

UNIVERSITY OF NIŠ
FACULTY OF MECHANICAL ENGINEERING

PROGRAM RAILCON '26

INTERNATIONAL SCIENTIFIC-EXPERT
CONFERENCE ON RAILWAYS

15–16 OCTOBER 2026 · NIŠ, SERBIA



FACULTY OF MECHANICAL ENGINEERING
Aleksandra Medvedeva 14, Niš, Serbia

Program Committee

Prof. Milan Banić, President, Faculty of Mechanical Engineering Niš, RS
 Prof. Milan Bižić, Faculty of Mechanical & Civil Engineering Kraljevo, RS
 Prof. Nebojša Bojović, Faculty of Traffic Engineering Belgrade, RS
 Prof. Branislav Bošković, Faculty of Traffic Engineering Belgrade, RS
 Prof. Dragan Đurđanović, University of Texas at Austin, USA
 Prof. Ratko Đuričić, University of East Sarajevo, R. Srpska, BA
 Prof. Juraj Grenčak, University of Žilina, SK
 Prof. Daniel Kalinčak, University of Žilina, SK
 Prof. Goran Janevski, Faculty of Mechanical Engineering Niš, RS
 Prof. Predrag Jovanović, Faculty of Traffic Engineering Belgrade, RS
 Prof. Vojkan Lučanin, Faculty of Mechanical Engineering Belgrade, RS
 Prof. Dragan Marinković, TU Berlin, DE
 Prof. Dragan Milković, Faculty of Mechanical Engineering Belgrade, RS
 Prof. Dragan Milčić, Faculty of Mechanical Engineering Niš, RS
 Prof. Miloš Milošević, Faculty of Mechanical Engineering Niš, RS
 Prof. Nenad T. Pavlović, Faculty of Mechanical Engineering Niš, RS
 Prof. Michaela Popa, University of Bucharest, RO
 Prof. Danijela Ristić-Durrant, OHB Digital Services, DE
 PD Dr. Andreas Schöbel, TU Wien, AT
 Prof. Szabolcs Fischer, Széchenyi István University, Gyor, HU
 Prof. Miloš Simonović, Faculty of Mechanical Engineering Niš, RS
 Prof. Dušan Stamenković, Faculty of Mechanical Engineering Niš, RS
 Prof. Jovan Tanasković, Faculty of Mechanical Engineering Belgrade, RS
 Prof. Ján Dižo, Faculty of Mechanical Engineering Žilina, Slovakia
 Ass. Prof. Sanel Purgić, TU Sofia, BG
 Dr. Cristian Ulianov, Newcastle University, UK
 Dr. Rešad Nuhodžić, Public Works Administration, ME
 Dr. Slobodan Rosić, Serbian Railways Infrastructure, RS
 Prof. Petr Voltr, University of Pardubice, CZ

Patron

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

Organizing Committee

Prof. Aleksandar Miltenović, President
 Prof. Miroslav Mijajlović
 Prof. Miodrag Milčić
 Doc. Vukašin Pavlović
 Doc. Nataša Zdravković
 Miša Tomić
 Damjan Rangelov
 Marko Perić
 Vesna Grozdanović
 Dušanka Nikolić, technical secretary

