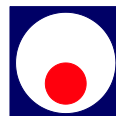




**FACULTY OF MECHANICAL AND CIVIL ENGINEERING IN KRALJEVO
UNIVERSITY OF KRAGUJEVAC
REPUBLIC OF SERBIA**



CONFERENCE PROGRAMME

XI INTERNATIONAL TRIENNIAL CONFERENCE

HEAVY MACHINERY - HM 2023

21 – 24 June 2023, Vrnjačka Banja, Serbia

Supported by:
Republic of Serbia
Ministry of Science, Technological Development and Innovation

21.6.2023. – WEDNESDAY

09:00 – 12:00	Registration of participants	Reception
12:00 – 13:00	Opening Ceremony	Hall 1
13:00 – 13:30	Cocktail	Lobby
13:30 – 14:30	Plenary Session	Hall 1
Chairman:	Radovan Bulatović, Nenad Zrnić, Milan Bižić	
WAREHOUSING 4.0 Boris Jerman, Jurij Hladnik		
DEVELOPMENT OF A DOMESTIC 4-AXIS SCARA ROBOT Zoran Miljković, Nikola Slavković, Bogdan Momčilović, Đorđe Milićević		
15:00 – 16:00	Lunch	Restaurant
16:00 –	Free activities	

22.6.2023. – THURSDAY

09:00 – 10:30	Registration of participants	Reception
10:30 – 12:00	Session 1: EARTH-MOVING AND TRANSPORTATION MACHINERY	Hall 1
Chairman:	Goran Marković, Nenad Zrnić	
DEVELOPMENT AND STATE-OF-THE ART IN GREEN ELEVATORS TECHNOLOGIES: A SURVEY Nenad Zrnić, Andro Dragović, Nenad Kosanić, Vladan Milovanović		
RESEARCH OF THE DYNAMICS OF THE PROCESS OF EXCAVATING THE SOIL WITH THE ADDITIONAL SLOPE BOARD OF THE BULLDOZER ON THE CATERPILLAR TRACK A.I. Dotsenko, T.K. Babaev		
STRENGTH OF FILLET-WELDED JOINT CONNECTIONS: COMMENTS ON CORRELATION BETWEEN CLASSICAL AND PARTICULAR FINITE ELEMENT		

APPROACH

Vlada Gašić, Aleksandra Arsić, Nenad Zrnić

CONTINUOUSLY VARIABLE TRANSMISSION FOR CONSTRUCTION MACHINES TO INCREASE EFFICIENCY AND PRODUCTIVITY

Jasna Glišović, Vanja Šušteršič, Jovanka Lukić, Saša Vasiljević

ARTIFICIAL INTELLIGENCE (AI) AND THE FUTURE OF THE MACHINE ELEMENTS DESIGN

Marko Popović, Nedeljko Dučić, Vojislav Vujičić, Milan Marjanović, Goran Marković

A STUDY OF EMERGING TECHNOLOGIES SCHEDULING AT CONTAINER TERMINALS USING CONCEPTUAL MAPPING

Branislav Dragović, Nenad Zrnić, Andro Dragović

FEM RECOMMENDATION FOR SHUTTLE RACKING TOLERANCES AND CLEARANCES

Rodoljub Vujanac, Nenad Miloradovic, Snezana Vulovic

LARGE SPAN GANTRY CRANE STRUCTURAL ANALYSIS USING FINITE ELEMENT METHOD

Marko Todorović, Goran Marković, Nebojša Zdravković, Mile Savković, Goran Pavlović

THE OPTIMIZATION OF THE LOADING RAMP MECHANISM OF A HEAVY-WEIGHT TRAILER

Predrag Mladenović, Radovan Bulatović, Nebojša Zdravković, Mile Savković, Goran Marković, Goran Pavlović

MULTI AISLE AUTOMATED RACK WAREHOUSE SIMULATION FOR AVERAGE TRAVEL TIME

Goran Bošković, Marko Todorović, Goran Marković, Zoran Čepić, Predrag Mladenović

10:30 – 12:00

Session 2: RAILWAY ENGINEERING

Hall 2

Chairman:

Dragan Petrović, Dobrinka Atmadzhova

PROOF TESTS OF GEOMETRIC-KINEMATIC CALCULATIONS OF RAILWAY VEHICLES

Dragan Milković, Goran Simić, Vojkan Lučanin, Saša Radulović, Aleksandra Kostić Miličić

