goriva
- Zamena goriva i korišćenje alternativnih goriva

5. Posebne sesije

- 5a. Ventili, zatvarači, rešetke, cevovodi
- 5b. Procesni i upravljački aspekti unapređenja energetske efikasnosti industrijskih procesa

1. Energy Policy, Legislature and Incentives

- Energy Policy of the Countries in the Region
- National Regional Programs for Energy Efficiency
- Incentive Measures for Improvement of Energy Efficiency
- Financing Models of Energy Efficiency
- Law Regulations

2. Energy efficiency and energy management within the industry and building

- Energy efficiency and sustainable development of industrial enterprises
- Energy-efficient technologies
- Problems and possibilities of co-generation and tri-generation usage
- The use of waste heat and waste materials
- Revitalization of technological energy systems in industrial companies
- Energy Management Programs
- The situation analysis and optimization methods in industrial energy
- Measurement, control and process visualization

3. Environmental Protection and Sustainable Development

- Protection of air, water and soil and sustainable development of industrial enterprises
- Treatment and Use of Waste Materials
- Environment Impact Studies, IPPC, BAT and BREF (best available technologies)
- Implementation of International Standards
- Activities and initiatives in the light of climate changes struggle
- Concepts and Projects for Cleaner Production
- Implementation of Analysis of Product Life Cycle

4. The use of renewable energy sources

- The use of renewable energy sources
- Using waste as fuel in industry
- The use of local fuels
- Replacing the fuel and the use of alternative fuels

5. Special Sessions

- 5a. Valves, closures, grates, pipelines
- 5b. Process and control aspects of improving the energy efficiency of industrial processes

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PREDAVAČI PO POZIVU / INVITED LECTURERS

Dr Miodrag Mesarović, redovni član Akademije inženjerskih nauka Srbije (AINS) od 2000. godine, diplomirao



je na Odseku za tehničku fiziku Elektrotehničkog fakulteta u Beogradu 1961. godine, a doktorirao na Mašinskom fakultetu 1978. godine iz oblasti simulacije nestacionarnih procesa sa promenom faza radnog medijuma u termoenergetskim postrojenjima. Od početka 1962. godine do danas radi u Energoprojekt u Beogradu, na različitim pozicijama od projektantskih do pozicije generalnog direktora, a od 2001. pa i danas kao specijalni savetnik. Predsednik je internog Stručnog saveta od 1987. godine. Najveći deo radnog veka je posvetio proučavanju i projektovanju složenih energetskih postrojenja i sistema. Učestvovao je u nekoliko stotina privrednih projekata u zemlji i inostranstvu iz oblasti energetskih sistema i energetskih tehnologija, kao i u brojnim naučno-istraživačkim projektima o specifičnim problemima u termoenergetici, nuklearnoj tehnologiji, zaštiti životne sredine, proizvodnji pijaće vode i drugim. Boravio je i na više specijalizacija u inostranstvu (u Nemačkoj, Švedskoj, Holandiji, Francuskoj, Austriji i drugde). Za uspehe u radu je odlikovan (Orden rada sa zlatnim vencem), više puta nagrađivan i pohvaljivan (Povelja "Nikola Tesla", i dr.). Učestvovao je na velikom broju stručnih i naučnih skupova u zemlji i inostranstvu i publikovao oko 200 stručnih i naučnih radova iz oblasti strateškog razvoja energetike, termoenergetike, racionalne potrošnje energije, primene obnovljivih izvora energije, zaštite životne sredine, globalnih promena klime, nuklearne sigurnosti, pouzdanosti složenih sistema, uključujući elektroenergetske mreže, dobijanja pijaće iz morske vode, i drugih. Učestvovao je kao član ili koordinator više ekspertskih timova, imenovanih za izradu predloga strategija razvoja privrede i energetike na nivou države, kao i na nivou regiona ili lokalnih samouprava. Osim toga, učestvovao je u dugoročnom planiranju energetike drugih zemalja (Angola, Kina, Irak, Katar i drugih). Dr Miodrag Mesarović je generalni sekretar Srpskog komiteta Svetskog saveta za energiju (WEC) i član Naučnog odbora Društva termičara Srbije, kao i aktivni član Nuklearnog društva Srbije, Srpskog komiteta Međunarodne konferencije za velike energetske mreže (CIGRE), idr. Član je i uređivačkih odbora časopisa "Tehnička dijagnostika", "Nuklearna tehnologija i zaštita od zračenja" i "Energoprojekt" i recenzent više specijalizovanih knjiga i monografija. Aktivan je u državnim programima energetske efikasnosti.

MIODRAG MESAROVIĆ, PhD, Full Member of the Academy of Engineering Sciences of Serbia (AESS) from 2000, took his B.Sc. degree at the Technical Physics Department of the Faculty of Electrical Engineering, University of Belgrade in 1961 and his Ph.D. degree at the Faculty of Mechanical Engineering in 1978 on the subject of simulation of unsteady processes with phase changes of working medium in thermal power plants. Mesarović is employed by Energoprojekt Consulting Engineers Co. in Belgrade from the beginning of 1962 by now, currently as a senior advisor (2001 to date). He is the chairman of the company's Council of experts from 1987 onwards. Major part of the career he devoted to studies and designs of complex energy facilities and systems. He has taken part in several hundred projects in Serbia and abroad in the fields of energy systems and facilities, as well as in numerous research and development projects in specific subjects of thermal engineering, nuclear technology, environmental protection, water production technology and others. He passed several training courses abroad (in Germany, Sweden, Netherlands, France, Austria, and elsewhere). For his professional achievements Mesarović was honoured (decoration of work with golden wreath), several times rewarded and praised ("Nikola Tesla" charter, and others). Dr Mesarović has taken part in a large number of professional and scientific conferences in Serbia and abroad, and published cca 200 reports in the fields of energy development strategies, thermal engineering, energy efficiency, renewable energy sources, environmental pollution, nuclear safety, reliability of complex systems, including electric power networks, production of fresh water from the seawater, etc. He was engaged as a member or co-ordinator of a number of expert teams nominated to elaborate proposals of strategic documents on energy and economic development at the state level as well as regional or local community level. Besides, he has taken part in long term development planning of energy in a number of foreign countries (Qatar, Angola, China Iraq, and



elsewhere). Dr Mesarović is the secretary general of Serbian member committee of the World Energy Council and member of the Scientific board of Serbian Thermal engineering society, as well as an active member of Serbian nuclear society, Serbian Committee of International Conference on Large Electric Networks (CIGRE) He is member of editorial boards of "Nuclear technology and Radiation Protection", "Technical Diagnostics" and several other journals and editor of several books and monographs. He is also active in governmental programs concerning energy efficiency.

