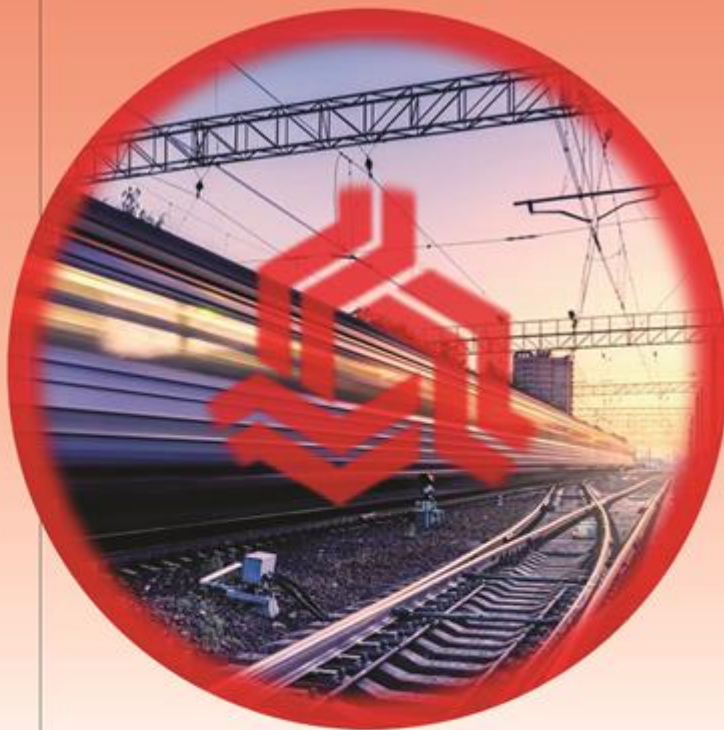


University of Niš
Faculty of Mechanical Engineering



PROGRAM

XXI SCIENTIFIC-EXPERT
CONFERENCE ON
RAILWAYS
RAILCON '24



October 10 - 11, 2024, Niš, Serbia



**The XXI Conference RAILCON '24
Faculty of Mechanical Engineering,
Aleksandra Medvedeva 14, Niš, Serbia
(GPS: 43°19'49.7"N+21°53'42.6"E)**



The Faculty of Mechanical Engineering Niš, Serbia wishes you a pleasant welcome to the

INTERNATIONAL XXI SCIENTIFIC-EXPERT CONFERENCE ON RAILWAYS - RAILCON '24

The RAILCON continues the tradition through its twenty-first Conference. As in previous years, the RAILCON will gather scientists and experts from the region, to observe the ongoing changes in developed railways and suggest directions for further railway development in Serbia and the region.

According to this year's Conference Program, there are 45 papers written by 115 authors from Railway, University and Industry, from 10 countries, dealing with actual topics from fields of rolling stock, traffic, infrastructure, maintenance, informatics, economics, strategy and policy.

During the RAILCON '24 a specialized exhibition and marketing presentations will be organized for 9 companies from 6 countries, co-financiers of the Conference.

We wish the participants a successful event and a pleasant stay in Niš.

Organizing Committee of RAILCON '24

Patron

Ministry of Science, Technological Development and Innovation of Republic of Serbia

Cofinanciers

KRAIBURG STRAIL
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Program Committee

Prof. Aleksandar Miltenović, President, Faculty of Mechanical Eng. Niš, RS
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Prof. Dragutin Kostić, Faculty of Traffic Engineering Belgrade, RS
Prof. Predrag Jovanović, Faculty of Traffic Engineering Belgrade, RS
Prof. Vojkan Lučanin, Faculty of Mechanical Engineering Belgrade, RS
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Prof. Dragan Milčić, Faculty of Mechanical Engineering Niš, RS
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Prof. Michaela Popa, University of Bucharest, RO
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PD Dr. Andreas Schöbel, TU Wien, AT
Prof. Szabolcs Fischer, Széchenyi István University, Győr, HU
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Prof. Jovan Tanasković, Faculty of Mechanical Engineering Belgrade, RS
Dr. Cristian Ulianov, Newcastle University, UK
Prof. Petr Voltr, University of Pardubice, CZ