NETWORK MODEL AND VIBRATION SIMULATION OF A RAILWAY TRACK

Mustafa Berkant Selek, Erol Uyar, Mücahid Candan

VIBRATION MEASUREMENT WITH WIRELESS HETEROGENEOUS INTEGRATED DISPLACEMENT SENSOR AND DETERMINATION OF DYNAMIC DEFLECTION OF SLEEPERS AND STIFFNESS OF RAILWAY TRACKS

Branslav Gavrilović, Vladimir Aleksandrovich Baboshin, Zoran Pavlović

METHOD FOR DETERMINING THE FORCES ACTING ON A AXLE BOX DESIGNED FOR THE INSTALLATION OF AN ADAPTER BEARING

Dobrinka Atmadzhova, Vanio Ralev

STUDY OF THE CONTACT BETWEEN DESIGN PROFILES OF RAILS AND RIMS USED IN THE TRAM TRACK OF THE CITY OF SOFIA

Vladimir Zhekov

INVESTIGATION OF THE BEHAVIOUR OF A FREIGHT WAGON BRAKING SYSTEM ON A BRAKE SYSTEMS BENCH

Vasko Nikolov, Georgi Nikolov

TECHNICAL CONDITION OF RAILWAY VEHICLES AS A SAFETY FACTOR IN TRAFFIC

Marija Vukšić Popović, Jovan Tanasković, Ivan Krišan

REQUIREMENTS OF UIC STANDARDS FOR BRAKE TRIANGLES OF RAILWAY VEHICLES

Milan Bižić, Dragan Petrović

APPLICATION OF METAL-RUBBER ELEMENTS IN THE SPRING SUSPENSION OF ROLLING STOCK

Emil Kostadinov, Nencho Nenov

AN ANALYSIS REGARDING TRAIN DERAILMENTS CAUSED BY CRACKED WHEELSETS

Eugen Ghita

12:00 – 12:30	Coffee break	Lobby
12:30 – 14:00	Session 3: EARTH-MOVING AND TRANSPORTATION MACHINERY	Hall 1
Chairman:	<i>Nebojša Zdravković, Dragan Živanić</i>	

FRAMEWORK AND REASONABLENESS OF APPLYING THE CONCEPT OF CRANE STRUCTURAL HEALTH MONITORING IN INLAND WATER HARBOURS

Atila Zelić, Dragan Živanić, Mirko Katona, Nikola Ilanković

MEASURING THE KINEMATIC CHARACTERISTICS ON A REDUCED-SIZE ZIPLINE MODEL

Tanasije Jojić, Jovan Vladić, Radomir Đokić

TESTING OF CONVEYOR BELTS AND FORMATION OF VERIFICATION MODEL USING FEM

Dragan Živanić, Nikola Ilanković, Nebojša Zdravković

ANALYSIS HYBRID DRIVES OF MOBILE MACHINES

Vesna Jovanović, Dragoslav Janošević, Jovan Pavlović

DETERMINATION OF RESISTANCE FORCES IN THE WHEEL LOADER USING DISCRETE ELEMENT METHOD

Jovan Pavlović, Dragoslav Janošević, Vesna Jovanović, Nikola Petrović

MOBILE CRANE MODELLING FOR ROBOTIC FUNCTIONAL INTEGRATION

Cătălin Frâncu, Cristina Sescu-Gal, Oana Tonciu

ANALYSIS AND CALCULATION OF OVERHEAD CHAIN CONVEYOR FOR METAL HOUSINGS TRANSPORTATION

Spasoje Trifkovic, Miroslav Milutinovic, Srdjan Samardzic

STRESS STATE ANALYSIS OF HINGED SHACKLE USING ANALYTIC AND FINITE ELEMENT METHOD

Srdjan Samardzic, Spasoje Trifkovic, Miroslav Milutinovic

A HYBRID MCDM MODEL FOR WASTE OIL TRANSFER STATION LOCATION SELECTION

Jelena Mihajlović, Goran Petrović, Danijel Marković, Dragan Marinković, Žarko Čojbašić, Dušan Ćirić

12:30 – 14:00

Session 4: RAILWAY ENGINEERING

Hall 2

Chairman:

Milan Bižić, Dragan Milković

DEVELOPMENT OF LABORATORY FOR TESTING OF RAILWAY VEHICLES AND STRUCTURES

Dragan Petrović, Milan Bižić

CHALLENGES FOR TECHNICAL SPECIFICATIONS FOR INTEROPERABILITY (TSI) IN THE EUROPEAN UNION (EU)