Prof. dr Aleksandar Jovović je redovni profesor na Mašinskom fakultetu Univerziteta u Beogradu, na kom se



takođe i školovao, na katedri za procesnu tehniku. Oblasti kojima se bavi u svom istraživačkom radu obuhvataju procesnu tehniku, procese i opremu za preradu vode, sušare, visokotemperaturske procese, emisiju zagađujućih komponenata u otpadnim gasovima, upravljanje otpadom: termički tretman otpada i kontrola emisije. Autor je više od 50 radova na domaćim i međunarodnim skupovima/časopisima. Objavio je jednu monografiju od međunarodnog značaja, dva poglavlja u monografiji međunarodnog značaja, i pet poglavlja u monografijama nacionalnog značaja. Dobitnik je nagrade Privredne komore grada Beograda za 2002. godinu. Predavač je u okviru Alternativne akademske obrazovne mreže u Beogradu (AAEN), na tri predmeta programa Zaštita životne sredine - izazov za nauku, tehnologiju i društvo. Član je ekspertske radne grupe za otpad Ministarstva za nauku, tehnologiju i zaštitu životne sredine Republike Srbije i Predsednik Komisije za jugoslovenske standarde u oblasti upravljanja otpadom.

Prof. Dr. Aleksandar Jovovic is a professor at the Faculty of Mechanical Engineering, University of Belgrade, to whom also his education, the Department of Process Engineering. The authorities dealt with in his research include process engineering, processes and equipment for water treatment, drying, high temperature processes, emissions of polluting components in the waste gases, waste management: thermal treatment of waste and controlling emissions. He has written over 50 papers at national and international conferences / journals. He published a monograph of the international importance, two chapters in the monograph of international importance, and five chapters in the monographs of national importance. He was awarded the Chamber of Commerce of Belgrade in 2002. Lecturer within the Alternative Academic Educational Network in Belgrade (AAEN), in three cases the program Environmental protection - Challenge for Science, Technology and Society. He is a member of the Expert Working Group on Waste Ministry of Science, Technology and Environment of the Republic of Serbia and President of the Commission for the Yugoslav standards in the area of waste management.

Dr Nataša Nord je profesor na Institutu za energetiku i procesnu tehniku na Norveškom univerzitetu za nauku



i tehnologiju u Trondhajmu (NTNU), Norveška. Trenutno ima ulogu zamenika šefa instituta za obrazovanje. Ona ima istraživačko iskustvo u daljinskom grejanju, energetske planiranju, nadzoru energije zgrada, simulacijama zgrada, optimizaciji i detekciji kvarova. Bila je član Programa izvanrednih akademskih stipendista na NTNU koji se fokusira na kvalifikovanje nekih od najistaknutijih mladih istraživačkih talenata za međunarodno vodeće istraživačke karijere. Bila je vođa projekta za dva istraživačka projekta, jedan Horizon 2020 MSCA-IF, nekoliko projekata saradnje sa industrijom i projekat inovativne nastave. Neki od njenih projekata bili su fokusirani na analizu performansi i upravljanja toplotnim pumpama i sistemima za snabdevanje energijom zgrada. U laboratoriji je ona odgovorna za postrojenje CO2 toplotne pumpe i jedne podstanice daljinskog grejanja. Ona je glavni ili koautor više od 50 radova u časopisima i ima Scopus h-indeks 23.



Natasa Nord is a Professor at the Department of Energy and Process Engineering at the Norwegian University of Science and Technology in Trondheim (NTNU), Norway. Currently, she has a role as department deputy for education. She has a strong background in district heating, energy planning, building energy monitoring, building simulation, optimization, and fault detection. She was a member of the Outstanding Academic Fellowship Programme at NTNU, which focuses on qualifying some of our foremost young research talents for internationally leading research careers. She has been a project leader for two research projects, one Horizon 2020 MSCA-IF, several collaboration and industry-related projects, and a project on innovative teaching. Some of her projects focused on performance and control analysis of heat pumps and energy supply systems for buildings. In the laboratory, the entire CO₂ heat pump plant and the heated room has been developed by her and the laboratory engineers. In addition, she is responsible for a district heating rig in the laboratory. She is the main or co-author of more than 50 journal papers and has a Scopus h-index of 23.

Dr Mirjana Stamenić je vanredni profesor na Katedri za procesnu tehniku Mašinskog fakulteta Univerziteta u Beogradu. Diplomirala je 1999., magistrirala 2005. i doktorirala 2014. godine na Mašinskom fakultetu u Beogradu.



Na Katedri za procesnu tehniku Mašinskog fakulteta u Beogradu zaposlena je od 2001. Predavač je na predmetima Procesni fenomeni, Procesna energetika i Peći i kotlovi u industriji (MSc studije), te Viši kurs iz procesnih fenomena i Viši kurs iz procesne energetike i visoko-temperaturskih uređaja i procesa (doktorske studije). Ovlašćeni je ispitivač u okviru Laboratorije za procesnu tehniku, energetske efikasnost i zaštitu životne sredine. Predavač je u okviru teorijske i praktične obuke za Energetske menadžere za oblast industrijske energetike u Centru za obuku energetske menadžera i energetske savetnika Mašinskog fakulteta u Beogradu.

Sudski je veštak za oblast Mašinska tehnika. Član je Upravnog odbora Društva za procesnu tehniku SMEITS. Od Inženjerske komore Srbije dobila je licence 330, 332 i 430, kao i licencu ovlašćenog energetske menadžera. Član je naučnog odbora Društva termičara Srbije. Učestvovala je u realizaciji 15 istraživačkih projekata finansiranih od Ministarstva nadležnog za oblast nauke i tehnološkog razvoja, a rukovodi jednim projektom čija je realizacija u toku. Učestvovala je u realizaciji velikog broja studija, kao i izradi tehničke dokumentacije više idejnih rešenja, idejnih (IDP) i glavnih mašinskih projekata/projekata za dobijanje građevinske dozvole (PGD), projekata za izvođenje (PZI) i projekata izvedenog stanja različitih vrsta procesnih postrojenja u svojstvu odgovornog projektanta i učesnika-konsultanta na projektima. Autor i koautor je na više od 100 naučnih i stručnih radova koji su objavljeni u međunarodnim i domaćim časopisima i zbornicima radova sa naučnih i stručnih konferencija. Od toga 11 radova je objavljeno u časopisima sa SCI liste. Autor i koautor tri knjige i zbirke zadataka, kao i tri priručnika namenjenih za usavršavanje u oblasti energetske efikasnosti. Učestvovala je u organizaciji i izvođenju više od 20 obuka iz oblasti energetske efikasnosti u industriji. Rukovodila je jednim EU-IPA projektom ukupne vrednosti 1 292 700 EUR.

