



THE ACADEMY
OF APPLIED STUDIES
POLYTECHNIC



International Scientific
and Professional Conference

Politehnika
2025

CONFERENCE PROCEEDINGS

28th November 2025



International Scientific
and Professional Conference

**Politehnika
2025**

Conference Proceedings

28th November 2025
Sava Centar, 9 Milentija Popovića Street, Belgrade, Serbia

Publisher:

The Academy of Applied Studies Polytechnic
Katarine Ambrozić 3, Belgrade
www.politehnika.edu.rs

For the Publisher:

Marina Stamenović, PhD, Professor of Applied Studies

Thematic section editors:

Ivana Matić Bujagić, PhD
Svetozar Sofijanić, PhD
Aleksandra Nastasić, PhD
Nenad Đorđević, PhD
Željko Zdravković, PhD Arts
Biljana Ranković Plazinić, PhD
Marko Jauković, PhD
Andrijana Đurđević, PhD
Tatjana Sekulić, PhD
Nikola Slavković, PhD

Technical preparation and cover design:

The Academy of Applied Studies Polytechnic, Organizing Committee

Design of the Conference logo:

Dušan Borović

Print:

The Academy of Applied Studies Polytechnic, Katarine Ambrozić 3, Belgrade

Year of Publishing:

2025

The circulation:

400



Conference Scopes

Environment and
Sustainable Development

Occupational Health
and Safety and Fire Safety

Smart Management Systems

Graphic Engineering

Design

Traffic Engineering

Biotechnology, Pharmacy
and Healthcare

Mechanical Engineering

Ecotourism and
Rural Development

Mechatronics

International Scientific Committee

assoc. prof. Filip Kokalj, PhD

Faculty of Mechanical Engineering, Maribor, Slovenia, president

prof. Luis Loures, *president of Portalegre Polytechnic University, Portalegre, Portugal*

prof. Andrea Matta, PhD, *Politecnico di Milano, Milano, Italy*

prof. Alessandro Gasparetto, PhD, *Polytechnic Department of Engineering and Architecture, Udine, Italy*

prof. Michalis Koniordos, PhD, *University of West Attica, Athens, Greece*

prof. Nihan Kahraman, PhD, *Yildiz Technical University Istanbul, Turkey*

prof. Anka Trajkovska Petkoska, PhD, *Faculty of Technology and Technical Sciences-Veles, North Macedonia*

prof. Yury Kuznetsov, PhD, *Orel State Agrarian University, Orel, Russia*

prof. Mohhamed-Salah Aggoune, PhD, *University of Batna 2, Algeria*

prof. Ilija Nasov, PhD, *Faculty of Technology and Technical Sciences-Veles, North Macedonia*

prof. Tihomir Latinović, PhD, *Faculty of Informational Technologies, Vitez University, Travnik, Bosnia and Herzegovina*

prof. Driss Nehari, PhD, *Ain Timouchen University, Algeria*

prof. Elizabeta Miskoska-Milevska, PhD, *Faculty of Agricultural Sciences and Food, Skopje, North Macedonia*

prof. Mirzo Selimić, PhD, *University College "CEPS – Centre for Business Studies", Kiseljak, Bosnia and Herzegovina*

assoc. prof. Srećko Stopić, PhD, *Aachen University, Germany*

assoc. prof. Anja Bubik, PhD, *Faculty of Environmental Protection, Velenje, Slovenia*

assoc. prof. Plamen Zahariev, PhD, *University of Ruse "Angel Kanchev", Ruse, Bulgaria*

Muharrem Hilmi Aksoy, PhD, *Konya Technical University, Konya, Turkey*

Darko Ljubić, PhD, *McMaster University, Hamilton, Canada*

Gregor Rak, MSc, *Vocational College of Traffic and Transport, Maribor, Slovenia*

Helena Mladenović Jerman, *director, School Center Ljubljana, Higher Vocational College, Slovenia*

prof. Mirjana Kijevčanin, PhD, *dean of Faculty of Technology and Metallurgy, Belgrade, Serbia*

prof. Srđan Glišović, PhD, *dean of Faculty of Occupational Safety, Niš, Serbia*

prof. Aleksandar Petrović, PhD, *Faculty of Mechanical Engineering, Belgrade, Serbia*

prof. Petar Uskoković, PhD, *Faculty of Technology and Metallurgy, Belgrade, Serbia*

prof. Aleksandar Jovović, PhD, *Faculty of Mechanical Engineering, Belgrade, Serbia*

assoc. prof. Biserka Vukomanović Đurđević, PhD, *Military Medical Academy, Belgrade, Serbia*

assoc. prof. Gordana Nikolić, PhD, *dean of PAR University of Applied Sciences, Rijeka, Croatia*

Marina Stamenović, PhD, *president of The Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Program Committee

prof. Slaviša Putić, PhD

Faculty of Technology and Metallurgy, Belgrade, Serbia, president

prof. Vojkan Lučanin, PhD, *Faculty of Mechanical Engineering, Belgrade, Serbia*

prof. Aleksandar Marinković, PhD, *Faculty of Technology and Metallurgy, Belgrade, Serbia*

prof. Momir Prašćević, PhD, *Faculty of Occupational Safety, Niš, Serbia*

prof. Jelena Ivanović Vojvodić, PhD, *Faculty of Contemporary Arts, Belgrade, Serbia*

prof. Katarina Lončarević, PhD, *Faculty of Philology and Arts, Kragujevac, Serbia*

prof. Petar Spalević, PhD, *Faculty of Technical Sciences, Kosovska Mitrovica, Serbia*

assoc. prof. Zoran Štirbanović, PhD, *Technical Faculty, Bor, Serbia*

assoc. prof. Vladimir Pavićević, PhD, *Faculty of Technology and Metallurgy, Belgrade, Serbia*

assoc. prof. Katarina Trivunac, PhD, *Faculty of Technology and Metallurgy, Belgrade, Serbia*

doc. Maja Đolić, PhD, *Faculty of Technology and Metallurgy, Belgrade, Serbia*

Danica Stojiljković, PhD, *University of Belgrade – Institute for Multidisciplinary Research, Belgrade, Serbia*

Aleksandra Patarić, PhD, *Institute for Chemistry, Technology and Metallurgy, Belgrade, Serbia*

Ivana Jovičić, PhD, *Institute of Pesticides and Environmental Protection, Belgrade, Serbia*

Predrag Maksić, PhD, *Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Dominik Brkić, PhD, *Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Aleksandra Nastasić, PhD, *Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Tatjana Marinković, PhD, *Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Predrag Drobnjak, PhD, *Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Goran Zajić, PhD, *Academy of Applied Studies Polytechnic, Belgrade, Serbia*

Organizing Committee

Ana Popović, PhD, president

Nebojša Ćurčić, MSc, deputy president

Ana Slavković, PhD

Dragana Gardašević, PhD

Dragana Kuprešanin, PhD Arts

Aleksandra Božić, PhD

Markola Saulić, PhD

Tatjana Sekulić, PhD

Novak Milošević, MSc

Aleksandra Janićijević, MSc

Ana Cvijanović, MA

Natalija Gaković, MA

Aleksandra Božović, MSc

Milan Marković, MSc

Jelena Pavlović, MSc

Dragica Nikodinović, PhD Arts

Melita Maleski, MSc

Miloš Kocić, MA

Boško Medaković, MSc

Reviewers

Svetozar Sofijanić, PhD, Marta Trninić, PhD, Radenko Rajić, PhD, Nikola Tanasić, PhD, Snežana Knežević, PhD, Barbara Vidaković Ristić, PhD, Nebojša Ćurčić, MSc, Novak Milošević, MSc, Filip Kokalj, PhD, Ana Popović, PhD, Aleksandra Božić, PhD, Ivana Matić Bujagić, PhD, Dominik Brkić, PhD, Olivera Jovanović, PhD, Vesna Alivojvodić, PhD, Darko Ljubić, PhD, Aleksandra Janićijević, PhD, Tatjana Sekulić, PhD, Marko Pavlović, PhD, Vladanka Stupar, PhD, Marko Jauković, PhD, Tatjana Marinković, PhD, Michallis Koniordos, PhD, Plamen Zahariev, PhD, Anka Trajkovska Petkoska, PhD, Ilija Nasov, PhD, Aleksandra Nastasić, PhD, Dragana Gardašević, PhD, Koviljka Banjević, PhD, Saša (Mirko) Marković, PhD, Zorica Baroš, PhD, Ana Slavković, PhD, Bosiljka Srebro, PhD, Aleksandra Pavlović, PhD, Brankica Pažun, PhD, Nebojša Andrijević, PhD, Jasmina Đurašković, PhD, Nikola Slavković, PhD, Dragan Kreculj, PhD, Željko Zdravković, PhD, Dejan Vračarević, PhD, Dragica Nikodinović, PhD, Goran Zajić, PhD, Maja Milinić Bodanović, PhD, Oliver Tomić, PhD, Natalija Simeonović, PhD, Anamarija Vartabedijan, PhD, Ivana Desnica, PhD, Dušanka Komnenić, PhD, Jelena Zdravković, MA, Natalija Gaković, MA, Ana Cvijanović, PhD, Ivan Erkić, MA, Milan Krstić, MA, Dejan Vukadinović, MA, Nikola Tanasić, PhD, Đorđe Dihovični, PhD, Saša (Milan) Marković, PhD, Bogdan Marković, PhD, Đorđe Đurđević, PhD, Andrijana Đurđević, PhD, Nataša Soldat, PhD, Obrad Aničić, PhD, Dragan Kreculj, PhD, Goran Nestorović, PhD, Milanka Plavšić, MA, Biljana Ranković Plazinić, PhD, Željko Ranković, PhD, Dragana Velimirović, PhD, Nada Ratković Kovačević, PhD, Dejan Jovanov, PhD

Foreword

The International Scientific and Professional Conference POLITEHNIKA 2025 represents the eighth edition of the POLITEHNIKA scientific and professional events, occurring biannually since its inaugural event in 2011. POLITEHNIKA 2025 upholds a distinguished tradition and commitment to integrating higher education and practical application across a diverse spectrum of disciplines represented by defined thematic scopes.