Organizing Committee

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Vukašin Pavlović
Miša Tomić
Marko Perić
Damjan Rangelov
Vesna Grozdanović
Dušanka Nikolić, technical secretary

PROGRAM

THURSDAY, October 10th 2024

8³⁰ – Application of Participants
(Lobby)

10⁰⁰ – 10⁴⁵ Opening Ceremony
(Amphitheatre A)

10⁴⁵ – 11³⁰ Welcome Cocktail
(Lobby)

11³⁰ – 13⁰⁰ Plenary Session
(Amphitheatre A)

Chairmen:

Prof. Milan Bižić, Prof. Aleksandar Miltenović

- SUSTAINABLE RAILWAYS – INVESTIGATION OF THE ENERGY EFFICIENCY OF ELECTRIC RAIL VEHICLES
Szabolcs FISCHER, Bence HERMÁN, Szabolcs KOCSIS SZÜRKE
Széchenyi István University, Győr, Hungary
- EVALUATION OF RIDE COMFORT FOR PASSENGERS OF A MULTIPLE-UNIT TRAIN WITH DIFFERENT TYPES OF POWERTRAIN
Ján DIŽO, Alyona LOVSKA, Miroslav BLATNICKÝ, Vadym ISHCHUK
University of Žilina, Faculty of Mechanical Engineering, Žilina, Slovakia
- USING OF SATELLITE DATA FOR RAILWAY INFRASTRUCTURE MONITORING
Danijela RISTIĆ-DURRANT, Alina KLAPPER
OHB Digital Services GmbH, Bremen, Germany
Milan BANIĆ, Miloš MADIĆ, Milan TRIFUNOVIĆ, Miloš SIMONOVIĆ
University of Niš, Faculty of Mechanical Engineering, Niš, Serbia

13⁰⁰ – 13¹⁵ Commercial Presentations
(Amphitheatre A)

- MIND Group

13¹⁵ – 15³⁰ Break

Optional walking tour „Niš Fortress”

15³⁰ – 17³⁰ Workshop “Advanced satellite-based technology in land transport”

(Amphitheatre B) / Hybrid event (registration required): link

Chairmen:

Prof. Danijela Ristić-Durrant, Prof. Miloš Simonović

Presentation of EU Horizon, EU Horizon-EUSPA and ESA Research&Innovative projects related to space-based technologies in transport:

- SPACE-BASED APPLICATIONS FOR TRANSPORT MONITORING AND MANAGEMENT – Project SPATRA
- JOINT DEVELOPMENTS FOR URBAN RESILIENCE CONNECTING USERS TO PUBLIC TRANSPORT THROUGH SPACE TECHNOLOGY – Project JULIA
- INSTANTANEOUS INFRASTRUCTURE MONITORING BY EARTH OBSERVATION – Project IIMEO
- SPACE-BASED INNOVATIVE SOLUTIONS FOR LEVEL CROSSING SAFETY - Project SPACE4LEVELCROSSING

17⁴⁵ – 19³⁰ Session 1 - Rolling stock
(Amphitheatre B)

Chairmen:

Prof. Jovan Tanasković, Prof. Dušan Stamenković

- 1.1. STATIC TESTING OF BRAKE TRIANGLES OF RAILWAY VEHICLES
Milan BIŽIĆ, Dragan PETROVIĆ
Faculty of Mechanical and Civil Engineering in Kraljevo, University of Kragujevac, RS
Dragoslav ANTONIJEVIĆ, Aleksandar ANTONIJEVIĆ, Ivan MILJKOVIĆ
Tehnoliv Komerc d.o.o., Velika Plana, RS