Dr Mirjana Stamenić is an associate professor at the Department of Process Engineering at Faculty of Mechanical Engineering, University of Belgrade. She graduated in 1999, received her master's degree in 2005, and received her PhD degree in 2014 at the Faculty of Mechanical Engineering in Belgrade. She has been employed at the Department of Process Engineering of the Faculty of Mechanical Engineering in Belgrade since 2001. She is a lecturer on several courses: Process Phenomena, Process Energy and Furnaces and Boilers in Industry (MSc studies), as well as the Advanced Course in Process Phenomena and the Advanced Course in Process Energetics and High-Temperature devices and processes (Ph.D. Studies). In addition, she is an authorized examiner within the Laboratory for Process Engineering, Energy Efficiency, and Environmental Protection. Furthermore, she is a lecturer in theoretical and practical training for Energy Managers in industrial energy at the Center for Training Energy Managers and Energy Advisors at the Faculty of Mechanical Engineering in Belgrade.



She is a court expert in the area of Mechanical Engineering. She is a member of the Management Board of the SMEITS. She received licenses 330, 332, and 430 from the Serbian Chamber of Engineers and an authorized energy manager's license from the Ministry in charge of energy. She is a member of the scientific board of the Society of Thermal Scientists of Serbia. She participated in the realization of 15 research projects financed by the Ministry responsible for science and technological development, and she manages one ongoing scientific project. She took part as a responsible designer in the realization of a large number of studies, as well as the technical documentation of several conceptual and preliminary designs, detailed designs, and as-built designs of various types of process plants. She is the author and co-author of more than 100 scientific and professional papers published in international and domestic journals and proceedings from scientific and professional conferences. Of these, 11 papers were published in journals from the SCI list. She is the author and co-author of three books and manuals for training in energy efficiency. She participated in the organization and realization of more than 20 training in the field of energy efficiency in the industry. She coordinated one EU-IPA project with a total value of EUR 1,292,700.

V. prof. Aleksandar Čočić je rođen 1975. godine u Aleksandrovcu, Srbija. Nakon završetka Gimnazije, studira na Mašinskom fakultetu Univerziteta u Beogradu, na kome diplomira 2000. godine na odseku za Automatsko upravljanje. Iste godine upisuje postdiplomske, magistarske studije na odseku Primenjena mehanika fluida na Mašinskom fakultetu Univerziteta u Beogradu. Magistrirao je 2007. godine, a doktorirao 2013. godine. Zaposlen je na istom fakultetu od 2002. godine, prvo u zvanju asistent, a danas je vanredni profesor na Katedri za mehaniku fluida. Njegove istraživačke oblasti obuhvataju turbulenciju, numeričku analizu i numeričke simulacije strujanja fluida i prenošenja toplote i Računarsku dinamiku fluida (CFD) korišćenjem softvera otvorenog koda. Proveo je jednu godinu na usavršavanju na Institutu za tehnologiju u Karlsruhe, Nemačka kao gostujući istraživač. Objavio je više od 50 radova u časopisima i međunarodnim konferencijama, i recenzirao je radove za časopise Thermal Science, FME Transactions, Energy Conversion and Management. Član je Međunarodnog naučnog i programskog komiteta i organizator procesa recenzija radova za Međunarodnu konferenciju pod nazivom "Conference on Modeling Fluid Flow".



ALEKSANDAR ČOČIĆ was born in Aleksandrovac, Serbia in 1975. After finishing high school, he studied the Faculty of Mechanical Engineering at the University of Belgrade and graduated in 2000 at the Automatic Control Department. The same year, he enrolled in post-graduate studies in Applied Fluid Mechanics at the Faculty of Mechanical Engineering, University of Belgrade, and received Mag.-Sci. degree in 2007, and PhD degree in 2013. He started working at the Faculty in 2002 as a teaching and research assistant and currently holds the position of associate professor at the Chair for fluid mechanics. His fields of interest include turbulence, numerical analysis and simulations of fluid flow and heat transfer and Computational Fluid Dynamics (CFD) with open-source software. He spent one year at Karlsruhe Institute of Technology (KIT), Germany as a visiting researcher. He has published more than 50 journal articles and conference papers and has been a reviewer for Thermal Science, FME Transactions, Energy Conversion and Management and he is a member of the International Scientific and Programme Committee (ISPC) and review organizer for International Conference on Fluid Flow Technologies, entitled "Conference on Modeling Fluid Flow".



Prof. dr Đorđe Čantrak redovni profesor na Katedri za hidraulične mašine i energetske sisteme na Mašinskom fakultetu Univerziteta u Beogradu. Rukovodilac je Laboratorije za turbulenciju i velosimetriju. Bio je Fulbrajt gostujući stipendista na Univerzitetu Stenford, SAD, Centru za istraživanje turbulencije i NASA Ames Laboratoriji za mehaniku fluida. Rukovodilac je tri naučna projekta iz oblasti mehanike fluida, dok je na 22 projekta (od kojih 10 međunarodnih) bio angažovan kao istraživač. Autor je i koautor 3 knjige, 37



radova u časopisima, od kojih je 11 na SCI listi, 50 radova na međunarodnim i 6 na domaćim konferencijama. Imao je 8 predavanja po pozivu. Bio je angažovan na 95 projekata za industriju, od kojih je na 15 bio rukovodilac. Bio je recenzent u 23 časopisa od kojih je 15 na SCI listi. Ima 10 tehničkih rešenja i jedan patent. Bio je gostujući urednik specijalnog izdanja posvećenog radionici o Turbulenciji u časopisu Thermal Science 2017. godine, a trenutno je gostujući urednik u časopisu Advances in Mechanical Engineering, oba na SCI listi. Organizovao je jednu radionicu o turbulenci 2015. i tri minisimpozija 2017, 2019. i 2021. na međunarodnim kongresima Srpskog društva za mehaniku (SSM). Član je upravnog odbora SSM i član naučnog odbora Društva termičara Srbije. Bio predsedavajući sesije na 17. Evropskoj konferenciji o turbulencijama EUROMECH 2019. i sazivač specijalne sesije na 6. IAHR kongresu Evrope 2021. Bio je član brojnih programa i naučnih odbora konferencija iz oblasti mehanike, turbomašina, hidraulike, energetike i obrazovanja. Bio je u dva mandata član Saveta Mašinskog fakulteta i brojnih komisija. Nosilac je zlatne medalje Nikole Tesle za novu tehnologiju (Ventilator za održavanje ekoloških uslova u tunelima) 2009. godine, nagrade za najbolji rad iz tehničkih nauka na UB 2002. itd. Angažovan je od strane Akreditacionog tela Srbije. Predaje na 11 predmeta na osnovnim, master i doktorskim studijama. Mentor je 18 magistarskih radova, dok je još 1 u izradi i 15 diplomskih radova. Bio je mentor jedne doktorske teze i potencijalni je mentor jedne doktorske teze u izradi. Bio je član komisija za 3 doktorske teze. Prof. Čantrak je akademski koordinator za Erasmus+ program mobilnosti (KA107) za akademske godine 2020/21 i 2021/2022 u predmetnoj oblasti Električna energija i energija sa Univerzitetu Crne Gore i kontakt osoba na UB FME za CEEPUS projekat CIII-RS-1012-07-2122. Član je Komisija za polaganje stručnog ispita za energetske menadžere u oblasti komunalne i industrijske energetike na državnom nivou u Ministarstvu rudarstva i energetike Republike Srbije. Već pet godina je član tehničkog žirija na takmičenju Najbolja tehnološka inovacija u Srbiji.