Cofinanciers

STRAIL
 EGIS
 SIGNALLING & CONTROL
 OPEN TRACK
 INSTITUTE MIHAJLO PUPIN

PROGRAM
THURSDAY, 15 October 2026

08:30–10:30	Registration of participants (Lobby 6 th floor)		
10:30–11:00	Opening Ceremony (Room 611)		
11:00–11:30	Welcome Cocktail (Lobby 6 th floor)		
11:30–13:30	Plenary Session (Room 611)		
<i>Chairmen: Prof. Aleksandar Miltenović, Prof. Miloš Simonović</i>			
<table><tr><td> PL.1. FROM AUTOMATION TO INTELLIGENT TRAIN CONTROL: AI, DIGITAL TWINS AND TRUSTWORTHY AUTONOMY FOR FUTURE RAILWAYS Francesco FLAMMINI PL.2. FROM NODE TO NETWORK: HOW TRANSPORT INTERCHANGES DEFINE THE PATHWAYS TO RAILWAY TRANSFORMATION Giannis ADAMOS </td><td> PL.3. ENHANCING COMPETITIVENESS OF INTERNATIONAL RAILWAY FREIGHT CORRIDORS THROUGH A COOPERATIVE GAME APPROACH Miroslav PROKIĆ PL.4. IMPROVING THE RELIABILITY OF RELEVANT RAILWAY SIGNAL DETECTION BY COMBINING ARTIFICIAL INTELLIGENCE AND CLASSICAL COMPUTER VISION METHODS Aleksandar PETROVIĆ </td></tr></table>		PL.1. FROM AUTOMATION TO INTELLIGENT TRAIN CONTROL: AI, DIGITAL TWINS AND TRUSTWORTHY AUTONOMY FOR FUTURE RAILWAYS Francesco FLAMMINI PL.2. FROM NODE TO NETWORK: HOW TRANSPORT INTERCHANGES DEFINE THE PATHWAYS TO RAILWAY TRANSFORMATION Giannis ADAMOS	PL.3. ENHANCING COMPETITIVENESS OF INTERNATIONAL RAILWAY FREIGHT CORRIDORS THROUGH A COOPERATIVE GAME APPROACH Miroslav PROKIĆ PL.4. IMPROVING THE RELIABILITY OF RELEVANT RAILWAY SIGNAL DETECTION BY COMBINING ARTIFICIAL INTELLIGENCE AND CLASSICAL COMPUTER VISION METHODS Aleksandar PETROVIĆ
PL.1. FROM AUTOMATION TO INTELLIGENT TRAIN CONTROL: AI, DIGITAL TWINS AND TRUSTWORTHY AUTONOMY FOR FUTURE RAILWAYS Francesco FLAMMINI PL.2. FROM NODE TO NETWORK: HOW TRANSPORT INTERCHANGES DEFINE THE PATHWAYS TO RAILWAY TRANSFORMATION Giannis ADAMOS	PL.3. ENHANCING COMPETITIVENESS OF INTERNATIONAL RAILWAY FREIGHT CORRIDORS THROUGH A COOPERATIVE GAME APPROACH Miroslav PROKIĆ PL.4. IMPROVING THE RELIABILITY OF RELEVANT RAILWAY SIGNAL DETECTION BY COMBINING ARTIFICIAL INTELLIGENCE AND CLASSICAL COMPUTER VISION METHODS Aleksandar PETROVIĆ		
13:30–15:30	Break		