Organized with the patronage of the Ministry of Education of the Republic of Serbia, the Ministry of Science, Technological Development and Innovation of the Republic of Serbia, the Directorate for Occupational Safety and Health, the Office for Dual Education and National Qualifications Framework, the Chamber of Commerce of Belgrade, the Institute for Standardization of Serbia, Serbian Automotive Cluster - AC Serbia, Center for the Promotion of Science, Engineering Academy of Serbia and the Development Agency of Serbia, POLITEHNIKA 2025 stands as a collaborative platform at the intersection of academia, governmental institutions and industry.

Proudly holding its international status, the Conference POLITEHNIKA 2025 encompasses 10 thematic domains: Environment and Sustainable Development, Occupational Safety and Health and Fire Safety, Smart Management Systems, Graphic Engineering, Design, Traffic Engineering, Biotechnology, Pharmacy and Healthcare, Mechanical Engineering, Ecotourism and Rural development, and Mechatronics. By engaging experts, emerging professionals, and practitioners from these domains, the conference unifies fields of study programs of the Academy of Applied Studies Polytechnic. The thematic scopes, coupled with the structure of the compiled papers in this Proceedings, exhibit a rich diversity and multidisciplinary approach, fundamentally contributing to a holistic examination and resolution of societal and scientific challenges.

Comprising over 200 peer-reviewed contributions, the Proceedings represent a substantial intellectual asset, aligning with the conference's overarching objective of fostering the exchange of knowledge, research findings, and professional experiences among experts from industry, research institutions, and higher education establishments.

The Proceedings of the International Scientific and Professional Conference POLITEHNIKA 2025 serve as a comprehensive snapshot of the current landscape within the thematic realms of the conference, offering both insights and directives for ongoing scientific and professional development. Moreover, it offers concrete solutions to practical challenges grounded in contemporary trends and pertinent insights.

The Academy of Applied Studies Polytechnic extends its sincere appreciation to all conference supporters whose financial contributions played a pivotal role in its successful realization. Special acknowledgment is reserved for the authors of the papers, whose diligence and eagerness to present their work to a wider audience, alongside the reviewers and members of the International Scientific Committee, Program Committee and Organizational Committee, have collectively contributed to the triumph of the International Scientific and Professional Conference POLITEHNIKA 2025.

Belgrade, November 2025
EDITORS



TABLE OF CONTENTS

SCOPE 1. ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Srećko Stopić, Zixi Gao, Hanwen Chung, Bernd Friedrich, Mulbah Forkpayea, Duško Kostić, Nenad Nikolić, Vladimir Damjanović, Dragana Životić <i>The importance of using hydrometallurgical treatment of different raw materials at high pressures for environmental protection and sustainable development</i>	25
Dorđe Ogrizović, Milica Delić, Maja Đolić, Ivana Matić Bujagić <i>Recent advances in removal of emerging contaminants from wastewaters</i>	31
Ljiljana Tolić Stojadinović, Radmila Novaković, Dušan Kekić, Ina Gajić, Svetlana Grujić <i>Determination of selected antibiotics in hospital and urban wastewater using liquid chromatography-tandem mass spectrometry</i>	36
Natalija Nedić, Tamara Tadić, Sandra Bulatović, Bojana Marković, Aleksandra Nastasović <i>Optimization of orange G sorption using GMA-based polymer through response surface methodology and Box-Behnken design</i>	42
Natalija Nedić, Tamara Tadić, Sandra Bulatović, Aleksandra Nastasović, Bojana Marković <i>Efficient removal of aniline from aqueous solution using a hydroxyl methacrylate-based sorbent</i>	47
Jelena Vesković, Milica Lučić, Andrijana Miletić, Marija Vesković, Antonije Onjia <i>Identifying groundwater heavy metal(loid) pollution sources in the Požarevac area using principal component analysis</i>	52
Nataša Palić, Marina Maletić, Ana Kalijadis, Anita Lazić, Katarina Trivunac, Marija Vukčević <i>Comparative analysis of chemically and thermally modified potato starch for the adsorption of brilliant green dye</i>	57
Tijana Radojičić, Nataša Palić, Marina Maletić, Nataša Mladenović Nikolić, Daniela Popović, Marija Vukčević, Katarina Trivunac <i>Alkali-activated material: A sustainable approach for adsorbing heavy metals and rare earth elements from water</i>	63
Miodrag Stanisavljević, Ana Stojković, Ivan Krstić <i>Comparative analysis of conventional and non-conventional systems for electroplating wastewater treatment</i>	69
Marija Vesković, Jelena Vesković, Antonije Onjia <i>Hydrogeochemical characterization of groundwater in the Northeastern Serbia</i>	75
Dragana Popović, Jovana Savanović, Andrija Vučetić, Tatjana Ćurčić, Dragana Despot <i>Optimization of solid-phase extraction for the determination of quaternary ammonium compounds in water by UHPLC–MS/MS</i>	80
Tijana Spasojević, Marina Maletić, Ana Kalijadis, Nataša Mladenović, Katarina Trivunac, Marija Vukčević <i>Carbonization and activation of flax fibers for the removal of bromazepam from water</i>	85
Tijana Spasojević, Marina Maletić, Dušan Trajković, Isabel Gria, Mirjana Ćujić, Nevena Prlainović, Maja Đolić <i>Enhanced arsenic removal using an iron-modified sandy clay and biochar</i>	91
Andrijana Miletić, Jelena Vesković, Milica Lučić, Antonije Onjia <i>Chemometric analysis of trace elements in sediments near an industrial ship dock</i>	97
Grozdana Bogdanović, Dragan Radulović, Dragana Marilović, Jovica Stojanović, Sanja Petrović, Vladimir Simić <i>From waste to resource: Leaching metals from flotation tailings at the “Rudnik” mine for sustainable development</i>	103

Anja Bubik, Klara Hohkraut <i>From isolation to detection of microplastics in natural and industrially processed honey</i>	107
Milica Vlahović, Miljan Vlahović, Nenad Vušović, Darja Žarković <i>Radium contamination of groundwater and remediation approaches</i>	113
Marija Prosheva, Teodora Stojanovska, Andrea Petanova, Jadranka Blazhevskia Gilev <i>Degradation behavior of lignin/TiO₂ waterborne polymers</i>	119
Dorđe Ogrizović, Milica Delić, Ivana Matić Bujagić, Maja Đolić <i>Adaptive water management and pathways toward urban resilience</i>	125
Andrea Petanova, Marija Prosheva, Jadranka Blazhevskia Gilev <i>Towards sustainable carbon nanomaterials: Pulsed laser-assisted synthesis approach</i>	130
Milica Rančić, Jelena Gržetić, Tamara Tešić, Ivana Gavrilović-Grmuša <i>Development and applications of bioepoxies for green materials</i>	136
Milica Rančić, Mladen Popović, Ivana Gavrilović-Grmuša <i>Green innovation in materials: Eco-panels made from hemp shives and starch</i>	142
Nevena Purić, Marija Popović, Darko Đorđević, Maja Đolić <i>Biowaste as a resource: Challenges and opportunities for biowaste management and sustainable infrastructure in Serbia</i>	147
Jelena Gligorijević-Sokolović, Vesna Krstić, Ana Petrović, Zoran Štirbanović, Jovica Sokolović <i>The role of solid recovered fuel (SRF) in waste reduction, resource management and carbon footprint mitigation within the circular economy</i>	153
Darja Žarković, Ana Aleksić, Milica Vlahović, Nenad Vušović <i>Information technologies in municipal solid waste management – from public participation to powerful software tools</i>	159
Darja Žarković, Milica Vlahović, Žaklina Todorović, Miljan Vlahović, Milica Prelić <i>Application of information systems in water resources monitoring and management</i>	165
Vesna Alivojvodić, Niko Samec, Filip Kokalj <i>Standards-based value creation for modern waste-to-energy facilities</i>	171
Vesna Alivojvodić, Aleksandra Vučinić, Nela Vujović <i>Bridging policy gaps through ISO 59000 standards in European waste management transitions</i>	177
Lea Komerički Kotnik, Katrin Školnik Škrabe, Anja Bubik <i>Erasmus+ projects as the opportunity to improve youth awareness on microplastics</i>	183
Nataša Radić, Andreja Stojić, Mirjana Perišić <i>Analysis of the effects of social and industrial changes on air quality during the Covid-19 pandemic in Belgrade</i>	189
Jasmina Bašić, Dragana Dragaš Milovanović, Mila Filipović, Marina Ivanović, Bojana Luković, Danijela Pecarski <i>Air pollutant levels in the first half of 2025 and their health effects in the Republic of Serbia</i>	195
Aleksandar Petković, Jovan Ilić <i>Numerical simulations of transient operation of SHPPs with pelton turbines and selection of protective measures. Case study of SHPP Velika Ploca</i>	202
Slavica Mihajlović, Nataša Đorđević, Vladan Kašić, Srđan Matijašević <i>The significance of the circular economy in solid waste management</i>	208
Jelena Andrić <i>Towards sustainable development in infrastructure projects</i>	214
Nataša Radić, Ana Popović, Vesna Alivojvodić <i>Practices and attitudes toward food waste in the Republic of Serbia - pilot survey</i>	219
Radule Tošović <i>Managerial-economic aspects of the participation of environmental costs in the cost price of mineral raw materials in the mineral sector</i>	224
Ana Popović, Nebojša Ćurčić, Aleksandra Božić <i>Managing environmental disasters: The role of environmental risk assessment</i>	230