- 1.2. RESEARCH OF THE DRAW HOOK FAILURES ON RAIL VEHICLES IN SERBIA
Marija VUKŠIĆ POPOVIĆ
Academy of Technical and Art Applied Studies Belgrade, RS
Jovan TANASKOVIĆ, Jagoš STOJANOVIĆ, Vojkan LUČANIN
University of Belgrade Faculty of Mechanical Engineering, RS
- 1.3. INFLUENCE OF VEHICLE LAYOUTS ON CAPACITY AND ENERGY CONSUMPTION
Bernhard RÜGER
TU Wien, Vienna, AT
- 1.4. IN-SERVICE ASSESSMENT OF EQUIVALENT CONICITY WITH THE AIM OF PREVENTING THE UNSTABLE RIDE OF RAIL VEHICLES
Goran SIMIĆ, Dragan MILKOVIĆ, Saša RADULOVIĆ, Aleksandra KOSTIĆ-MILIČIĆ
University of Belgrade, Faculty of Mechanical Engineering, Belgrade, RS
- 1.5. MODIFICATION OF THE POWERTRAIN UNIT ON A RAIL VEHICLE AND ANALYSIS OF ITS RUNNING PROPERTIES
Vadym ISHCHUK, Ján DIŽO, Alyona LOVSKA, Miroslav BLATNICKÝ
University of Žilina, Faculty of Mechanical Engineering, SK
- 1.6. RESEARCH OF MECHANICAL PROPERTIES OF A REMOVABLE MODULE CONCEPT FOR TRANSPORT OF TRACKED VEHICLES BY RAILWAYS
Alyona LOVSKA, Ján DIŽO, Juraj GERLICI
University of Žilina, Faculty of Mechanical Engineering, SK
- 1.7. PASS-BY NOISE MEASUREMENTS USING ONE VERSUS TWO IDENTICAL TRAILER UNITS WITHIN AVAILABLE STANDARD METHODS
Saša RADULOVIĆ, Aleksandra KOSTIĆ-MILIČIĆ, Dragan MILKOVIĆ, Goran SIMIĆ, Vojkan LUČANIN
University of Belgrade, Faculty of Mechanical Engineering, Belgrade, RS

17⁴⁵ – 19³⁰ Session 2
Traffic and transport
(Ceremonious Room)

Chairmen:

Prof. Predrag Jovanović, Prof. Miroslav Mijajlović

- 2.1. CONSIDERATIONS ON THE EFFICIENT USE OF NIGHT TRAINS IN DAYTIME TRANSPORT
Bernhard RÜGER
TU Wien, AT
Maria TRAUNMÜLLER
Strategy and Innovation, moodley design, AT
Frank MICHELBERGER
Carl Ritter von Ghega, Institute for Integrated Mobility Research, AT
Thomas SAUTER-SERVEAS
ZHAW School of Engineering, CH
- 2.2. ANALYSIS OF STATION'S CAPACITY REGARDING THE APPLIED INTERLOCKING SYSTEM, ON THE EXAMPLE OF THE TENT KALENIC STATION
Miodrag ALEKSIĆ
EPS, TENT Belgrade, Obrenovac, RS
Predrag JOVANOVIĆ, Dragana MACURA
University of Belgrade, Faculty of Transport and Traffic Engineering, Belgrade, RS
- 2.3. DISCUSSION OF DIFFERENT TOPOLOGIES FOR STATION RESNIK
Andreas SCHÖBEL
OpenTrack Railway Technology GmbH, Wien, Austria
- 2.4. ANALYSIS OF RAIL TRANSPORTATION SERVICES FROM THE ASPECT OF PERSONS WITH DISABILITIES: SECTION BELGRADE-NOVI SAD
Dragan ĐORĐEVIĆ, Nikola RISTIĆ, Jasmina STANIŠIĆ, Bojan VOZAR
Egis doo, RS

2.5. COMPARATIVE ANALYSIS OF TRAIN TRAFFIC USING SIMULATION MODELS

Strahinja OGNJANOVIĆ

Institute of Transportation CIP, RS

Milivoje ILIĆ, Predrag JOVANOVIĆ, Sanjin MILINKOVIĆ

University of Belgrade, Faculty of Transport and Traffic Engineering, RS

2.6. IMPROVING CYBER SECURITY IN RAILWAY TRAFFIC AND TRANSPORT USING BLOCKCHAIN TECHNOLOGY

Zoran PAVLOVIĆ

Academy of Technical and Art Applied Studies, RS

2.7. ANALYSIS OF CYBER SECURITY MECHANISM IN RAILWAY COMPANIES IN ELECTRONIC BUSINESS PROCESSES

Zoran G. PAVLOVIĆ, Veljko RADIČEVIĆ, Miloš MILANOVIĆ, Adela SULEJMANI, Marko BURSAĆ