***Prof. Đorđe Čantrak, PhD** is a Full Professor in Hydraulic machinery and energy systems at the University of Belgrade (UB), Faculty of Mechanical Engineering (FME), Belgrade, Serbia. He is the head of the Laboratory for turbulence and velocimetry, which is employed in the scientific and projects for industry. He was a Fulbright visiting scholar at Stanford University, USA, Center for turbulence research (Senior research fellow 2014) and NASA Ames Laboratory for fluid mechanics He is the leader of three scientific projects in the field of fluid technique, and he was an investigator on 22 projects, of which 10 are international. He is the author and co-author of 3 books, and 37 papers in journals, of which 11 are at the SCI list, 50 papers in the international and 6 in the national conferences. He had 8 invited lectures. He was engaged on 95 projects for industry, of which in 15 he was a leader. Cantrak is a reviewer in 23 journals of which are 15 on the SCI list. He has 10 technical solutions and one patent. He was a Guest editor of the special issue dedicated to the Turbulence workshop in the journal Thermal Science in 2017, and he is currently Co-Guest editor in the journal Advances in Mechanical Engineering, both on SCI list. He organized one turbulence workshop in 2015 and three minisymposia in 2017, 2019 and 2021 at the international congresses of the Serbian Society of Mechanics (SSM). He is a member of the steering committee of the SSM and a member of the scientific board of the Society of thermal engineers of Serbia. Cantrak was a session chairman at the 17th European Turbulence Conference EUROMECH in 2019 and convener of the special session at the 6th IAHR Europe Congress in 2021. He was a member of numerous programs and scientific boards of conferences in mechanics, turbomachinery, hydraulics, energy and education. He was in two mandates member of the Faculty Council and numerous commissions. He holds Nikola Tesla's gold medal for new technology (Fan for sustaining ecological conditions in tunnels) in 2009, award for the best paper in technical sciences at UB in 2002., etc. Cantrak is, also, engaged by the Accreditation body of Serbia. He lectures in 11 subjects on bachelor, master and PhD study levels. He is mentor of 18 master theses, while additional 1 is in progress, and 15 bachelor theses. He was mentor of one doctoral thesis and he is a potential mentor for one PhD thesis in progress. He was a member of 3 PhD theses committees. Regarding projects concerning education and collaboration, he is an academic coordinator for Erasmus+ mobility program (KA107) for academic years 2020/21 and 2021/2022 in the subject area Electricity and Energy with Univ. of Montenegro and a contact person at the UB FME for CEEPUS project CIII-RS-1012-07-2122. Cantrak is a member of the Commissions for*



taking the professional exam for energy manager in the field of municipal and industrial energy sectors at the state level in the Ministry for Mining and Energy Republic of Serbia. He has been member of the technical jury in the competition The best Technology Innovation in Serbia for five years.

POSEBNE SESIJE / SPECIAL SESSION

1. Ventili, zatvarači, rešetke, cevovodi / Valves, closures, grates, pipelines

Sesija pokriva sledeće teme:

The session will cover the following topics:

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| <ul style="list-style-type: none">- energetska i kavitacijska ispitivanja ventila;- konstrukcije ventila;- akustična ispitivanja ventila;- numeričke simulacije strujanja kroz ventile i rešetke;- izbor i ugradnja rešetki;- proračun i ugradnja cevovoda. | <ul style="list-style-type: none">- <i>Energy and cavitation tests of valves;</i>- <i>Valve design;</i>- <i>Acoustic tests of valves;</i>- <i>Numerical simulations of flow through valves and grates;</i>- <i>Selection and installation of gratings;</i>- <i>Calculation and installation of pipelines.</i> |
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Moderator ove sesije je v.prof. Dejan Ilić.

Moderator of this session is Dejan Ilić, assoc. prof.

Dejan B. Ilić je vanredni profesor na Mašinskom fakultetu Univerziteta u Beogradu, Katedri za hidraulične mašine i energetske sisteme. Osnovne oblasti njegovog istraživanja su: hidraulične mašine, energetske sisteme, energetska efikasnost, merenja fluida, kalibracija mernih uređaja (anemometri, merila zapreminskog protoka i uređaji za merenje pritiska). Bio je istraživač na 16 projekata, od kojih je 5 međunarodnih. Autor je i koautor 1 knjige, 5 radova u međunarodnim časopisima (SCI lista), 7 radova u domaćim časopisima, 26 radova na međunarodnim konferencijama, 3 rada na nacionalnim konferencijama i 8 tehničkih rešenja. Bio je angažovan na 95 projekata za industriju. Ilić je recenzent u 3 časopisa. Član je Srpskog društva za mehaniku. Prof. Ilić je takođe angažovan od strane Akreditacionog tela Srbije. Nosilac je „Zlatne medalje sa likom Nikole Tesle“, kao član grupe autora Udruženja pronalazača i autora tehničkih unapređenja Beograda, 2009. Predaje iz 10 predmeta na osnovnim, master i doktorskim studijama. Mentor je 10 magistarskih radova.



Dejan B. Ilić is associate professor at the University of Belgrade, Faculty of Mechanical Engineering, Hydraulic Machinery and Energy Systems Department. His main research fields are: hydraulic machinery, energy systems, energy efficiency, fluid measurements, calibration of measurement devices (anemometers, volume flow meters and pressure measurement devices). He was investigator on 16 projects, of which 5 are international. He is author and co-author of 1 book, 5 papers in international journals (SCI list), 7 papers in national journals, 26 papers on international conferences, 3 papers on national conferences and 8 technical solutions. He was engaged on 95 projects for industry. Ilić is a reviewer in 3 journals. He is a member of the Serbian Society of Mechanics. Ilić is, also, engaged by the Accreditation body of Serbia. He holds the "Gold Medal with Nikola Tesla's Face", as a member of a group of authors by the Belgrade Association of Inventors and Authors of Technical Improvements, 2009. He lectures in 10 subjects at bachelor, master and PhD study levels. He is a mentor of 10 master theses.