Miloš Tošović <i>Copenhagen school of security in the light of analysis of environmental security and environmental risk management</i>	236
Suzana Radojković <i>Microbiological pollution in the Toplica River: Impact and Solutions</i>	242
Tatjana Mitrović, Marija Perović, Darija Obradović, Saša Lazović <i>Soil remediation: Perspectives and risks</i>	248
Tatjana Mitrović, Marija Perović, Darija Obradović, Saša Lazović <i>Ecological risks of urban soils in Belgrade</i>	254
Aleksandra Pavlović, Andrea Ivanišević <i>Is Serbia becoming a pollution haven? The impact of FDI on air pollution and public health</i>	260
Dragan Ugrinov, Magdalena Nikolić <i>A model of successful medical waste management in Pančevo municipality – system analysis and development perspectives</i>	266
Dragan Ugrinov, Magdalena Nikolić <i>Ecological and political dimensions of sustainable natural resource management in the context of climate change</i>	271
Magdalena Nikolić, Dragan Ugrinov <i>Ecotourism as a mechanism for biodiversity conservation in the protected natural areas of Serbia</i>	277
Marija Tasić, Milica Petković, Sofija Miljković, Žarko Vranjanac <i>Application of the Serbian water quality index in the assessment of the Jerma, Gaberska River, and Great Timok (2019–2023)</i>	283
Aleksandar Petković, Jovan Ilić <i>Numerical simulations of long-term annual energy generation of SHPP Kresaja</i>	289
Zorica Baroš, Olivera Jovanović <i>Monitoring ionizing radiation in the Republic of Serbia</i>	293
Sara Stanić Jovanović, Marica Milošević, Ana Urošević, Božo Ilić <i>The importance of environmental sustainability in hotel operations: A case study of Hotel 'Iver'</i>	299
Jovana Vukanić, Bojana Sterniša Stanišić <i>Urban ecology in architecture: Ecological potential of public spaces and strategies for improving biodiversity</i>	306
Vaishnavi Khedulkar, Ana Popović <i>The evolution of sustainability: From cultural roots to future generations</i>	312
Ivana Rvović, Aleksandra Davidović <i>Forest fires in Serbia – spatial analysis of the impact of forest ownership and prevention measures</i>	317
Bensedira Noureddine, Milles Abdessmad, Aggoune Mohammed-Salah <i>Photovoltaic supplied MHD desalination system for agricultural uses</i>	323
Nevenka Galečić, Đurđa Petrov, Dejan Skočajić, Jelena Čukanović, Sara Đorđević, Radenka Kolarov, Mirjana Ocokoljić <i>The influence of light and air temperature on the visual perception of Photinia x fraseri 'Red Robin' in the parterre composition of Savski Square in Belgrade</i>	329
Đurđa Petrov, Nevenka Galečić, Dejan Skočajić, Jelena Čukanović, Dragan Vujičić, Sara Đorđević, Mirjana Ocokoljić <i>Secondary flowering and fruiting of Laburnum anagyroides Medik. and their importance in urban landscape design</i>	335
Mirjana Ocokoljić, Jelena Čukanović, Sara Đorđević, Nevenka Galečić, Dejan Skočajić, Radenka Kolarov, Đurđa Petrov <i>Amorpha fruticosa L. in the alluvial habitats of Belgrade and Novi Sad: Morphological and phenological characteristics of inflorescences, flowers, and flowering in the context of ecosystem service</i>	341

Nevenka Galečić, Đurđa Petrov, Dejan Skočajić, Jelena Čukanović, Radenka Kolarov, Sara Đorđević Mirjana Ocokoljić <i>Adaptation of flowering phenology and flower longevity of <i>Philadelphus coronarius</i> L. in landscape design under climate change conditions</i>	347
Mirjana Ocokoljić, Nevenka Galečić, Dejan Skočajić, Jelena Čukanović, Sara Đorđević, Radenka Kolarov, Đurđa Petrov <i>Viburnum tinus</i> L.: Mediterranean floral element in the urban and suburban landscape of Belgrade	353
Mirjana Ocokoljić, Radenka Kolarov, Jelena Čukanović, Nevenka Galečić, Dejan Skočajić, Sara Đorđević, Đurđa Petrov <i>Morphological and biochemical characteristics of the fruits of <i>Malus hupehensis</i> var. <i>Pinyensis</i> n.g. Jiang in Belgrade</i>	359
Đurđa Petrov, Nevenka Galečić, Dejan Skočajić, Jelena Čukanović, Dragan Vujičić, Radenka Kolarov, Mirjana Ocokoljić <i>Punica granatum</i> L. in garden design in Serbia	365
Mirjana Ocokoljić, Nevenka Galečić, Jelena Čukanović, Sara Đorđević, Radenka Kolarov, Đurđa Petrov <i>Ornamental cherry trees in the open urban spaces in front of the temple of Saint Sava in Belgrade: Identification and significance</i>	372

STUDENT PAPERS

Nikola Stojković <i>Determination of heavy metal content in river fish</i>	378
Marija Perkunić, Ana Popović <i>Integrating phytoremediation into sustainable development strategies: Lead removal potential of <i>Mentha</i> sp.</i>	384
Nikola Stojković <i>Digital ecology and the environmental impact of digital platforms</i>	390
Lav Leskur <i>Environmental risk assessment for Pambukovica Dam project in Serbia – a case study</i>	395

SCOPE 2. OCCUPATIONAL HEALTH AND SAFETY AND FIRE SAFETY

Dragan Jovanović <i>The role of experts in court proceedings of the Republic of Serbia</i>	402
Jelena Andrić, Xi'an Jiaotong <i>The analysis of occupational accidents on construction sites in Hong Kong</i>	408
Branka Bursać Vranješ, Svetozar Sofijanić <i>Specific features of occupational safety and health organization in bridge construction</i>	413
Dragan Živanić, Nikola Ilanković, Tanasije Jojić <i>Integration of sensor systems for enhancing escalator safety and reliability</i>	419
Dragan Živanić, Nikola Ilanković, Tanasije Jojić <i>Design and analysis of a conveyor system for removing floating waste from river surfaces</i>	425
Marko Miletić, Aleksandar Pantović, Marko Milošević, Marko Đapan, Ivan Mačužić <i>The improvement of lockout/tagout compliance in manufacturing through digitalization</i>	431
Daniela Ristić, Ognjen Ristić <i>The impact of work stress on employees' performance and job satisfaction</i>	437

Snežana Knežević, Snežana Milanović, Marijana Jandrić Kočić, Tamara Gajić <i>Work-life balance among higher education employees</i>	442
Maja Đikić <i>From paper to practice: How employees use personal protective equipment and perceive occupational health and safety training</i>	448
Nebojša Ćurčić, Novak Milošević <i>Real-time monitoring of workplace environmental factors using smart devices – an overview on vibration exposure evaluation</i>	454
Darko Marković, Nebojša Ćurčić, Novak Milošević <i>Research on impact of cultural diversity on occupational safety and health culture in multinationals teams based on Hofstede's cultural dimensions theory</i>	461
Dejan Kožović, Dragan Đurđević, Mirko Dinulović, Marta Trninić <i>ADS-B aviation system: Analysis of real time flight data</i>	470
Nataša Ćirović, Nebojša Bošnjaković <i>Fire risk level of a residential business object</i>	476
Petar Simonović, Marijola Božović <i>Training fires as high-risk events: Rethinking safety in simulated environments</i>	484
Ana Aleksić, Darja Žarković <i>Application of GIS technology in the education of engineers of fire protection</i>	490
Nikola Tanasić, Radenko Rajić, Ivan Arandjelović <i>A novel tabular method for estimation of heat extraction factor</i>	496
Milivoje Filipović, Marina Milovanović Arandjelović <i>An extended tabular method for estimation of water flow rate at the hydrant nozzle</i>	500
Barbara Vidaković Ristić <i>Understanding intentional fires: From 'how' to 'why' through an interdisciplinary lens</i>	504
Barbara Vidaković Ristić <i>Fire risk management in nightclubs: Regulatory framework, practice and recommendations</i>	509

STUDENT PAPER

Lav Leskur <i>How to prevent workplace accidents and save workers' lives? Tackling the invisible trio of depression, anxiety and insomnia before it's too late</i>	515
--	------------

SCOPE 3. SMART MANAGEMENT SYSTEMS

Dragana Gardašević, Koviljka Banjević, Milanka Gardašević-Filipović, Vladan Radivojević <i>AHP and PROMETHEE II methods in selecting candidate for the position of strategic planning manager</i>	522
Brankica Pažun, Zlatko Langović, Milena Cvjetković <i>Quantum computing in business decision-making</i>	528
Dragana Gardašević, Aleksandra Božić, Ana Popović, Vladana Ilijin <i>Application of control charts in the internal control of chemical oxygen demand determination method</i>	535
Dušan Trajković, Nevena Purić, Aleksandar Kojović, Dragana Živojinović <i>Global market and standardization in biofuel industry</i>	540
Saša Marković, Marko Pavlović <i>Possibilities of improving business processes and business efficiency in the automotive industry</i>	546