PROGRAM

THURSDAY, 15 October 2026

15:30–17:00	Parallel Sessions
15:30–17:00 Session 1 – Rolling Stock <i>(Room 611)</i> <i>Chairmen: Prof. Jovan Tanasković, Prof. Milan Banić</i> 1.1. CALCULATION OF SELECTED PARAMETERS OF A SCREW COUPLER AND BUFFERS OF A LOCOMOTIVE SCALED MODEL Ján DIŽO, Alyona LOVSKA, Miroslav BLATNICKÝ, Martin BUČKO, Marek ZOŠIAK 1.2. A STUDY OF THE STRENGTH OF THE LOAD-BEARING STRUCTURE OF A BOX WAGON WITH CORRUGATED CLADDING SHEETS Alyona LOVSKA, Juraj GERLICI, Ján DIŽO 1.3. ANALYSIS OF FRICTION COEFFICIENTS OF CERTIFIED COMPOSITE BRAKE BLOCKS IN FREIGHT RAILWAY WAGONS Saša RADULOVIĆ, Dragan MILKOVIĆ, Goran SIMIĆ, Aleksandra KOSTIĆ MILIČIĆ 1.4. CONCEPTUAL SOLUTION OF A TEST STAND FOR CALIBRATION OF MEASURING RAILWAY WHEELSETS FOR DIFFERENT TRACK GAUGES Milan BIŽIĆ, Dragan PETROVIĆ 1.5. PASS-BY NOISE ASSESSMENT OF CONTEMPORARY AND LEGACY RAIL VEHICLES ON SERBIAN RAILWAYS Goran SIMIĆ, Aleksandra KOSTIĆ-MILIČIĆ, Dragan MILKOVIĆ, Saša RADULOVIĆ, Ognjen OBRADOVIĆ 1.6. MODELING AND PREDICTION OF STOCHASTIC VIBRATIONS IN TRAIN OPTICAL DETECTION SYSTEMS Ivan PAVLOVIĆ, Nikola DESPENIĆ, Milan BANIĆ	15:30–17:00 Session 4 – Vehicle and Infrastructure Maintenance/ Other Railway Aspects <i>(Room 401)</i> <i>Chairmen: Prof. Giannis Adamos, Prof. Miloš Milošević</i> 4.1. SMART RAIL VEHICLE MONITORING: A COMPARATIVE STUDY OF CNN ARCHITECTURES Marko PERIĆ, Aleksandar MILTENOVIC, Emina PETROVIĆ, Damjan RANGELOV, Saša PAVLOVIĆ 4.2. A REVIEW OF WHEEL INSPECTION DEVICES AND CONDITION MONITORING SYSTEMS FOR RAILWAY VEHICLES Damjan RANGELOV, Aleksandar MILTENOVIC, Marko PERIĆ, Dušan STAMENKOVIĆ, Sanel PURGIĆ 6.1. APPLICATION OF PHYSICS AI IN RAILWAY VEHICLE DESIGN – A REVIEW Nađa BRADIĆ, Aleksandar MILTENOVIC, Danijela RISTIĆ-DURRANT, Miloš SIMONOVIC, Miloš BOJIĆ 6.2. OPERATIONAL VALIDATION OF SPACE-ENABLED RAIL BUCKLING RISK MONITORING IN THE SPATRA RAILWAY PILOT Danijela RISTIĆ-DURRANT, Milan BANIĆ, Alina KLAPPER, Dietrich KUHN, Miloš SIMONOVIC, Miloš MADIĆ, Milan TRIFUNOVIC 6.3. MANAGEMENT OF AI SMART MONITORING IN RAILWAY SYSTEMS: A SYSTEMATIC REVIEW OF PREDICTIVE MAINTENANCE, RISK-INFORMED DECISION SUPPORT, AND OPERATIONAL RESILIENCE Milena RAJIĆ, Giannis ADAMOS, Pedja MILOSAVLJEVIĆ, Marko PERIĆ, Argirios BALATSOUKAS 6.4. FROM RAILWAYS ACT 1993 TO GREAT BRITISH RAILWAYS: EVOLUTION OF UK RAIL REFORM AND RETURN TO PUBLIC OWNERSHIP (1993–2026) Aleksandar BLAGOJEVIĆ [Serbian]
17:00–17:30	Coffee Break (Lobby 6 th floor)
17:30–19:00	Meeting of the founding members (Room 611)
Association for the Scientific and Industrial Development of Railway Mechanical Engineering and Transport	
20:00	Conference Dinner (Tami Residence)