Academy of Technical and Art Applied Studies, Belgrade, Serbia

FRIDAY, October 11th 2024

**9⁰⁰ – Application of Participants
(Lobby)**

**9⁰⁰ – 11⁰⁰ Session 3 – Infrastructure
(Amphitheatre B)**

Chairmen:

Prof. Szabolcs Fischer, Prof. Jelena Stefanović-Marinović

3.1. LIFECYCLE COST CONSIDERATIONS OF COMPUTER BASED LEVEL CROSSING PROTECTION SYSTEMS

Dejan LUTOVAC,

Signalling & Control d.o.o., RS

Ana LUTOVAC

University of Belgrade, School of Electrical Engineering, RS

3.2. STOWARDS A UNIVERSAL COMPUTER BASED LEVEL CROSSING PROTECTION SYSTEM

Dejan LUTOVAC,

Signalling & Control d.o.o., RS

Ana LUTOVAC

University of Belgrade, School of Electrical Engineering, RS

Railways of Republic of Srpska, BA

3.3. APPLICATION OF MACHINE LEARNING IN THE ANALYSIS OF THE WEB PROXY SERVER IN RAILWAY TRAFFIC ENVIRONMENT

Dragan JEVIĆ

Infrastructure of Serbian Railways, University of Criminal Investigation and Police Studies, RS

Kristijan KUK, Vladica STOJANOVIĆ

University of Criminal Investigation and Police Studies, RS

3.4. RAILWAY TRANSPORTATION AS A CAUSE OF CADMIUM POLLUTION

Jelena DIMITRIJEVIĆ, Elefterija ZLATANOVIĆ, Zoran BONIĆ

University of Niš, Faculty of Civil Engineering and Architecture, RS

Dragan M. DJORDJEVIĆ

University of Niš, Faculty of Science and Mathematics, RS

Zlatko ZAFIROVSKI

University "Ss. Cyril and Methodius" of Skopje, MK

20⁰⁰ Dinner Party
Restaurant *Crystal light*
(Dimitrija Tucovića 186, Niš)
(GPS: 43°19'00.6"N+21°50'55.1"E)



3.5. OVERVIEW OF METHODS FOR DETERMINING THE CAPACITY OF THE RAILWAY NETWORK

Julia VARADINOVA, Petar KOSTADINOV
Todor Kableskov" Higher Transport School, BG

3.6. POSSIBLE SCENARIO FOR VOIP COLLABORATION SOLUTION IN RAILWAY ENVIRONMENT

Sanja JEVTIĆ
Belgrade Academy of Technical and Art Applied Studies, College of Railway Engineering, RS
Dragan JEVTIĆ
Infrastructure of Serbian Railways, RS
Petar ČISAR
Information Technology Studies, University of Criminal Investigation and Police Studies, RS
Sonja KETIN
"Tamis" Research and Development Institute Pancevo, Pančevo, Serbia
Nada RATKOVIĆ KOVAČEVIĆ
Academy of Applied Technical Studies Belgrade, Computer-Mechanical Engineering Section, RS

3.7. USING NEW TECHNOLOGIES TO IMPROVE MANAGEMENT CONTROL OF ELECTRICAL POWER PLANTS OF RAILWAYS OF THE REPUBLIC OF SRPSKA

Goran STEVANOVIĆ, Zoran ILINČIĆ, Nebojša TOMIĆ, Dragan ŽIGIĆ, Borislav POPOVIĆ
Željeznice R.Srpske a.d. Doboj, DobojBA

4.2. RAILWAY TRACK DEFORMATION RESULTING FROM A CURVE NEAR ONE LEVEL CROSSING

Jelena DIMITRIJEVIĆ
Faculty of Civil Engineering and Architecture, University of Niš, RS
Marko MILIJIĆ
Serbian Railways Infrastructure AD, RS
Dušan CVETKOVIĆ
Faculty of Civil Engineering and Architecture, University of Niš, RS