Dragana Rošulj, Aleksandra Nastasić, Dejan Petrović <i>The culture of knowledge management and its impact on the implementation of knowledge management processes</i>	552
Biljana Ljubanović, Koviljka Banjević, Zoran Sekulić <i>Change scenario: Control of documented information</i>	559
Goran Nestorović <i>Development of teaching staff through the introduction of professional doctoral studies</i>	565
Predrag Janković, Dragan Miletić, Suzana Pavlović <i>The place and perspectives of the development of dual education in the higher education the Republic of Serbia</i>	572
Vana Colić <i>The role of mathematical education and digital competencies in preparing workforce for Industry 4.0</i>	578
Ivan Mačužić, Marko Milošević, Nikola Tonić, Marija Savković, Đorđe Milojević <i>Demo-didactic systems for practical training in Industry 4.0</i>	583
Đorđe Dihovični, Dragan Kreculj, Nada Ratković Kovačević, Goran Vorotović <i>XML approach to the creation of a database for the alumni project</i>	589
Goran Vojnović <i>Augmented reality in academic libraries: Implementing affordable tools</i>	594
Marija Mićanović <i>The analysis of writing style and the application of tools for academic writing</i>	600
Aleksandra Nastasić, Dragana Rošulj, Aleksandra Božović <i>Influence of artificial intelligence on organisational culture</i>	606
Marija Simonović, Snežana Tadić, Mladen Krstić, Miloš Veljović <i>Space logistics: How to get into space?</i>	612
Saša Marković, Marko Pavlović <i>Strategic forms of business internationalization</i>	618
Bosiljka Srebro, Marija Perić, Stevica Dedanski <i>The impact of digital technologies on enterprise e-commerce export strategies</i>	623
Jasmina Đurašković, Ana Slavković, Brankica Pažun <i>Web transparency of CSR activities in Belgrade municipalities: A content analysis of official websites</i>	629
Aleksandra Pavlović <i>Economic growth in Serbia - Does inflation matter?</i>	634
Brankica Pažun, Zlatko Langović, Jasmina Đurašković <i>Processor technologies and their impact on global economic trends</i>	639
Srdan Barzut, Dragana Sajfert, Ana Bašić, Milica Jevremović <i>The main cyber treats in modern e-business</i>	643
Marko Pavlović, Dragana Đurić, Miloš Lučić <i>The role of CRM systems in the revitalization of an artistic brand: A study on consumer perception of the Naslikati brand</i>	650
Đorđe Dihovični <i>Programs and their applications in web design and web management</i>	656

STUDENT PAPER

Lav Leskur <i>Is personality the missing key for boosting sales? A fresh perspective for marketing strategists on Serbian consumers' organic food attitudes</i>	662
---	------------

SCOPE 4. GRAPHIC ENGINEERING

- Adrijana Đorđević, Danijela Kovačević, Nenad Đorđević, Aleksandra Krstić** 669
An investigation into the mechanical properties of corrugated fiberboard packaging boxes
- Dejan Miljković, Danijela Kovačević, Adrijana Đorđević, Nenad Đorđević, Aleksandra Krstić** 675
Comparative analysis of transport packaging manufactured using flat and rotary die-cutting tools

SCOPE 5. DESIGN

- Predrag Maksić** 682
Foundations and principles of interdisciplinary design: Towards a holistic approach to creative practice
- Ljubomir Maširević** 688
The video game industry and globalization
- Ljubomir Maširević** 694
Video games in culture
- Dušanka Komnenić** 701
AI and the aesthetic of imperfection: Defining the visual signature of machine-made art
- Danica Glođović** 705
Visual codes and cultural narratives: Rethinking graphic design as semiotics
- El Hadj Mimoune Arezki, Khattabi Lahcene, Berkani Dalila** 710
Eternal geometry: Zellij as a bridge between Islamic heritage and modern design
- Maja Milinić Bogdanović** 716
How additive manufacturing can enhance contemporary fashion and footwear design
- Jelena Zdravković** 723
Contemporary fashion and interdisciplinary approach to design: Zero waste fashion design
- Jelena Zdravković, Igor Ponti** 730
Fashion design and digital technology: Ready-to-wear collections and the modern textile industry in Serbia
- Jasna Jelić Obradović** 738
The influence of art theory in the field of design
- Željko Zdravković** 743
Designing the future: How AI platforms are transforming industrial design in our world today
- Duško Radaković, Nebojša Andrijević, Dragana Gardašević, Nenad Živanović** 750
An assessment of diverse generative AI applications
- Duško Radaković, Danijela Živojinović** 757
Implicit modeling and the future of next gen CAD
- Fedor Rakić** 765
Will artificial intelligence ever replace the UX designer?
- Fedor Rakić** 770
Real vs. synthetic users: The future of UX testing
- Dragica Nikodinović** 776
Poster design in the society of the spectacle
- Jelena Jocić, Maja Milinić Bogdanović** 782
Contemporary creative approaches and technological tendencies in graphic art and fashion design communication

Katarina Nikolić <i>Oblique strategies and projector cards – fostering creativity in design through randomness and material engagement</i>	788
Natalija Đukić <i>Space as the third teacher: Architecture of preschool institutions based on the Reggio Emilia approach – case study analysis</i>	795
Dejan Vračarević <i>The Future of 3D additive technologies in an artificial intelligence environment for industrial designers and artists</i>	801
Milica Matović <i>Digital aesthetics and contemporary painting: The transformations of visual form in post-media art</i>	805
Duško Trifunović <i>Werner Jeker — photography, typography, and grid in poster design</i>	811
Sandra DePalo <i>The colour of light: Influence of James Turrell's work on contemporary interior lighting design</i>	816
Sandra DePalo <i>Light narratives: Adaptive museum lighting as a medium of artistic expression and communication</i>	823
Natalija Gaković <i>Selection of contemporary synthetic polymeric organic materials for application in sustainable interior design</i>	830
Jelena Ivanović Vojvodić, Goran Vojvodić <i>Reconstruction of the Building Palace of Science in Belgrade – The Miodrag Kostić Foundation Endowment</i>	836
Ivan Erkić <i>The power of the new 3D material in visual merchandising</i>	842

SCOPE 6. TRAFFIC ENGINEERING

Biljana Ranković Plazinić, Željko Ranković, Nemanja Deretić <i>A methodology to determine parking zone boundaries</i>	848
Nebojša Andrijević, Zoran Lovreković, Bojan Jovanović, Vlada Jevtić, Branko Petrović <i>IoTarchitecture for a smart modular traffic intersection control with real-time multi-sensor adaptation</i>	854
Dejan Jovanov, Daniel Pavleski, Kosta Jovanov <i>Road safety action plan: Data driven decision making approach</i>	862
Željko Ranković, Biljana Ranković Plazinić, Nemanja Deretić <i>Comparison of road safety level on the “Miloš Veliki” motorway and two-lane state road IB No. 22 following the construction of the “Miloš Veliki” motorway</i>	868
David Rilak, Boris Antić, Nenad Marković, Emir Smailović <i>Identification of characteristic road problems and deficiencies at locations, sections, and streets of increased pedestrian risk in the territory of the Belgrade police department, through the application of independent assessment</i>	874
Denis Lukač, Mirsad Velju, Jasmin Hodžić <i>Analysis of traffic safety at level crossings in Montenegro</i>	880
Aleksandra Obradović, Biljana Ranković Plazinić <i>The impact of signalization of pedestrian crossings on pedestrian safety</i>	886
Jaime Vite Solares, Iran Guerrero Andrade <i>Pedestrian mobility and urban policy in Pachuca: Inequality, risks, and the right to the city</i>	893

Dragana Velimirović, Milan Marković, Milan Velimirović <i>Novelties in automotive industry sector in European countries</i>	899
Danijela Miloradović, Jasna Glišović, Jovanka Lukić <i>Measuring instruments for vehicle technical inspection in technical regulations – a review</i>	905
Dobrivoje Ćatić, Vladimir Ćatić <i>Analysis of brake drum damage in motor vehicle braking systems</i>	911
Nemanja Deretić, Saša Kukolj <i>Human resource management and digital transformation in transport companies</i>	917
Slavka Durlević <i>The role of logistics center in the supply chain – a case study</i>	923
Filip Marković, Miroljub Nikolić, Maja Stošković <i>Financial aspects of supply chain optimization in freight forwarding</i>	929

SCOPE 7. BIOTECHNOLOGY, PHARMACY AND HEALTHCARE

Dragana Ilić Udovičić, Jelena Đuričić Milanković, Aleksandra Vasić Popović, Ivana Jevtić, Jelena Makević <i>Allergens as a parameter of food quality and safety control: Attitudes and awareness of medical school students</i>	935
Dubravka Mandušić <i>Artificial intelligence in the animal world</i>	941
Tatjana Marinković, Dragan Marinković, Jovana Pavlović <i>Physical activity and microbiota: An overlooked link to health</i>	945
Snežana Knežević, Snežana Milanović, Slavica Đorđević, Marijana Jandrić Kočić <i>Preventive medicine and healthy aging: Addressing population frailty prevention</i>	951
Snežana Knežević, Aleksandar Stevanović, Snežana Milanović, Slavica Đorđević <i>Climate change impacts on bacterial foodborne infections and food safety</i>	957
Tanja Krunić <i>Reusing and improving food industry waste</i>	963
Višnja Sikimić, Slavica Čabrilo, Nada Jelić <i>Formulations of gluten free biscuits with improved nutritional and functional properties</i>	969
Marina Ivanović, Jasmina Bašić, Mila Filipović, Dragana Dragaš Milovanović, Bojana Luković <i>Utilization of lactic acid bacteria in food technology from bioprotection to sensory quality enhancement</i>	977
Dragana Dragaš Milovanović, Jasmina Bašić, Mila Filipović, Marina Ivanović, Bojana Luković <i>Dose-response relationship between chronic exposure to trihalomethanes and haloacetic acids and adverse health outcomes</i>	982
Dragana Dragaš, Jasmina Bašić, Danijela Pecarski <i>Current pharmacogenetics trends in depression treatment</i>	985
Nebojša Andrijević, Zoran Lovreković, Vladan Radivojević, Mihajlo Manojlović, Milica Velkovski <i>Implementation of IoT systems in modern agriculture: Optimization and automation of smart greenhouse functionality</i>	989
Miloš Purić <i>Apricot kernel oil as a new edible products processed from biowaste</i>	996