Miltcho Lepoev

DETERMINING THE PARAMETERS FOR PERFORMING PUBLIC PASSENGER RAIL TRANSPORT OF THE CARRIERS

Mirena Todorova, Kostadin Trifonov

POSSIBILITY OF REPLACING LOW-CARBON STRUCTURAL STEEL WITH HIGH-STRENGTH STEELS, FOR PRODUCING WELDED STRUCTURES IN INDUSTRY OF HEAVY MACHINES

Đorđe Ivković, Dušan Arsić, Radun Vulović, Vukić Lazić, Aleksandar Sedmak, Srbislav Aleksandrović, Milan Đorđević

INVESTIGATION OF THE OCCURRENCE OF FAILURES IN THE AXLE BOX AND PRIMARY SPRING SUSPENSION OF PASSENGER BOGIES

Vanio Ralev

APPLICATION OF AGILE PROJECT MANAGEMENT METHODOLOGY IN RAILWAY TRANSPORT

Irena Petrova, Dimitar Dimitrov

COMPARATIVE ANALYSIS OF THE EFFECT OF LATERAL SWINGING OF THE TRAM BODY ON DIFFERENT TYPES OF ELECTRICAL CURRENT COLLECTORS

Emil M. Mihaylov, Emil Iontchev, Rosen Miletiev, Metodi Atanasov, Rashko Vladimirov

A SENSOR NETWORK-BASED MODEL FOR INCREASING SAFETY ON HIGH-SPEED RAILWAYS

Zoran G. Pavlović, Veljko Radičević, Branislav Gavrilović, Marko Bursać, Miloš Milanović

METHODOLOGY FOR CALCULATING THE PROCESS OF EMERGENCY COLLISION IN RAILWAY VEHICLES

Venelin Pavlov

14:00 – 14:30	Coffee	Lobby
14:30 – 15:00	Company Presentation: TeamCAD	Hall 1
15:00 – 16:00	Lunch	Restaurant
16:30 – 18:00	Session 5: AUTOMATIC CONTROL AND FLUID TECHNIQUE	Hall 1
Chairman:	Dragan Pršić, Vladimir Stojanović	

EVENT-TRIGGERED ADAPTIVE DYNAMIC PROGRAMMING BASED OPTIMAL CONTROL FOR HYDRAULIC SERVO ACTUATOR

Vladimir Djordjevic, Vladimir Stojanovic, Hongfeng Tao, Xiaona Song, Shuping

He, Weinan Gao

H^∞ CONTROL OF AEROPENDULUM

Dušan Božić, Luka Filipović, Milan Ristanović

DESIGN AND IMPLEMENTATION OF AN AEROPENDULUM CONTROLLER VIA LOOP SHAPING

Luka Filipović, Milan Ristanović, Dušan Božić

ANALYSIS OF THE CURRENT SITUATION IN SERBIA RELATED TO THE EDUCATION IN THE FIELD OF APPLIED ARTIFICIAL INTELLIGENCE

Anđela Đorđević, Marko Milojković, Miodrag Spasić, Dejan Rančić, Saša S. Nikolić, Miroslav Milovanović

EXPLORING THE BENEFITS OF NEURAL NETWORKS IN FUNCTION APPROXIMATION COMPARED TO CLASSICAL INTERPOLATION METHODS

Filip Stanić

CONCEPTUAL MODELING OF HYSTERESIS IN PIEZO CRYSTALS USING NEURAL NETWORKS

Lazar Kelić, Dragan Pršić

DESIGN OF PD CONTROLLERS FOR THE SYSTEM OF A VALVE CONTROLLED HYDRO-MOTOR

Ljubiša Dubonjić, Saša Prodanović

ADVANCED ELECTRO-HYDRAULIC SYSTEMS FOR DRIVING THE MOVEMENT OF RADIAL GATES

Dragan Nauparac

MODELING AND SIMULATION HYDRAULIC EXCAVATOR'S ARM

Almir Osmanović, Elvedin Trakić, Salko Ćosić, Mirza Bećirović

DIAGNOSTICS OF THE VEHICLE CONTROL SYSTEM BREAKDOWN – CASE STUDY: AUDI

Ljiljana Pecić, Milija Džekulić, Marko Milivojčević

EMERGING TECHNOLOGY OF AMBIENT LOOP HEAT PUMPS ENERGY SYSTEMS

Olivier Boennec

16:30 – 18:00

Session 6: THERMAL TECHNIQUE AND ENVIRONMENT PROTECTION

Hall 2

Chairman:

Rade Karamarković, Miljan Marašević

CARBON DIOXIDE EMISSIONS CALCULATION OF THE TRANSPORT PROCESS IN ROAD FREIGHT TRANSPORT

Nikola Petrović, Vesna Jovanović, Dragan Marinković, Jovan Pavlović

POLLUTANTS IN THE AIR

Svetlana K. Belošević, Maja B. Djukić

DETERMINATIONS OF EQUATION IN 1D CONDUCTION: EXPERIMENTAL INVESTIGATION FOR WALL HEATING

Aleksandar Vičovac

THE PROPOSAL OF THE RECUPERATOR DESIGN FOR THE ROTARY KILNS WITH A DRIVING MECHANISM IN THE CALCINATION ZONE

Nenad Stojić, Nebojša Bogojević, Miljan Marašević, Dragan Cvetković, Aleksandar Nešović

THE USAGE OF NATURAL GAS HHV FROM SMALL COGENERATION SYSTEMS IMPLEMENTED IN A 3rd GENERATION DH PLANT

Milan Marjanović, Miloš Nikolić, Rade Karamarković, Anđela Lazarević, Đorđe Novčić

CFD ANALYSIS OF WIRE COIL TURBULATORS WITH CONICAL INLETS

Đorđe Novčić, Miloš Nikolić, Rade Karamarković, Milan Marjanović

18:00 – 18:30

Coffee

Lobby

19:00

Gala dinner

Restaurant

23.6.2023. - FRIDAY

09:00 – 10:30

Registration of participants

Reception

10:30 – 12:00

Session 7: PRODUCTION TECHNOLOGIES

Hall 1

Chairman:

Aleksandra Petrović, Goran Miodragović

MANUFACTURING TECHNOLOGIES FOR GFRP'S WITH THERMOSETTING POLYMERIC BINDERS

Cristina Sescu-Gal, Cătălin Frâncu, Cornelia Dobrescu, Petre Bălan

ADDITIVE MANUFACTURING – A VIEW THROUGH THE PRISM OF STANDARDIZATION

Pavle Ljubojević, Tatjana Lazović, Snežana Ćirić-Kostić

ANALYSIS OF SPECIFIC CUTTING ENERGY IN LONGITUDINAL TURNING OF UNALLOYED STEELS

Milan Trifunović, Miloš Madić

STATE OF THE ART IN THE FIELD OF COLD FORGING TOOLS

Ilija Varničić, Miloš Pjević, Mihajlo Popović

APPLICATION OF THE POKA-YOKE METHOD IN SMALL WOOD PROCESSING COMPANIES

Jovana Perić, Milovan Lazarević, Mitar Jcanović, Vladan Grković

DEVELOPMENT A SYSTEM FOR DESIGNING OPTIMAL TECHNOLOGICAL PROCESSING PARAMETERS AT MACHINING CENTERS

Zvonko Petrović, Milan Kolarević, Radovan Nikolić, Milica Tufegdžić, Violeta Đorđević

APPLICATION OF THE ANFIS METHOD TO SUPPORT DECISION-MAKING IN THE PREDICTION OF THE FACTORS THAT MOST INFLUENCE THE PRODUCT PRICE

Marija Mojsilović, Radoje Cvejić, Goran Miodragović, Snežana Gavrilović, Selver Pepić

10:30 – 12:00

Session 8: APPLIED MECHANICS

Hall 2

Chairman:

Snežana Ćirić Kostić, Nebojša Bogojević

INFLUENCE ON THE SUPPORT RESISTANCE OF A MOBILE PLATFORM DUE TO THE EFFECT OF HIGH-INTENSITY IMPULSIVE FORCE

Aleksandra B. Živković, Slobodan R. Savić, Nebojša P. Hristov, Damir D. Jerković, Andjela G. Mitrović, Marija V. Milovanović, Lazar M. Arsić

METHODS FOR MODELING BOLTED CONNECTIONS USING FEM

Vladimir Milovanović, Miloš Pešić, Rodoljub Vujanac, Marko Topalović, Milan Stojiljković