2. Procesni i upravljački aspekti unapređenja energetske efikasnosti industrijskih procesa / Process and control aspects of improving the energy efficiency of industrial processes

Potrošnja energije je u stalnom porastu, međutim, neobnovljivi izvori energije su ograničeni. Poslednjih 6 meseci su pokazali da je tržište energijom i energentima izuzetno nestabilno i više nije moguće dugoročno predvideti cenu električne energije, prirodnog gasa i nafte. Jedino što je izvesno jeste da više ne možemo računati na jeftinu energiju i energente. U tom smislu, energetska efikasnost je postala jedna od centralnih tema energetske politike svih razvijenih zemalja sveta. Koristeći se dostupnim visoko-efikasnim tehnologijama, moguće je ostvariti i do 20% ušteda energije, dok je dodatnih 10-15% moguće ostvariti tako što će se sprečiti rasipanje i neefikasno korišćenje primarnih izvora energije. Energija koja se „sačuva“ postaje „gorivo“ visoke vrednosti.

Ova sesija se zajedničkim naporom između mašinske i elektro struke organizuje sa ciljem da se ukaže da se jedino zajedničkom saradnjom struka mogu maksimizirati efekti unapređenja energetske efikasnosti.

Teme koje ove sesije se odnose na:

- energetska efikasnost i obnovljive izvore energije u industrijskom sektoru kao instrumenti za ublažavanje negativnih uticaja rasta cena energije i energenata;
- potencijale unapređenja energetske efikasnosti u industrijskim sistemima za proizvodnju energetskih fluida;
- primenu tipičnih strategija upravljanja pogonom sa sinhronim motorom sa stalnim magnetima u cilju postizanja njegovih optimalnih performansi;
- analizu primene energetskih filtera i digitalne obrade signala kod aktivnih ispravljača;
- upravljanje aktivnim ispravljačem kao virtuelnom sinhronom mašinom.

Moderator ove sesije je v.prof. Leposava Ristić a komoderator je v.prof. Mirjana Stamenić.

Energy consumption is constantly increasing. However, non-renewable energy sources are limited, and there is less and less of it. Moreover, the last six months have shown that the energy market is volatile, so it is no longer possible to predict the price of electricity, natural gas, and oil in the long term. The only sure thing is that we can no longer count on cheap energy. In this sense, energy efficiency has become one of the central topics of the energy policy of all developed countries. By using available high-efficiency technologies, it is possible to achieve up to 20% energy savings, while an additional 10-15% can be achieved by preventing waste and inefficient use of primary energy sources. The saved energy becomes a high-value source. This session is organized by a joint effort between the mechanical and electrical professions to point out that the effects of improving energy efficiency can only be maximized through the cooperation of the disciplines.

The topics in this session are related but not limited to:

- *Energy efficiency and renewable energy sources in the industrial sector as instruments for mitigating the negative effects of rising energy and energy prices;*
- *Potentials for improving energy efficiency in industrial utility systems;*
- *Application of typical permanent magnet synchronous motor drive control to achieve its optimal performance;*
- *Analysis of the power filters implementation and digital signal processing in active rectifiers;*
- *Management of the active rectifier as a virtual synchronous machine.*

The Moderator of this session is Leposava Ristić, associate professor, and the co-moderator is Mirjana Stamenić, associate professor.



Dr Leposava Ristić, vanredni profesor na Katedri za energetske pretvarače i pogone Elektrotehničkog fakulteta Univerziteta u Beogradu diplomirala je, magistrirala i doktorirala na ovom fakultetu. Njeni istraživački interesi su: energetska efikasna primena i regulacija elektromotornih pogona; višemotorni i višefazni elektromotorni pogoni i energetska pretvarači u industriji i obnovljivim izvorima energije. Član je Međunarodne organizacije IEEE i Industrial Electronics Society, član Upravnog odbora Društva za energetska elektroniku u Srbiji i član radne grupe KS N009 / RG- 2, „Električna oprema i sistemi na železnici” Instituta za standardizaciju Srbije. Bila je član Programskih odbora nekoliko međunarodnih konferencija, organizator više specijalnih sekcija na ovim konferencijama i jedna je od pet gostujućih urednika specijalnog broja časopisa „Energies” (Open Access Journal by MDPI, ISSN: 1996-1073) pod naslovom Efficiency and Performance



Optimization of State-Of-The-Art ”Multi-Phase, -Level, -Cell, -Port, -Motor” Electrical Drives and Renewable Energy Systems. Angažovana je kao predavač na više od 10 predmeta na sva tri nivoa studija, autor je više od 80 konferencijskih radova, osam radova u časopisima na JCR listi, osam radova u časopisima koji nisu na JCR listi, jednog poglavlja u knjizi na engleskom, jednog poglavlja u knjizi na srpskom, kao i četiri udžbenika na srpskom jeziku. Dr Leposava Ristić je bila mentor mnogobrojnih master i diplomskih radova, recenzent naučnih radova za mnoge ugledne časopise, kao i za konferencije. Učestvovala je u više od 15 nacionalnih projekata koje je finansiralo Ministarstvo prosvete, nauke i tehnološkog razvoja Republike Srbije, kao i u mnogim komercijalnim projektima sa privredom (<https://www.etf.bg.ac.rs/en/faculty/staff/leposava-ristic-2504>).

Dr Leposava Ristić, associate professor at the Department of Power Converters and Drives, School of Electrical Engineering, University of Belgrade, has achieved BSc, MSc and PhD at the same faculty. Her research interests are energy-efficient application and control of electrical drives, multi-motor and multi-phase electrical drives and power converters in industry and renewable energy sources. She is a member of the IEEE and Industrial Electronics Society, a member of the Management Board of the Society for Power Electronics in Serbia and a member of the working group KS N009 / RG-2, „Electrical equipment and systems on railways” of the Institute for Standardization of Serbia. She has been a member of the Program Committees of several international conferences, the organizer of several special sections at these conferences and is one of the five guest editors of the special issue of the journal „Energies” (Open Access Journal by MDPI, ISSN: 1996-1073) entitled „Efficiency and Performance Optimization of State -Of-The-Art „Multi-Phase, -Level, -Cell, -Port, -Motor” Electrical Drives and Renewable Energy Systems”. She is engaged as a lecturer in more than 10 subjects at all three levels of study, she is the author of more than 80 conference papers, eight papers in journals on the JCR list, eight papers in journals not on the JCR list, one chapter in a book in English, one chapter in a book in Serbian, as well as four books in Serbian. Dr Leposava Ristić has been the mentor of numerous masters and graduate theses and a reviewer of scientific papers for many reputable journals, as well as for conferences. She participated in more than 15 national projects financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia, as well as in many commercial projects with the Serbian industry (<https://www.etf.bg.ac.rs/en/faculty/staff/leposava-ristic-2504>).