Eleonora Gvozdić, Danijela Prokić, Marija Bajović, Svetlana Grujić, Tatjana Đurkić <i>Fungicide residues in apples: Analysis and health risk assessment</i>	1002
Marija Bajović, Eleonora Gvozdić, Tatjana Đurkić <i>Validation of a GC-MS/MS method for determining 200 pesticides in herbal tea infusions</i>	1008
Milica Jevtić, Goran Nestorović, Darko Stojićević <i>The rise of data-driven agriculture: Transforming farming through digital intelligence</i>	1013
Vladanka Stupar, Milica Jevtić <i>Sustainable innovation in plant production</i>	1018
Melita Zec Vojinović, Kristijan Jurišić, Slavica Dudaš, Martina Peršić, Marin Tomičić <i>The inhibitory potential of thyme essential oil (<i>Thymus vulgaris</i> L. against the phytopathogenic fungus <i>Colletotrichum acutatum</i></i>	1024
Milica Lučić, Andrijana Miletić, Jelena Vesković, Antonije Onjia <i>LC-MS/MS analysis of imazalil in lemons</i>	1030
Ana-Marija Valland, Tatjana Golubović <i>Exposure to antineoplastic pharmaceuticals and associated health effects</i>	1036
Tatjana Sekulić, Vladanka Stupar, Zlata Živković, Milica Blažić <i>Microbial bioremediation strategies of environmental pollutants</i>	1041
Slavica Čabrilo, Višnja Sikimić, Nada Jelić <i>The role of antimicrobial packaging in the protection cheese</i>	1047
Milica Ivanović, Predrag Rajković, Aleksandra Janković, Sandra Stanković <i>Optimization of the mixture composition and initial process parameters for composting grape pomace and co-substrates: Selection of an appropriate method</i>	1054
Markola Saulić, Aleksandar Stevanović, Marko Kovačević, Snežana Knežević <i>Integrated digital systems in pesticide control for safe food and agroecosystem conservation</i>	1061
Tanja Krunic <i>Impact of carrier composition and gastrointestinal digestion on the hydrogel sphericity and diameter</i>	1067
Danijela Pecarski, Dragana Dragaš Milovanović, Jasmina Bašić <i>Mycotoxin contamination in Serbia: Health implications and food safety challenges</i>	1073
Jasmina Rajić, Tanja Petrović, Aleksandra Stojićević, Dragana Mihajlović <i>Functional food: Concept, regulation, and public health significance</i>	1079
Jasna Savić, Aleksandra Božić, Dominik Brkić, Biljana Simić Polić <i>HDL functionality as a biomarker and therapeutic target in the era of new dyslipidemic drugs – a biochemical perspective</i>	1085
Maja Antanasković <i>Treatment and management of medical waste in the Health Center Prokuplje</i>	1092
Jasmina Rajić, Tanja Petrović, Aleksandra Stojićević, Dragana Mihajlović <i>Technological challenges and innovations in the formulation of functional food products</i>	1098
Aleksandra Stojićević, Ana Alimpić Aradski, Smiljana Janković, Jasmina Rajić, Marko Jauković, Aleksandar Stevanović, Milica Blažić <i>The essential oil of <i>Satureja</i> species as a promising food ingredient</i>	1103

STUDENT PAPER

Tijana Pavlović, Aleksandra Stojićević, Marko Jauković <i>Influence of the storage conditions on the chemical composition and shelf life of potato tuber</i>	1109
--	-------------

SCOPE 8. MECHANICAL ENGINEERING

Kuznetsov Yu. A., Yakovlev D.D., Dobychin A.V., Gribakin A.A., Pichev V.S., Kravchenko I. N., Kalashnikova L.V. <i>Formation of protective coatings by high-velocity oxygen-fuel spraying</i>	1115
Milica Timotijević, Olivera Erić Cekić, Petar Janjatović, Stojko Biočanin, Dragan Rajnović <i>Quantification of niobium-rich and chromium-rich carbides in HP40Nb alloy after overheating</i>	1120
Manuel Vite-Torres, Juan Laguna-Camacho, Ezequiel Gallardo-Hernández, Javier Frias-Flores <i>The contribution on solid particle erosion (SPE) of two tribology labs in Mexico</i>	1129
Do Duc Trung, Hoang Tien Dung, Siniša Škrbić, Aleksandar Ašonja <i>Applying the depart method for material selection in mechanical engineering</i>	1135
Aleksandar Cvetković, Žaklina Tasić, Marija Petrović Mihajlović, Milan Radovanović, Ana Simonović, Milan Antonijević, Snežana Milić <i>Carbon paste electrodes and ZnO/CPE sensors: A short review</i>	1141
Đorđe Đurđević, Nikola Tanasić, Andrijana Đurđević, Nina Anđelić <i>Static calculation of smoke exhaust duct construction in fire conditions using FEM</i>	1147
Milan Marković, Dragana Velimirović <i>Moment of inertia as a cause of loss of stability in a front forklift</i>	1153
Bojan Ivljanin, Uroš Kovačević, Vladeta Milenković <i>Comparative analysis of new systems for determining ratio and phase displacement errors on high-voltage current transformers without power interruption</i>	1160
Goran Pavlović, Mile Savković, Nebojša Zdravković, Marko Todorović, Goran Marković, Predrag Mladenović <i>Weight minimization of the hydraulic press frame with metaheuristic algorithms</i>	1166
Andrijana Đurđević, Đorđe Đurđević <i>Static calculation of the tank wall</i>	1172
Strahinja Đurović, Nikolaj Velikinac, Milan Mišić, Aleksandra Kokić Arsić, Goran Maksimović, Ivan Šarkoćević, Andjela Baščarević <i>Artificial intelligence in fused deposition modeling</i>	1177
Milanka Plavšić <i>Design of polymeric materials in function of unit (technological) operations for new industrial production methods</i>	1182
Predrag Drobniak, Đorđe Đurđević, Andrijana Đurđević <i>Analysis of the problem of deformation of the guides and rearing of the guide console from the wall of the passenger lift drive shaft</i>	1188
Miloš Milovančević, Marija Stevanović <i>ANFIS-based prediction of surface roughness and material removal rate in plasma arc cutting of Quard-400</i>	1193
Obrad Aničić <i>Integration of modern technologies and artificial intelligence into CNC manufacturing systems: From 3D modeling to the application of neural networks</i>	1200
Milan Milutinović, Nikola Matić, Uroš Ugrinić <i>Tool life of CBN cutting inserts during hard turning of 60WCrV7 steel</i>	1204
Milan Mišić, Nikolaj Velikinac, Strahinja Đurović, Dragan Lazarević, Bojan Stojčević, Martina Petković, Aleksandra Kokić Arsić <i>Influence of feed rate on surface roughness of 3D printed PLA parts after milling process</i>	1210

Nada Ratković Kovačević, Miloš Jakovljević, Đorđe Dihovični, Milica Ivanović, Petar Jakovljević <i>Project based learning - building a scaled operating CNC mill model using 3D printed parts</i>	1215
Milan Vasić, Mirko Blagojević, Milan Banić, Miloš Josimović, Goran Nestorović <i>Investigation of the influence of lubricant type on the efficiency of a cycloidal reducer</i>	1221
Nataša Soldat, Ivana Atanasovska <i>Step-by-step approach of rolling bearings modelling for efficient FEA contact analysis</i>	1227
Marko Tasić, Žarko Mišković, Radivoje Mitrović <i>Appliance of the polymer material for construction of the conveyor belt carrying idler's shell</i>	1233
Marko Milošević, Dragan Džunić, Živana Jovanović Pešić, Marko Miletić, Vladimir Kočović, Slobodan Mitrović <i>Tribo-mechanical characterization of epoxy-based composites reinforced with abaca fibers: A scratch test study</i>	1239
Milanka Plavšić <i>Some applications of polymer system scaling theory in design of processing industrial equipment</i>	1246
Blanka Škipina, Biljana Pećanin, Aleksandar Savić, Ljiljana Topalić-Trivunović, Branka Ružičić, Slavica Maletić, Mitja Kolar, Manja Kurečić, Andreja Rudolf, Dragana Grujić <i>Enhancing electrical conductivity of polypropylene nonwoven textiles via Cu/Zn-modified bentonite: FTIR, XRD and dielectric study</i>	1252
Milica Timotijević, Stojko Biočanin, Željko Bulatović <i>Reliability model of the CNC hydraulic press DAGGT</i>	1257
Đorđe Karić, Mirko Komatina, Goran Vorotović <i>Machine learning methods for predicting energy savings in building retrofits</i>	1266
Andela Vasović, Nebojša Denić, Nikolaj Velikinac, Aleksandar Marković, Marko Smilić <i>The impact of batch size on the performance of the ResNet-18 model on the CIFAR-10 dataset</i>	1271
Nebojša Petrović, Goran Vorotović, Aleksandar Bengin, Miloš Januzović, Jela Burazer, Dejan Blagojević <i>High-resolution UAV analysis of urban heat islands</i>	1275
Milan Travica, Danilo Miljković, Nenad Mitrović <i>Application of a mobile digital image correlation system for on-site structural integrity assessment</i>	1281
Marija Stevanović, Miloš Milovančević <i>Identification of key influential parameters for economic optimization of wastewater treatment systems using ANFIS</i>	1286
Ioannis Filippou Kyriakidis, Savvas Koltsakidis, Konstantinos Tsongas, Michel Theodor Mansour, Apostolos Korlos, Konstantinos David, Dimitrios Tzetzis <i>Mechanical and dynamic behaviour of thermoplastic polyurethane-based composites produced via fused filament fabrication for machine mount applications</i>	1294