4.3. EFFECTS OF SURFACE PREPARATION ON THE ADHESIVE BONDING OF ALUMINIUM ALLOY EN AW 5754 IN THE RAILWAY INDUSTRY

Nataša ZDRAVKOVIĆ, Dragan MILČIĆ, Miodrag MILČIĆ, Vukašin PAVLOVIĆ
Faculty of Mechanical Engineering, Niš, Serbia
Damjan KLOBČAR
Faculty of Mechanical Engineering, Ljubljana, Slovenia

4.4. WELDING TECHNIQUES TRAM RAIL 54G2 OF R260 AND BLOCK OF COGIDUR USING FCAW-S PROCESS AND FATIGUE TESTING OF WELDED JOINT

Dragan MITIĆ
NIVAR d.o.o. RS
Nikola JOVIĆ
Vossloh MIN Skretnice, RS
Davor GRUBER
DGNDT d.o.o., RS
Dragan MILČIĆ, Miodrag MILČIĆ
University of Niš, Faculty of Mechanical Engineering, RS

4.5. PREVENTIVE MAINTENANCE IN RAILWAY VEHICLES USING NEW TECHNOLOGIES

Damjan RANGELOV, Aleksandar MILTENOVIĆ, Dušan STAMENKOVIĆ, Lazar STOJANOVIĆ, Marko PERIĆ
University of Niš, Faculty of Mechanical Engineering, RS

9⁰⁰ – 11⁰⁰ Session 4

Vehicle and infrastructure maintenance (Ceremonious Room)

Chairmen:

Prof. Miloš Milošević, Dragan Nešić

4.1. MONITORING AND OBJECT DETECTION ON RAILWAY VEHICLE UNDERCARRIAGES USING DEEP LEARNING

Marko PERIĆ, Aleksandar MILTENOVIĆ, Jelena STEFANOVIĆ-MARINOVIĆ, Damjan RANGELOV, Nikola KOSTIĆ
University of Niš, Faculty of Mechanical Engineering, RS

11⁰⁰ – 11³⁰ Poster Presentation / Coffee Break
(Lobby)

- P.1. CHALLENGES IN ENSURING THE QUALITY OF WELDED RAILWAY VEHICLES AND COMPONENTS
Marko MARIČIĆ
TMS CEE D.O.O. BEOGRAD, RS
Marija VUKŠIĆ POPOVIĆ
Academy of Technical and Art Applied Studies RS
Marija NIKOLIĆ
Doo Tehnoliv Komerc Velika Plana, Velika Plana, RS
- P.2. OPTIMIZATION OF SHUNTING PROCESS AT A PASSENGER COMPLEX
Mirena TODOROVA
University of Transport “Todor Kableshkov”, Sofia, BG
- P.3. POSSIBILITY OF APPLYING MODERN SYSTEMS FOR THE SALE OF TRANSPORT SERVICES IN RAILWAY PASSENGER TRAFFIC AT RSR
Nikola SIMIĆ, Aleksandar MALIĆ, Siniša URUMOVIĆ, Biljana URUMOVIĆ, Danijela KURAVICA
Željeznice Republike Srpske a.d. Doboj, Doboj, BA
- P.4. IMPROVEMENT OF SPARE PARTS STOCK MANAGEMENT SYSTEM FOR LOCOMOTIVE DEPOT
Petya STOYANOVA
University of Transport, BG
- P.5. IMPLEMENTATION OF THE NEW INFORMATION SYSTEM FOR FINANCIAL MANAGEMENT (ERP SYSTEM) AT ŽRS A.D. DOBOJ
Siniša URUMOVIĆ, Mladen KURAVICA, Mladen BOŽIĆ, Biljana URUMOVIĆ, Gordana ILINČIĆ
Railways of Republic of Srpska, Doboj, BA

11³⁰ – 12⁴⁵ Session 5
Strategy and policy
(Ceremonious Room)

Chairmen:

Prof. Branislav Bošković Prof. Nikola Petrović

- 5.1. DESIGNING THE WEAR AND TEAR COMPONENT IN THE STRUCTURE OF TRACK ACCESS CHARGES
Vladimir MALČIĆ, Ratko ĐURIČIĆ
University of East Sarajevo, Faculty for Transport and Traffic Engineering Doboj, BA
Branislav BOŠKOVIĆ, Mirjana BUGARINOVIĆ
University of Belgrade, Faculty for transport and Traffic Engineering, RS
- 5.2. PROGRAM FOR PASSING PROFESSIONAL EXAM FOR POSITION OF MACHINE DRIVER EXPERIENCE AND CHALLENGES IN FUTURE
Aleksandar BLAGOJEVIĆ
Srbijavoz AD, Belgrade, Serbia
- 5.3. KPIs FOR EVALUATING THE NEW TECHNOLOGIES EFFICIENCY: THE CASE OF ZRS A.D. DOBOJ
Rade CVIJANOVIĆ
Railways of Republic of Srpska, BA
Branislav BOŠKOVIĆ, Mirjana BUGARINOVIĆ
University of Belgrade, Faculty of Transport and Traffic Engineering, RS
Ratko ĐURIČIĆ
University of East Sarajevo, Faculty for Transport and Traffic Engineering, Doboj, BA
- 5.4. STOPPAGE OF RSR-OWNED WAGONS IN FREIGHT OPERATIONS
Marko PAVLOVIĆ, Zoran GAJIĆ, Snježana CVIJANOVIĆ, Dragan ZELENKOVIĆ, Nebojša KOVAČEVIĆ
Republika Srpska Railways JSC. BA
- 5.5. RAILWAY PROJECT MANAGEMENT – CONTEMPORARY ISSUES AND SOLUTIONS
Irena PETROVA
Faculty of Transport Management, Todor Kableshkov University of Transport, BA

5.6. ANALYSIS OF THE TIMETABLE FROM SREMSKA MITROVICA STATION TO ŠID STATION

Nataša PEJIĆ

Leget Container Transport d.o.o., RS

11³⁰ – 12⁴⁵ Session 6 - The Graduates and the Future of Railway (Amphitheatre B)

Chairmen:

Prof. Dušan Stamenković, Prof. Milan Banić

6.1. RESEARCH ON THE DYNAMICS OF RAILWAY VEHICLES USING THE SOFTWARE PACKAGE SIMPACK RAIL

Student: Ivica BUDROVAC

Mentor: Milan BANIĆ

University of Niš, Faculty of Mechanical Engineering, RS

6.2. WHEEL SLIDE PROTECTION IN RAILWAY VEHICLES BRAKING

Student: Lazar RANKIĆ

Mentor: Dragan MILKOVIĆ

University of Belgrade, Faculty of Mechanical Engineering, RS

6.3. BIOMIMICRY AS A METHOD FOR AERODYNAMIC TRAIN DESIGN

Student: Pavle SAVIĆEVIĆ

Mentor: Jovan TANASKOVIĆ

University of Belgrade, Faculty of Mechanical Engineering, RS

6.4. ANALYSIS AND OPTIMIZATION OF MAINTENANCE OPERATIONS EMU "FLIRT 413"

Student: Dušan PANTELIĆ

Mentor: Jovan TANASKOVIĆ

University of Belgrade, Faculty of Mechanical Engineering, RS

6.5. APPLICATION OF DEA METHOD IN RAILWAY TRANSPORT

Student: Marija JOSIMOVIC

Mentor: Nikola PETROVIC

University of Niš, Faculty of Mechanical Engineering, RS

Conference Fee

The Registration Fees for the participants are:

- **14000 RSD** + 20% VAT or about **120 EUR** + 20% VAT

A participant with a paid registration fee is eligible for the attendance at the Conference, Proceedings, other Conference materials and Dinner Party.

The Registration fee is payable by bank transfer to the account of the Conference according to the payment instructions that can be found on the web site of the Conference.

Application of Participants

For the purpose of successful organization of the International XXI Scientific-Expert Conference on Railways RAILCON '24 potential participants are asked to apply their participation on time.

Selected papers

Selected presented papers will be published in the Journal of the Faculty of Mechanical Engineering University of Niš: Innovative Mechanical Engineering (<http://ime.masfak.ni.ac.rs>).

Organizing Secretariat

Faculty of Mechanical Engineering

RAILCON '24

Aleksandra Medvedeva 14

18000 Niš

Serbia

Phone: +381-18-500-642

e-mail: info@railcon.rs

www.railcon.rs



13⁰⁰ Conference Closing