Program rada konferencije
sa vremenskim rasporedom

Conference Programme
with the time table

- 9:00-10:00 REGISTRACIJA UČESNIKA / REGISTRATION OF THE PARTICIPANTS
- 10:00-10:30 SVEČANO OTVARANJE / OPENING CEREMONY
POZDRAVNI GOVORI / WELCOME GREETINGS:
Prof. dr Vladimir POPOVIĆ dekan Mašinskog fakulteta /
Dean of the Faculty of Mechanical Engineering
Prof. dr Milan RADOVANOVIĆ predsednik Društva termičara Srbije /
President of the Society of Thermal Engineers of Serbia
Prof. dr Goran JANKES predsednik Organizacionog odbora IEEP 2022 /
President of the Organizing Committee of IEEP 2022
Privredna komora Srbije / Serbian Chambers of Commerce
ZVANIČNO OTVARANJE / OFFICIAL OPENING
- 10:30-12:00 UVODNA IZLAGANJA (20 minuta) / INTRODUCTORY LECTURES (20 minutes per lecture)
- SOLVING THE NET-ZERO EMISSION EQUATION FOR INDUSTRY**
Miodrag M. MESAROVIĆ, Secretary General of the Serbian WEC Member Committee, Senior Advisor in Energoprojekt Entel Consulting Engineers Co. in Belgrade and president of the scientific committee of the Society of Thermal Engineers of Serbia
- SUSTAINABLE AND LOW-CARBON ENERGY SYSTEM POLICIES IN DEVELOPING COUNTRIES: A CASE STUDY OF MACEDONIA**
Gligor KANEVČE, Macedonian Academy of Science and Art / Makedonska akademija nauka i umetnosti, North Macedonia
- USE OF NATURAL GAS IN SERBIA**
Vojislav VULETIĆ, Serbian Gas Society / Udruženje za gas Srbije
- KLJUČNI REZULTATI I PROJEKCIJE RANIH KONSULTACIJA ZA NACRT NEKP-A / KEY FINDINGS AND PROJECTIONS FOR THE DRAFT NECP EARLY CONSULTATION**
Nenad JOVANOVIĆ, Senior Energy Consultant, LDK Consultants / Viši savetnik za energetiku, LDK Consultants
- 12:00-12:30 KAFE PAUZA / COFFEE BREAK
- 12:30-13:00 PREZENTACIJA SPONZORA / PRESENTATION OF SPONSOR – JUŽNA BAČKA
- 13:00-14:00 *Energetska politika, snabdevanje energijom, zakonodavstvo i podsticajni elementi / Energy policy, energy supply, legislature and incentives*
UVODNO IZLAGANJE (20 min. sa diskusijom) / INTRODUCTORY LECTURES (20 min. per lecture, with discussion)
PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion)
- ONE SCENARIO FOR SERBIA'S DECARBONISATION IN THE FIELD OF ENERGY PRODUCTION**
Borivoj STEPANOV, Faculty of Technical Sciences, Novi Sad / Univerzitet u Novom Sadu, Fakultet Tehničkih nauka, Serbia
- ASSURED CAPACITY, TOTAL ASSURED CAPACITY AND DISPATCHABILITY OF SERBIAN POWER SYSTEM AND POWER PLANTS**
Vojin GRKOVIĆ, Đorđe ČANTRAK, Miroslav BENIŠEK, Dragan PETROVIĆ, Đorđije DODER
- ENERGY-TIME FRAME PROCEDURE FOR COMPETITIVENESS ASSESSMENT OF ENERGY TECHNOLOGIES**
Vojin GRKOVIĆ, Miroslav KLJAJIĆ, Vladimir ŽIVKOVIĆ
- SELECTED SUSTAINABLE ENERGY LESSONS FROM FUTURE**
Borivoj STEPANOV, Željko VLAOVIĆ, Aleksandar ANĐELKOVIĆ, Vladimir RAJS, Zoran ČEPIĆ, Mladen TOMIĆ
- 14:00-15:30 RUČAK / LUNCH
- 15:30-17:00 *Energetska efikasnost i energetski menadžment u industriji / Energy efficiency and energy management within industry*
UVODNO IZLAGANJE (20 min. sa diskusijom) / INTRODUCTORY LECTURES (20 min. per lecture, with discussion)
PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion)



ENERGETSKA EFIKASNOST KAO KLJUČNI POKRETAČ ZA ODRŽIVI RAZVOJ MALIH I SREDNJIH PREDUZEĆA U INDUSTRIJSKOM SEKTORU SRBIJE / ENERGY EFFICIENCY AS A KEY DRIVER FOR SUSTAINABLE GROWTH IN SMEs IN INDUSTRIAL SECTOR IN SERBIA

Mirjana STAMENIĆ, University of Belgrade, Faculty of Mechanical Engineering / Univerzitet u Beogradu, Mašinski fakultet, Beograd, *Serbia*

INDUSTRIJSKE TOPLOTNE PUMPE – EKOLOŠKI I ENERGETSKI EFIKASAN OBNOVLJIVI IZVOR TOPLOTNE ENERGIJE

Zoran STAJIĆ, Emerson Commercial & Residential Solutions – Vilter

PRIMENA TOPLOTNIH PUMPI ZA KORIŠĆENJE OTPADNE TOPLOTE U INDUSTRIJI / APPLICATION OF HEAT PUMPS FOR UTILIZATION OF WASTE HEAT IN INDUSTRY

Nikola TANASIĆ, Goran JANKES, Mirjana STAMENIĆ, Vuk ADŽIĆ

RAZMATRANJE MOGUĆNOSTI KORIŠĆENJA OTPADNE TOPLOTE U RAFINERIJAMA / POSSIBILITY OF USING WASTE HEAT IN OIL REFINERIES

Stojan SIMIĆ, Krsto BATINIĆ, Davor MILIĆ, Goran ORAŠANIN, Srđan VASKOVIĆ, Jovana BLAGOJEVIĆ

UPOREDNA ANALIZA SUŠENJA DRVETA / COMPARATIVE ANALYSIS OF WOOD DRYING

Vuk MAROVIĆ, Damir ĐAKOVIĆ, Miroslav KLJAJIĆ

EKSPERIMENTALNA OPTIMIZACIJA ATMOSFERSKIH GORIONIKA MALE SNAGE / EXPERIMENTAL OPTIMIZATION OF LOW POWER ATMOSPHERIC BURNER