SCOPE 9. ECOTOURISM AND RURAL DEVELOPMENT

Radomir Stojanović <i>Tourism destination management in Serbia - selecting new management model</i>	1301
Jelena Anđelković Grašar, Roksana Chowanec, Emilija Nikolić, Marija Jović, Ljubomir Jevtović, Stefan Stančić <i>Green heritage - archaeological parks as living labs for achieving sustainability</i>	1307
Slobodanka Stankov, Radomir Stojanović, Branko Radeljić <i>Digitalisation of cultural heritage and its impact on tourism development in Serbia</i>	1314

Valentina Radoičić, Ivo Županović <i>Assessment of sustainable tourism development in Durmitor National Park</i>	1320
Marko Pavlović, Dragana Đurić, Saša Marković, Marija Perić, Ben Mladenović <i>Belgrade as a tourist brand - opportunities and development strategies</i>	1326
Biljana Ranković Plazinić, Svetlana Lekić <i>Transport accessibility as a driver of rural development</i>	1332
Aleksandar Todorović, Darko Dimitrovski <i>Field trip as educational instrument in rediscovering rurality</i>	1338

SCOPE 10. MECHATRONICS

Goran Zajić, Milan Pavlović, Marija Zajeganović <i>Case study on generating configuration parameters for network devices and computers using generative AI agents</i>	1346
Dorđe Lazarević, Jovan Ćirić <i>Multisensor IoT system for detection and measurement of physical parameters of the work environment</i>	1352
Nebojša Andrijević, Zoran Lovreković, Vladan Radivojević, Milan Milanović, Milica Stojičević <i>Cost-efficient smart building IoT architecture: Integration of Arduino Mega, ESP32 and real-time web control</i>	1358
Aleksa Turudić, Siniša Škrbić, Uroš Ilić <i>Impact of small distributed energy resources on voltage profiles and power flow in distribution networks</i>	1365
Nikola Slavković, Mirjana Tomić, Dejan Đukic, Goran Zajić <i>Human - machine interrelationship: Automatic sentence generation by rule-based systems</i>	1371
Nastasija Nikolić, Marko Đapan, Ivan Mačuzić, Carlo Caiazzo, Petar Todorović, Arso Vukićević <i>Identification of parameters affecting the implementation of robotic solutions in lean industrial systems</i>	1378
Nada Ratković Kovačević, Goran Vojnović, Đorđe Dihovični, Dragan Kreculj, Petar Jakovljević <i>Programming Arduino to drive a stepper motor for positioning a scanner in a library automation system</i>	1384
Đorđe Dihovični, Aleksandra Mitrović, Nada Ratković Kovačević, Dragan Kreculj <i>Advances in 3D printing of electronics</i>	1390
Nela Vujović, Jelena Zarić Kovačević, Vesna Alivojvodić <i>AI-driven resource efficiency balancing opportunities and constraints in mining</i>	1396
Dragan Kreculj, Đorđe Dihovični, Aleksandra Mitrović, Nada Ratković Kovačević, Miloš Vorkapić <i>Artificial intelligence in digital twins</i>	1401

STUDENT PAPER

Alper Şanlı, Alim Rüstem Aslan, Tuncay Yunus Erkeç, Musa Şen <i>Misalignment effects on optical payload performance for small satellites</i>	1407
--	-------------



THE IMPORTANCE OF ENVIRONMENTAL SUSTAINABILITY IN HOTEL OPERATIONS: A CASE STUDY OF HOTEL “IVER”

Sara Stanić Jovanović¹, The Academy of Applied Studies Šumadija
Marica Milošević², The Academy of Applied Studies Šumadija
Ana Urošević³, The Academy of Applied Studies Šumadija
Božo Ilić⁴, The Academy of Applied Studies Šumadija

Abstract: *The implementation of ecological principles in hotel operations brings numerous benefits by reducing the negative impacts of business activities and enhancing the positive effects of tourism on the local environment. This paper highlights the importance of environmental sustainability in hotel management, with Hotel "Iver" serving as a case study. Located near the Mokra Gora Nature Park, Hotel "Iver" represents an example of good practice in developing environmentally sustainable operations. A survey conducted among the hotel's employees examines the ecological aspects of hotel operations within the Mokra Gora area. While there is clear potential, additional measures and the adoption of various ecological principles and standards are necessary to fully develop sustainable tourism practices within the hotel industry, with the ultimate goal of protecting the environment.*

Keywords: Hotel management, environmental sustainability, tourism, ecological practices, sustainable business.

1. THEORETICAL FOUNDATIONS OF ENVIRONMENTAL SUSTAINABILITY IN HOTEL MANAGEMENT WITHIN TOURISM

A distinctive characteristic of every tourism business is its strong connection with the overall offerings of the destination where it operates its facilities or conducts its business activities [1]. In the hotel industry, services are offered and realized on the hotel market through the sale of accommodation services and other hotel-related services, as well as special goods and services sold to tourists and the local population, thereby generating tourist consumption [2]. The application of the sustainable tourism concept involves minimizing the negative and maximizing the positive impacts of tourism on the environment and available resources. The key issue is the identification, monitoring, assessment, and management of the effects of tourism's impact on the environment and resources [3]. Hotels have the potential—and indeed the obligation—to reduce their environmental impact, as they are among the largest polluters and resource consumers in the service sector [4]. In previous activities, the greatest contribution of hotels to environmental protection has been achieved in the areas of energy savings, water consumption, green consumption, and waste minimization [5]. The tasks of ecological management of a tourist destination are focused on preserving the living environment of that area, which involves the application of global standards, active participation in relevant environmental initiatives, and creating partnerships with other stakeholders to achieve the goals [6]. The hospitality industry, together with the hotel sector, began implementing sustainable tourism measures as early as the 1990s, all aimed at reducing environmental impact. For this reason,

¹ssstanic@asss.edu.rs

²mmilosevic@asss.edu.rs

³aurosevic@asss.edu.rs

⁴ilic@asss.edu.rs

hotels are considered pioneers in applying environmental protection and sustainable tourism practices [7]. Hotel chains also have the opportunity to implement environmental policies at the corporate strategic level, thereby significantly reducing their environmental impact on a large scale [4].

2. HOTEL „IVER“ AS A FUNCTION OF SUSTAINABLE BUSINESS

Hotel “Iver” is located 10 km from the village center and 8 km from the tourist settlement “Mećavnik – Drvengrad.” It is designed to meet all the attributes of a mountain lodge, where a fire always burns in the fireplace at its heart. Hotel “Iver” has 32 wooden rooms with a total of 50 beds. Guests of Hotel “Iver” have access to a swimming pool, sauna, Turkish bath, salt room, bowling alley, and gym [8]. For passionate skiing enthusiasts, Mećavnik has built accommodation at Iver, located on the trail between two ski slopes, on the lower eastern side of the ski resort. “Iver” also organizes a skiing school for beginners, and ski equipment rental is available [9]. Šargan Mokra Gora is a protected area to preserve and enhance the diversity and beauty of the landscape, as well as the variety and richness of wild plant and animal life, with particular emphasis on protecting endangered, rare, and endemic species of plants, animals, and their communities [10]. The level of protection in place brings numerous benefits to the local environment and to Hotel “Iver”, which is closely integrated with its natural surroundings. Given its proximity to protected areas, Hotel “Iver” has strong potential for future operations based on principles of environmentally sustainable practices. In the past period the tourism and hospitality sector has made significant progress in developing measures to prevent environmental pollution, with substantial support from institutions and organizations of global or regional importance around the world [4]. The goals of sustainable tourism development include improving accommodation capacities, developing a tourist information system, expanding additional tourist offerings while achieving economic viability and local prosperity, and identifying and resolving current and potential conflicts between tourism and other resource-related activities [11]. In response to the challenges humanity faces due to climate change and global warming, the World Tourism Organization launched the “Hotel Energy Solutions” project. This initiative provides training, information, and technical support to assist small and medium-sized hotels [4]. A common best practice in the hotel industry is obtaining certifications such as the “Green Key.” The “Green Key” certificate is a leading standard for excellence in environmental responsibility and sustainable business in the tourism industry. This prestigious certification represents a commitment by businesses to adhere to strict criteria set by the Foundation for Environmental Education. The “Green Key” guarantees guests that by choosing to stay at a “Green Key” certified property, they are contributing to environmental improvement [12]. In addition to the “Green Key,” the “Green Globe” standard is also significant. The “Green Globe” standard promotes responsible and sustainable tourism practices, enabling the reduction of environmental and social impacts. The Green Globe standard is a structured sustainability assessment for travel and tourism businesses (such as tourist attractions, hotels, and conference centers) and their partners in the supply chain [11]. Following good business practices and meeting these standards brings long-term benefits to hotel establishments operating under principles of environmental management. The “Green Globe” standard and the “Green Key” are just some of the leading certifications that can positively influence the improvement of hotel operations aligned with sustainable business principles.

3. RESULTS OF THE SURVEY RESEARCH

Below are the results of the survey research conducted in the territory of “Mokra Gora” and Hotel “Iver.” Respondents’ answers were anonymous, and the questionnaire included multiple-choice, rating scale, and open-ended questions. The research was carried out between August 10 and 25, 2024. In a sample of 30 respondents, 60% (18 respondents) were male, while 40% (12 respondents) were female. The majority of respondents were male. Based on the collected data, 80% of respondents are between 20 and 30 years old, while 20% belong to the group aged 31 to 40 years. No respondents in the age groups of 41 to 50 years or older were recorded in the questionnaire. Out of the total 30

respondents, 60% (18 individuals) have completed secondary education, while 40% (12 individuals) hold higher education degrees. None of the respondents indicated having only primary education, nor qualifications at the specialization, master’s, or doctoral levels.