PROGRAM

FRIDAY, 16 October 2026

08:30–10:00	Parallel Sessions
08:30–10:00 Session 2 – Traffic and Transport/Strategy and policy <i>(Room 611)</i> <i>Chairmen: Prof. Predrag Jovanović, Prof. Branislav Bošković</i> 2.1. ASSESSMENT OF RESIDUAL CAPACITY OF SINGLE-TRACK LINES FROM SIMULATION USING UIC 406 COMPRESSION Andreas SCHÖBEL 2.2. COST-MINIMIZING TRAIN PATH MANAGEMENT: CURRENT AND PROPOSED CALCULATION METHOD Nemanja TOŠIĆ, Predrag JOVANOVIĆ, Dragana MACURA 2.3. APPLICATION OF MATHEMATICAL MODELS IN RAILWAY WASTE MANAGEMENT SYSTEMS Nikola RISTIĆ, Predrag JOVANOVIĆ 2.4. APPLICATION OF ARTIFICIAL INTELLIGENCE IN SINGLE WAGON LOAD (SWL) OPTIMIZATION OPERATIONAL MODEL FOR RAILWAYS OF REPUBLIKA SRPSKA Marko PAVLOVIĆ, Zoran GAJIĆ, Snježana CVIJANOVIĆ 5.1. THE MISSING INSTITUTION IN EUROPEAN RAIL FREIGHT CORRIDOR GOVERNANCE: LESSONS FROM AVIATION AND ELECTRICITY Miroslav PROKIĆ, Branislav BOŠKOVIĆ 5.2. BALANCING CAPACITY, FLEXIBILITY AND RESILIENCE: LESSONS FROM AUTOMATED METRO SYSTEMS FOR FUTURE RAILWAYS Mirjana BUGARINOVIĆ, Tihomir SUBOTIĆ, Branislav BOŠKOVIĆ 5.3. INTERMODAL RAIL-AIR TRAVEL – RECOMMENDED FUTURE SERVICES Bernhard RÜGER, Jan HERBST	08:30–10:00 Session 3 – Infrastructure <i>(Room 401)</i> <i>Chairmen: Prof. Ján Dižo, Doc. Vukašin Pavlović</i> 3.1. LOWCOST ELECTRONIC INTERLOCKING SYSTEM FOR THE RAILWAY STATION ELEMIR Dejan LUTOVAC, Tatjana LUTOVAC, Ana LUTOVAC 3.2. SUPERSTRUCTURE MODERNIZATION OF THE HEAVY GANTRY CRANE TRACK IN TPP REK BITOLA Ivona NEDEVSKA TRAJKOVA, Riste RISTOV, Vasko GACEVSKI 3.3. COMPARATIVE ANALYSIS OF TRACK QUALITY INDEX CALCULATION METHODOLOGIES USING REAL GEOMETRY DATA Ivona NEDEVSKA TRAJKOVA, Zlatko ZAFIROVSKI, Jelena DIMITRIJEVIĆ, Nenad PETRESKI 3.4. WELDING OF COGIDUR BLOCKS (1.8715 GROUP 3.2) WITH SELF-SHIELDING WIRE-PROCESS 114 Mladen MITIĆ, Đorđe HADŽI-ĐOKIĆ, Miroslav MIJAJLOVIĆ, Dragan MITIĆ 3.5. TGPS+ MONITORING OF GOODS FLOWS AND PREPARATION OF DOCUMENTS IN RAILWAY GOODS TRAFFIC Zoran STOŠIĆ, Jovan STOŠIĆ, Života ĐORĐEVIĆ
10:00–10:30	Coffee Break (Lobby 6 th floor)
10:00–10:30	Poster Presentation / Coffee Break (Lobby 6 th floor)