Aleksandar MILIVOJEVIĆ, Miroljub ADŽIĆ, Vuk ADŽIĆ, Mirjana STAMENIĆ

ANALYSIS OF THE SITUATION AND POSSIBILITIES OF INCREASING ENERGY EFFICIENCY

Mlađana ASIMI

HEAT RECOVERY OF INDUSTRIAL AIR SCREW COMPRESSOR

Adem BUREKOVIĆ, Almir MUJIĆ, Adnan MEŠINOVIĆ, Mona NEMER, Rejhana ĐAKOVAC, Sumeja LEPIĆ, Berina Delalić-Gurda, Nijaz Delalić, Džana KADRIĆ, Edin KADRIĆ

17:00-17:30 KAFE PAUZA / COFFEE BREAK

17:30-18:30 *Posebna sesija procesni i upravljački aspekti unapređenja energetske efikasnosti industrijskih procesa / Process and control aspects of improving the energy efficiency of industrial processes*

PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion)

UPRAVLJANJE AKTIVNIM ISPRAVLJAČEM KAO VIRTUELNOM SINHRONOM MAŠINOM

Jovana GLUŠČEVIĆ, Mihailo TANASIĆ, Lepasava RISTIĆ, Milan BEBIĆ

ANALIZA PRIMENE ENERGETSKIH FILTERA I DIGITALNE OBRADNE SIGNALA KOD AKTIVNOG ISPRAVLJAČA

Nemanja MILOŠEVIĆ, Lepasava RISTIĆ, JELENA ČERTIĆ

PRIMENA TIPIČNIH STRATEGIJA UPRAVLJANJA POGONOM SA SINHRONIM MOTOROM SA STALNIM MAGNETIMA U CILJU POSTIZANJA OPTIMALNIH PERFORMANSI

Uroš MILOŠEVIĆ, Lepasava RISTIĆ, Mladen TERZIĆ

ENERGETSKI PREGLED I MERE ZA POVEĆANJE ENERGETSKE EFIKASNOSTI INDUSTRIJSKIH POSTROJENJA / ENERGY AUDIT IN SELECTED INDUSTRIAL COMPANY AND PROPOSED MEASURES FOR ENERGY EFFICIENCY IMPROVEMENTS

Tomislav STEPANOVIĆ, Nikola KIJANOVIĆ, Lepasava RISTIĆ, Mirjana STAMENIĆ, Saša MARKOVIĆ

19:00 **SVEČANA VEČERA / DINNER CEREMONY**

(RESTAURANT AT THE 5th FLOOR OF THE FACULTY OF MECHANICAL ENGINEERING)



- 09:00-10:00 **Posebna sesija Ventili, zatvarači, rešetke, cevovodi /
Valves, closures, grates, pipelines**
UVODNO IZLAGANJE (20 min. sa diskusijom) / INTRODUCTORY LECTURES (20 min. per lecture, with discussion)
PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion)
- THE NATIONAL STANDARD FOR VELOCIMETRY AND POSSIBILITIES FOR IT IN SERBIA**
Đorđe ČANTRAK, University of Belgrade, Faculty of Mechanical Engineering / Univerzitet u Beogradu, Mašinski fakultet, Beograd, *Serbia*
EXPERIMENTAL AND NUMERICAL INVESTIGATION OF BALL VALVE CHARACTERISTICS
Milan RAKOVIĆ, Lazar LEČIĆ, Aleksandar ČOČIĆ, Novica JANKOVIĆ
CONTROL VALVES TRIM DESIGN, RETROFITTING AND TESTING
Đorđe ČANTRAK, Ljubomir SAVIĆ, Novica JANKOVIĆ, Dejan ILIĆ
NEINVAZIVNA SANACIJA OŠTEĆENIH CEVOVODA U VODOVODNIM SISTEMIMA
Aleksandar STOJANOVIĆ
ODVODNJAVANJE MULJA IZ KANALIZACIONE OTPADNE VODE POMOĆU VIJČANE PRESE
Nemanja RADIĆ, Nebojša RADIĆ
- 10:00-10:30 **PREZENTACIJA SPONZORA / PRESENTATION OF SPONSOR – SIEMENS Energy d.o.o., Beograd:
IMPLEMENTACIJA SN FREKVENTNOG REGULATORA U SDG OBRENOVAC**
- 10:30-11:00 KAFE PAUZA / COFFEE BREAK
- 11:00-13:00 **Energetska efikasnost i energetska menadžment u zgradarstvu i daljinskom grejanju /
Energy efficiency and energy management within building and in district heating system**
UVODNO IZLAGANJE (20 min. sa diskusijom) / INTRODUCTORY LECTURES (20 min. per lecture, with discussion):
PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion):
- FUTURE ENERGY PATHWAYS FOR A UNIVERSITY CAMPUS CONSIDERING POSSIBILITIES FOR ENERGY EFFICIENCY IMPROVEMENTS**
Nataša NORD, Norwegian University of Science and Technology, Department of Energy and Process Engineering, Faculty of Engineering, *Norway*
THERMAL ENERGY STORAGE FOR DATA CENTRE WASTE HEAT RECOVERY IN DISTRICT HEATING SYSTEMS
Haoran LI, Juan HOU, Nataša NORD
OPERATIONAL CHARACTERISTICS OF THE CHP PLANT IN THE DISTRICT HEATING SYSTEM OF BELGRADE
Vladimir TANASIĆ, Nikola TANASIĆ, Mirjana STAMENIĆ
PRIPREMNE AKTIVNOSTI ZA PROGRAM „ENERGETSKA EFIKASNOST U ZGRADAMA CENTRALNE VLASTI“
Maja MATEJIĆ, Dragan UROŠEVIĆ
DETEKCIJA TOPLOVODNE INFRASTRUKTURE TERMALNOM KAMEROM MONTIRANE NA BESPILOTNU LETELICU I TEHNOLOGIJOM SKENIRANJA GEORADAROM
Aleksandar RISTIĆ, Željko BUGARINOVIĆ, Milan VRTUNSKI, Aleksandra RADULOVIĆ, Milka ŠARKANOVIĆ BUGARINOVIĆ
EXPERIMENTAL ANALYSIS OF THE JUSTIFICATION OF USING A SPACE HEATING SYSTEM USING A PELTIER THERMOELECTRIC GENERATOR
Milan PUPČEVIĆ, Petar GVERO, Čedomir ZELJKOVIĆ, Milovan KOTUR, Predrag MRŠIĆ
INTERAKCIJA VAZDUHA I VODE TOKOM PUNJENJA CIJEVNOG SISTEMA POD PRITISKOM
Vuko KOVIJANIĆ, Uroš KARADŽIĆ
- 13:00-13:30 **PREZENTACIJA SPONZORA / PRESENTATION OF SPONSOR**
- 13:30-15:00 RUČAK / LUNCH
- 15:00-16:30 **Zaštita životne sredine i održivi razvoj / Environmental protection and sustainable development**
UVODNO IZLAGANJE (20 min. sa diskusijom) / INTRODUCTORY LECTURES (20 min. per lecture, with discussion):
PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion):
- RASPODELA ZAGAĐENJA IZ KOTLOVA NA DRVNU BIOMASU- REZULTATI MODELIRANJA**
Aleksandar JOVOVIĆ, Dušan TODOROVIĆ, University of Belgrade, Faculty of Mechanical Engineering / Univerzitet u Beogradu, Mašinski fakultet, Beograd, *Serbia*
HYDROGEN PRODUCTION BY THERMAL CRACKING OF NATURAL GAS – TEST FACILITY
Dragan STEVANOVIĆ, Judith SCHIMMEL, Tarek PHILIPPI