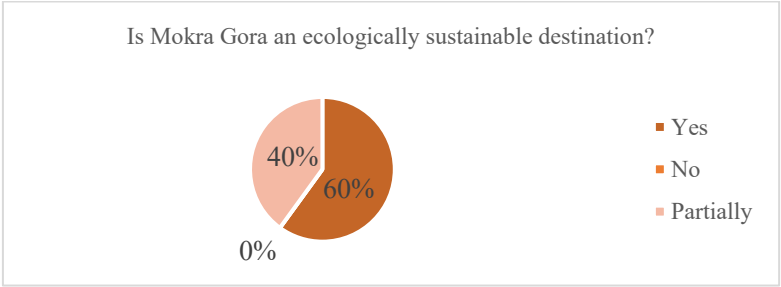


Chart 1. Is Mokra Gora an Environmentally Sustainable Destination?
Sources: Authors, 2024.

To the question: “When asked whether Mokra Gora is an ecologically sustainable destination” 60% of respondents (18 individuals) answered affirmatively, while 40% (12 individuals) believe that Mokra Gora is only partially ecologically sustainable. No respondent rated the destination as not ecologically sustainable (*Chart 1*).

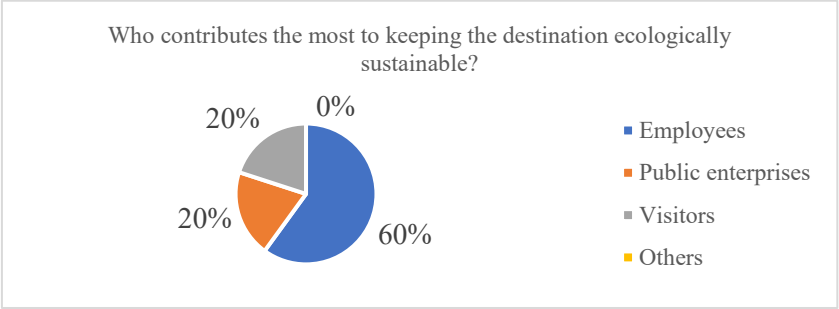


Chart 2. Who Contributes the Most to Keeping the Destination Ecologically Sustainable?
Sources: Authors, 2024.

To the question: “Who contributes the most to keeping the destination ecologically sustainable?”, 60% of respondents (18 individuals) believe that employees in tourism make the greatest contribution. An equal 20% of respondents (6 individuals) answered that the contribution comes from public enterprises and the visitors themselves. No respondent selected the “others” category. These data indicate a perception that employees bear the primary responsibility for maintaining the ecological sustainability of the destination, but also highlight the significant role of public institutions and visitors in this process (*Chart 2*).

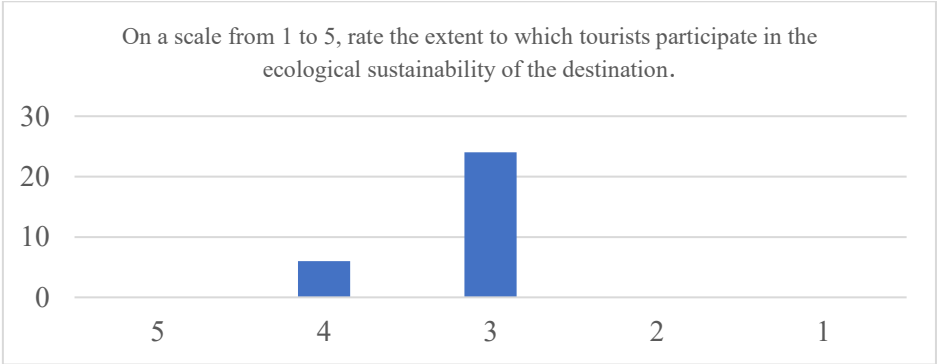


Chart 3. On a scale from 1 to 5, rate how much tourists contribute to the ecological sustainability of the destination
Sources: Authors, 2024.

Out of the 30 respondents who participated in the survey, 80% gave a rating of 3, meaning that 24 respondents evaluated tourists' participation in the ecological sustainability of the destination as moderate. The remaining 20%, or 6 respondents, gave a rating of 4, indicating a slightly higher level of involvement (*Chart 3*).

Table 1. What do employees do to ensure that the Mokra Gora destination remains environmentally sustainable?

Sources: Authors, 2024.

Employees raise awareness about the importance of environmental preservation among visitors and the local population.
They actively collect waste and are dedicated to their work.
Their role depends on the sector in which they work: one sector is responsible for collecting and transporting waste from protected areas, another sector charges an environmental fee whose revenue is used for the sustainable development of the destination, while the third sector monitors construction to ensure it is adapted to the area and positively impacts the environment.

One of the questions was: What do employees do to ensure that the Mokra Gora destination remains environmentally sustainable? The question was open-ended, and the most common answers are presented in *Table 1*.

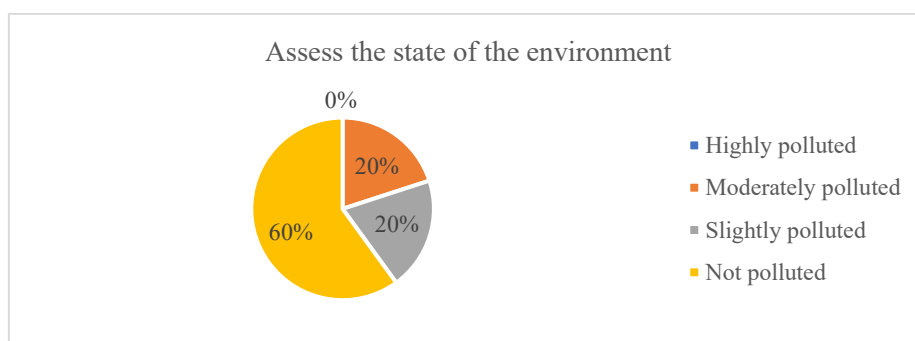


Chart 4. Assess the state of the environment.

Sources: Authors, 2024.

In response to the question "Assess the state of the environment," the respondents answered as follows: The majority, that is, 18 respondents (60%), assessed that the environment is not polluted; six respondents (20%) believe it is moderately polluted, while another six respondents (20%) consider the environment to be slightly polluted. None of the respondents rated the environment as highly polluted (*Chart 4*).

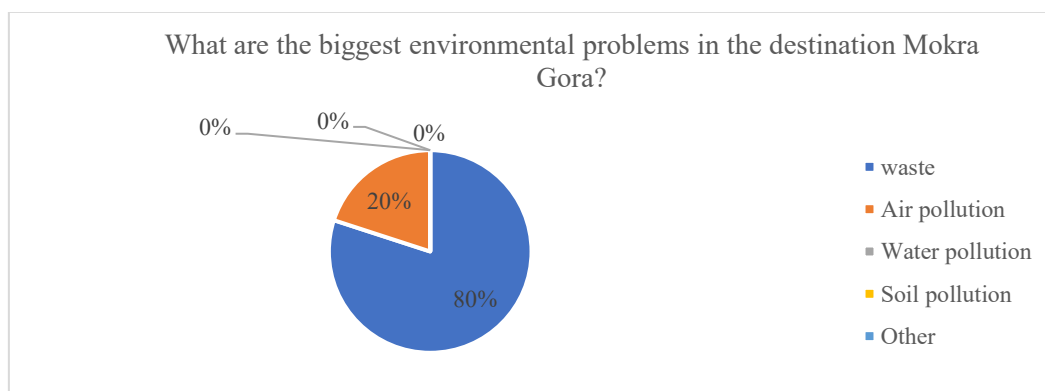


Chart 5. What are the biggest environmental problems in the destination "Mokra Gora"?

Sources: Authors, 2024.

To the question: What are the biggest environmental problems in the destination "Mokra Gora"? respondents most frequently highlighted waste as the main ecological challenge – as many as 24 out of 30 respondents (80%) identified waste as the biggest problem. Additionally, 6 respondents (20%) recognized air pollution as a significant ecological challenge. None of the respondents singled out other types of pollution as particularly problematic (*Chart 5*).

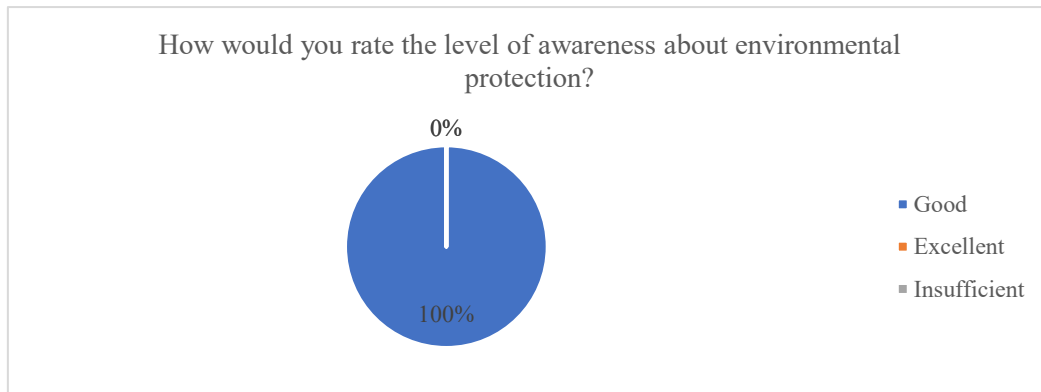


Chart 6. How would you rate the level of awareness about environmental protection?
Sources: Authors, 2024.

To the question: How would you rate the level of awareness about environmental protection? all respondents, i.e., 100%, rated the awareness as good. No respondent chose the answers excellent or insufficient (*Chart 6*).