P.1. FRICTION STIR WELDING OF ALUMINIUM ROOF PANELS FOR METRO VEHICLES

Miodrag MILČIĆ, Petar LJUŠIĆ, Branko SPASIĆ, Dragan MILČIĆ, Nataša ZDRAVKOVIĆ

P.2. IMPACT OF OPERATIONAL DISRUPTIONS ON QUALITY INDICATORS IN SOFIA METRO UNDER DIFFERENT LEVELS OF AUTOMATION

Mirena TODOROVA, Violina VELJOVA, Zlatin TRENDABILOV, Aleksander GEORGIEV

P.3. MODERNIZATION OF RAILWAY VEHICLE MAINTENANCE WORKSHOPS AT ŽRS A.D. DOBOJ

Biljana SIMIĆ, Gordana ILINČIĆ, Boro MANJIĆ

P.4. METAHEURISTIC OPTIMIZATION OF RESOURCE PLANNING AND BUSINESS PROCESS MANAGEMENT IN RAILWAY TRANSPORT

Irena PETROVA, Kostadin TRIFONOV

P.5. BATTERY POWERED TRAINS FOR CROATIAN RAILWAYS

Dominik GLAVINA, Marina BOMEŠTAR GAŠPARIĆ

P.6. SAFETY ASPECTS OF RAILWAY VEHICLE MAINTENANCE PLANS WITHIN THE EUROPEAN REGULATORY FRAMEWORK

Marija VUKŠIĆ POPOVIĆ, Aleksandar BLAGOJEVIĆ, Jovan TANASKOVIĆ, Marko MARIČIĆ, Dragan RAJOVIĆ

P.7. FREIGHT WAGON FAILURES AS A BASIS FOR SAFETY-ORIENTED MAINTENANCE MANAGEMENT UNDER EUROPEAN RAILWAY REGULATIONS

Marija VUKŠIĆ POPOVIĆ, Aleksandar BLAGOJEVIĆ, Srđan STOJČIĆ, Jevrem ROGIĆ, Dušan VUJOVIĆ

P.8. EXPERIMENTAL RESEARCH OF CHARACTERISTICS OF RIGID POLYURETHANE FOAM FOR KINETIC COLLISION ABSORPTION SYSTEMS - OGDEN MATERIAL MODEL

Jovan TANASKOVIĆ, Francis FRANKLIN, William NIGHTINGALE

P.9. ENERGY HARVESTING TECHNOLOGIES FOR RAILWAY SENSOR SYSTEMS: A COMPARATIVE ANALYSIS BY APPLICATION AND DEPLOYMENT LOCATION

Anđela TONČEV, Teodor ĐORĐEVIĆ, Vukašin PAVLOVIĆ, Aleksandra CVETKOVIĆ, Miloš MILOŠEVIĆ

P.10. PIEZOELECTRIC ENERGY HARVESTERS FOR RAILWAY TRACK VIBRATIONS: A REVIEW OF STRUCTURAL DESIGNS AND PERFORMANCE ENHANCEMENT STRATEGIES

Teodor ĐORĐEVIĆ, Anđela TONČEV, Nenad T. PAVLOVIĆ, Aleksandra CVETKOVIĆ, Miloš MILOŠEVIĆ

10:30–11:30 Session 7 – The Graduates and the Future of Railway (Room 611)*Chairmen: Prof. Dušan Stamenković, Prof. Milan Bižić***7.1. FAILURE ANALYSIS OF TYPE R FREIGHT WAGONS ON THE SERBIAN RAILWAY NETWORK**

Dragana PANIĆ, Jovan TANASKOVIĆ

7.2. ANALYSIS OF FAILURES OF TYPE “Z” FREIGHT WAGONS ON SERBIAN RAILWAYS

Jovana IVANOVIĆ, Jovan TANASKOVIĆ

7.3. FAILURE ANALYSIS AND AVAILABILITY ASSESSMENT OF STADLER FLIRT EMU 413/417 TRAINS IN SERBIA

Kristina HRISTODULU, Jovan TANASKOVIĆ

7.4. FAILURE ANALYSIS OF H-SERIES FREIGHT WAGONS ON THE RAILWAY NETWORK OF THE REPUBLIC OF SERBIA

Milica ANDRIĆ, Jovan TANASKOVIĆ

7.5. ANALYSIS OF FAILURES OF TYPE “E” FREIGHT WAGONS ON SERBIAN RAILWAYS

Zoran JOVICIĆ, Jovan TANASKOVIĆ

11:30–12:00 Conference Closing (Room 611)