ANALYSIS OF PARASITIC DISPLACEMENTS OF LUMPED COMPLIANT PARALLEL-GUIDING MECHANISMS

Slaviša Šalinić

OPTIMAL DYNAMIC BALANCING OF PLANAR MECHANISMS: AN OVERVIEW

Marina Bošković

MODIFIED 2D ARC-STAR STRUCTURE WITH NEGATIVE POISSON'S RATIO

Vladimir Sinđelić, Aleksandar Nikolić, Nebojša Bogojević, Snežana Ćirić-Kostić

12:00 – 12:30	Coffee break	Lobby
12:30 – 14:00	Session 9: PRODUCTION TECHNOLOGIES	Hall 1
Chairman:	Nicolae Herisanu, Mišo Bjelić	
SOME CONSIDERATIONS REGARDING THE INVESTIGATION AND REDUCTION OF THE NOISE GENERATED BY THE RUNNING OF ROAD VEHICLES Vasile Bacria, Nicolae Herisanu		
SUPPLEMENTARY ELEMENTS OF TRAFFIC NOISE BARRIERS Vladan Grković, Violeta Đorđević, Milan Kolarević, Branko Radičević		
IDENTIFICATION OF NOISE SOURCE BASED ON SOUND INTENSITY IN VERTICAL CNC MILLING MACHINE Tanja Miodragović, Branko Radičević, Stefan Pajović, Nenad Kolarević		
SURFACE TREATMENTS FOR TRAFFIC NOISE BARRIERS Violeta Đorđević, Jovana Perić, Tanja Miodragović, Stefan Pajović		
COMPARISON OF MECHANICAL BEHAVIOUR OF TIG AND MIG WELDED JOINT DISSIMILAR ALUMINUM ALLOYS 2024 T351 AND 6082 T6 Dragan Milčić, Miodrag Milčić, Tomaž Vuherer, Aleksija Đurić, Nataša Zdravković, Andreja Radovanović		
TAGUCHI-BASED DETERMINATION OF DOUBLE-ELLIPSOIDAL HEAT SOURCE PARAMETERS FOR NUMERICAL SIMULATIONS OF GMAW PROCESS Mišo Bjelić, Mladen Rasinac, Aleksandra Petrović, Marina Ivanović		
OPTIMIZATION OF GMA WELDING PARAMETERS USING THE GRASSHOPPER OPTIMIZATION ALGORITHM Mladen Rasinac, Mišo Bjelić, Aleksandra Petrović, Marina Ivanović		
12:30 – 14:00	Session 10: CIVIL ENGINEERING	Hall 2
Chairman:	Vladimir Mandić, Bojan Milošević	
MASONRY DEVELOPMENT OF BUILDING CONSTRUCTION ON THE TERRITORY OF SERBIA Bojan Milošević, Vladimir Mandić, Dušan Turina, Aleksandar Kostić, Katarina Krstić		
KRIGING INTERPOLATION OF PRECIPITATION FOR LAKE ĆELIJE CATCHMENT Vladimir Mandić, Slobodan Kolaković, Milan Stojković, Bojan Milošević, Iva		

Despotović

POSSIBILITIES OF RECYCLED CONCRETE AGGREGATE IMPROVEMENT

Iva Despotović, Adrijana Savić, Stefan Mihajlović, Jovana Bojković, Marijana Janićijević

METHODS FOR DETERMINING THE CHARACTERISTICS OF BIOCOMPOSITES

Jovana Bojković, Vesna Bulatović, Branko Radičević, Nenad Stojić, Miljan Marašević

STATIC ANALYSIS OF THE RC MULTI-STOREY BUILDING DEPENDING ON MODEL AND SOIL PARAMETERS

Stefan Mihajlović, Miloš Šešlija, Iva Despotović, Vladimir Mandić, Marijana Janićijević

NONLINEAR STATIC „PUSHOVER” ANALYSIS OF MULTI-STOREY REINFORCED CONCRETE BUILDING

Marijana Janićijević, Bojan Milošević, Stefan Mihajlović, Jovana Bojković, Saša Marinković

14:00 – 14:30	Coffee	Lobby
14:30 – 15:00	Company Presentation: TeamCAD	Hall 1
15:00 – 16:00	Lunch	Restaurant
16:00 –	Free activities	
24.6.2023. – SATURDAY		
09:00 – 14:00	Tourist Tour	
15:00	Conference closing	

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