A THERMODYNAMIC ANALYSIS OF THE PROCESS OF HYDROGEN PRODUCTION BY NATURAL GAS DECOMPOSITION IN THE LOW-TEMPERATURE THERMAL PLASMA REACTOR

Nada MILUTINOVIĆ, Aleksandar ERIĆ, Dejan CVETINOVIĆ, Nikola ŽIVKOVIĆ, Jovana ANĐELKOVIĆ

SISTEM ZA PRAĆENJE KONCENTRACIJE PM_{2.5} ČESTICA BAZIRAN NA ARDUINO PLATFORMI I GIS

Milan VRTUNSKI, Aleksandr RISTIĆ, Dušan JOVANOVIĆ, Željko BUGARINOVIĆ

NUMERICAL SIMULATION OF WET FLUE GAS DESULPHURIZATION IN SPRAY ABSORBER

Milan PETROVIĆ, Vladimir STEVANOVIĆ, Sanja MILIVOJEVIĆ, Milica ILIĆ

CO₂ EMISSION REDUCTION BY USING CORN AS A RAW MATERIAL IN REFINED ALCOHOL PRODUCTION

Saša MARKOVIĆ, Branislav GAJIĆ, Srbislav GENIĆ

16:30-16:45 KAFE PAUZA / COFFEE BREAK

16:45-18:15 *Paralelna sesija - Energetska efikasnost energetski procesi i tehnologije (SALA 512) / Parallel Session - Energy efficiency and energy process and technologies (ROOM 512)*

PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion):

THIRD LIFE OF COAL POWER PLANTS ANALYSIS

Željko VLAOVIĆ, Borivoj STEPANOV, Aleksandar ANĐELKOVIĆ, Vladimir RAJS, Zoran ČEPIĆ, Marko JUROŠEVIĆ

BEHAVIOR ANALYSIS OF PRODUCTION SYSTEMS BASED ON THE ENERGY FLOW THEORY OF NONLINEAR DYNAMIC SYSTEMS

Milovan MEDOJEVIĆ

EXPERIMENTAL RESEARCH OF ENERGY CHARACTERISTICS OF VAWT IN A WIND TUNNEL

Časlav MITROVIĆ, Goran VOROTOVIĆ, Jela BURAZER, Aleksandar BENGIN, Nebojša PETROVIĆ, Miloš JANUZOVIĆ

NOISE ANALYSIS OF 3-BLADED H-DARRIEUS TURBINE AT DIFFERENT ANGLES OF ATTACK

Marta TRNINIĆ, Vuk ADŽIĆ, Mirko DINULOVIĆ, Miloš JANUZOVIĆ, Jela BURAZER

ISPITIVANJE ZASNOVANO NA RIZIKU: STANDARDI I PERSPEKTIVE

Vladimir PILIĆ

THERMODYNAMIC EQUILIBRIUM MODELING OF THE THERMAL PLASMA GASIFICATION PROCESS USING ASPEN PLUS

Jovana ANĐELKOVIĆ, Dejan CVETINOVIĆ, Aleksandar ERIĆ, Nada MILUTINOVIĆ, Mirjana KIJEVČANIN

16:45-18:15 *Paralelna sesija - Korišćenje obnovljivih izvora energije (SALA 211) / Parallel Session - The use of renewable energy sources (ROOM 211)*

UVODNO IZLAGANJE (20 min. sa diskusijom) / INTRODUCTORY LECTURES (20 min. per lecture, with discussion):

PREZENTACIJE RADOVA (10 min. sa diskusijom) / PAPER PRESENTATIONS (10 min. per lecture, with discussion):

SOLAR UPDRAFT TOWER TECHNOLOGY AS CLEAN AND RENEWABLE ENERGY SOURCE

Aleksandar ČOČIĆ, University of Belgrade, Faculty of Mechanical Engineering / Univerzitet u Beogradu, Mašinski fakultet, Beograd, Serbia

FORECASTING SOLAR PHOTOVOLTAIC ENERGY PRODUCTION USING ARTIFICIAL NEURAL NETWORK

Budimirka MARINOVIĆ, Aleksandra ILJAČIĆ, Milica KAŠIKOVIĆ

REZULTATI PRIJEMNIH ISPITIVANJA KOTLOVA NA DRVNU BIOMASU U RS U PERIODU 2020-2022.

Marko OBRADOVIĆ, Dejan RADIĆ, Nikola KARLIČIĆ, Aleksandar JOVOVIĆ

MODELING THE OPERATING PARAMETERS OF THE COOLING TOWER USING THE METHOD RESPONSE SURFACES

Mona NEMER, Jusri DIZDAREVIĆ, Sajma GLEDO-MERDAN, Rejhana ĐAKOVAC, Sumeja LEPIĆ, Adem BUREKOVIĆ,

Almir MUJIĆ, Adnan MEŠINOVIĆ, Berina DELALIĆ-GURDA, Nijaz DELALIĆ, Džana KADRIĆ, Edin KADRIĆ

UPOREDNA ANALIZA VARIJANTNIH REŠENJA PELTON TURBINE PRI REVITALIZACIJI MALOG HIDROAGREGATA DRUŠTVENOG TROŠENJA

Jelica PEŠIĆ, Ivan BOŽIĆ, Bogdan RISTIĆ

DEFINISANJE I PRORAČUN KRITRIJUMA ZA OPTIMIZACIJU ENERGETSKOG MIKSA UZ PRIMJENU MCDM METODA ZA PROCES NJEGOVE OPTIMIZACIJE

MRKIĆ-BOSANČIĆ, S. VASKOVIĆ, Petar GVERO

PRIMERI DOBRE PRAKSE - KORIŠĆENJE BIOMASE U REPUBLICI SRPSKOJ

Petar GVERO

PRIMERI DOBRE PRAKSE - MALE SOLARNE ELEKTRANE

Miloš KOSTIĆ

18:15-18:45

ZATVARANJE KONFERENCIJE – ZAKLJUČCI / CLOSING CEREMONY – CONCLUSIONS (ROOM 211)



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