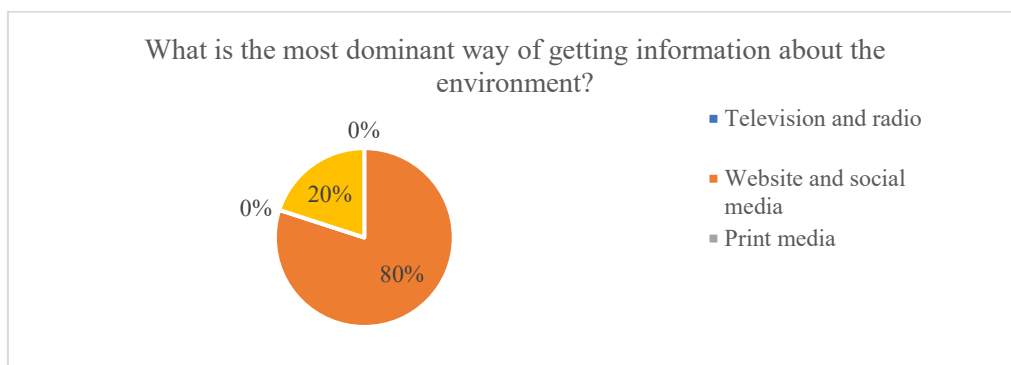


Chart 7. What is the most dominant way of getting information about the environment?
Sources: Authors, 2024.

To the question: What is the most dominant way of getting information about the environment? the majority of respondents, namely 24 out of 30 (80%), stated that they most often get informed through websites and social media. The remaining 6 respondents (20%) reported that they receive information about the environment through other means of communication (*Chart 7*).

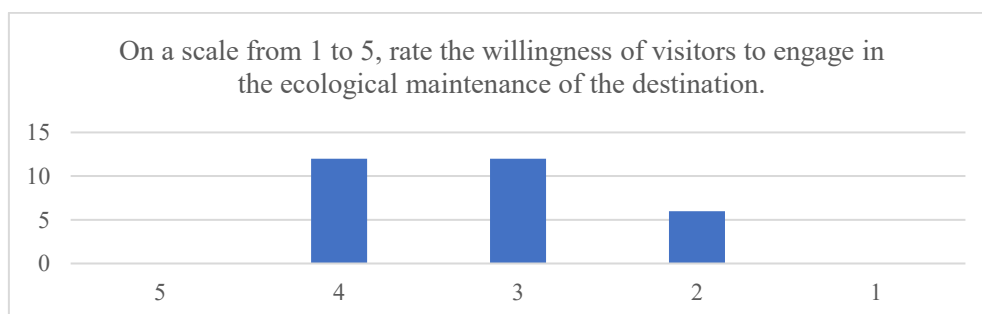


Chart 8. On a scale from 1 to 5, rate the willingness of visitors to engage in the ecological maintenance of the destination.
Sources: Authors, 2024.

To the question where respondents were asked to rate, on a scale from 1 to 5, the willingness of visitors to engage in the ecological maintenance of the destination, the following ratings were given: 12 respondents (40%) gave a rating of 4, another 40% of respondents (12 people) chose a rating of 3, and 6 respondents (20%) rated visitors' willingness with a 2. The research results showed that the majority of respondents perceive a moderate level of willingness among visitors to participate in ecological initiatives (*Chart 8*).

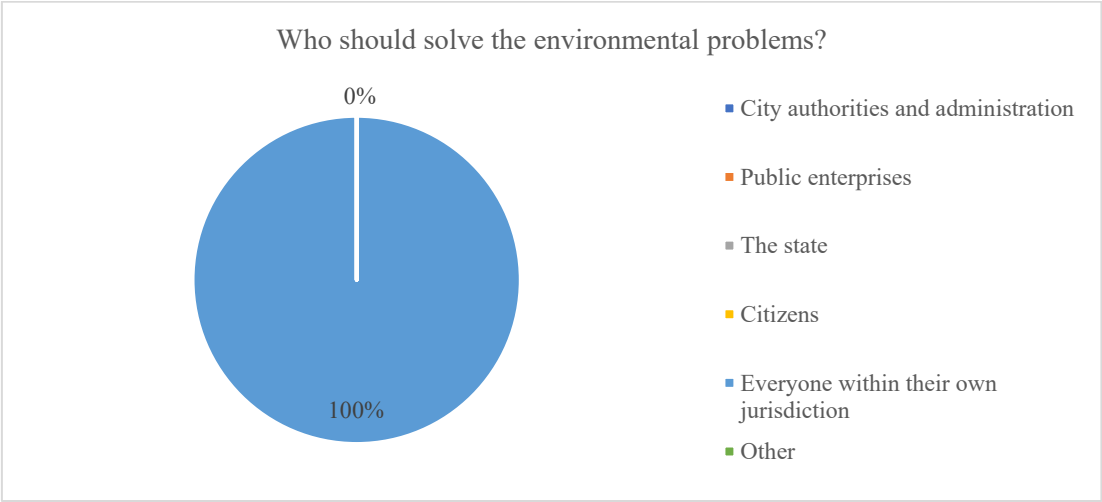


Chart 9. Who should solve the environmental problems?
Sources: Authors, 2024.

To the question: Who should solve the environmental problems? All 30 respondents (100%) gave the same answer – that everyone should solve the problems within their own jurisdiction (*Chart 9*).

Table 2. What changes in business operations are necessary for the long-term ecological sustainability of the destination?
Sources: Authors, 2024.

It is necessary to raise awareness about the importance of ecology, both among employees and visitors.
There is a particular emphasis on the need for increased education and information about the importance of the environment.
The introduction of innovative solutions for waste recycling.
Strengthening human resources capacity, that is, forming larger teams of experts and workers who would systematically address environmental issues.

The last question was: What changes in business operations are necessary for the long-term ecological sustainability of the destination? The question was open-ended, and the most common answers are presented in *Table 2*.

4. PROPOSALS FOR MEASURES TO IMPROVE ECO-FRIENDLY PRACTICES IN THE HOSPITALITY INDUSTRY

Environmentally responsible hotel management involves a range of activities aimed at reducing negative environmental impacts, including redesigning buildings, using smart heating and cooling systems, utilizing renewable energy sources, using energy-efficient appliances in kitchens and laundries, as well as for lighting and water heating, efficient water consumption, maintaining hygiene by using products free of hazardous chemicals, and promoting energy-efficient transportation options for guests and staff such as public transport, hybrid vehicles, and bicycles [11].

5. CONCLUSION

One of the successes of hotel operations lies in its sustainability and commitment to eco-friendly practices. The management of a tourist destination has the task of directing its operations towards a sustainable business system in order to achieve higher goals and preserve the environment. The case study in this paper was conducted in the area of Mokra Gora, near which the "Iver" hotel is located, a facility with potential for operating based on principles of environmentally sustainable practices. Employees expressed their views on the ecological aspects of business, and their awareness of the importance of sustainable operations also influences the awareness of visitors, who have the opportunity to learn about the significance and importance of environmental protection during their visit to this destination. Continuity in work and innovations based on ecological business principles bring numerous benefits to hotel facilities, the environment and the local community. The results of the survey indicate the necessity to raise awareness about the importance of sustainable development, educate employees and visitors, and introduce innovations in the field of waste recycling.

LITERATURE

- [1] Čačić, K.: *Business Operations of Hotel Enterprises*. Faculty of Tourism and Hotel Management, Singidunum University, Belgrade, 2013, p. 306
- [2] Čerović, S., Knežević, M.: *Management in Hospitality*. Singidunum University, Belgrade, 2019, p. 5
- [3] Maksin, M., Pucar, M., Korać, M., Milijić, S.: *Management of Natural and Cultural Resources in Tourism*. Faculty of Tourism and Hotel Management, Singidunum University, Belgrade, 2009, p. 19
- [4] Stojanović, V.: *Tourism and Sustainable Development*. Faculty of Science, University of Novi Sad, Novi Sad, 2023.
- [5] Sloan, P., Legrand, W., Chen, J.: *Sustainability in the Hospitality Industry Principles of Sustainable Operations*. Elsevier, Oxford, 2009.
- [6] Lazarević, M.: *Ecology as an Important Factor in Tourism*. Scientific Journal for Economics Financing 04/17, pp. 58-60, https://financingscience.org/wp-content/uploads/2019/08/04_17.pdf
- [7] Weaver, D.: *Sustainable Tourism*. Routledge, Abingdon, 2006.
- [11] Dražić, G.: *Sustainable Tourism*. Singidunum University, Belgrade, 2020.
- [8] Official website of the Mokra Gora destination. Available at: <https://mokragerainfo.com/> (Accessed: 05.06.2025.)
- [9] Official website. Available at: <https://mecavnik.info/skijaliste/smestaj-na-iveru/> (Accessed: 06.06.2025.)
- [10] Institute for Nature Protection of Serbia. Available at: <https://zzps.rs> (Accessed: 06.06.2025.)
- [12] Green key. Available at: <https://www.greenkey.global/> (Accessed: 06.06.2025.)

=====
CIP - Каталогизација у публикацији Народна библиотека Србије, Београд

6(082)(0.034.2)

5(082)(0.034.2)

331.45/.46(082)(0.034.2)

005(082)(0.034.2)

INTERNATIONAL Scientific and Professional Conference Politehnika (2025 ; Beograd)
Conference Proceedings [Електронски извор] / International Scientific and

Professional Conference Politehnika 2025, Belgrade, 28th November 2025. -

Belgrade : The Academy of Applied Studies Polytechnic, 2025 (Belgrade : The

Academy of Applied Studies Polytechnic). - 1 USB fleš memorija ; 1 x 2 x 5 cm

Sistemski zahtevi: Nisu navedeni. - Nasl. sa naslovne strane dokumenta. - Tiraž

400. - Bibliografija uz svaki rad.

ISBN 978-86-7498-146-7

a) Техника -- Зборници b) Примењене науке -- Зборници v) Заштита на раду

-- Зборници g) Менаџмент -- Зборници

COBISS.SR-ID 180602633



THE ACADEMY
OF APPLIED STUDIES
POLYTECHNIC

politehnika.edu.rs



conference.politehnika.edu.rs

ISBN-978-86-7498-146-7



9 788674 981467