UNIVERSITY OF BELGRADE
FACULTY OF MECHANICAL ENGINEERING

TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

XXIV International Conference on Material Handling, Constructions and Logistics

MHCL 2022

will take place during
September 21st – 23rd, 2022
at the University of Belgrade, Faculty of Mechanical Engineering,
Department of Material Handling, Constructions and Logistics,
Kraljice Marije 16, 11120 Belgrade, Serbia

FINAL SCIENTIFIC and SOCIAL PROGRAM

Wednesday - September 21st, 2022

13.00 – 14.00 **Registration of participants**
Lecture hall 211, 2nd floor
14.00 – 14.15 **Opening Session**
Lecture hall 211, 2nd floor
14.20 – 16.40 **Plenary Session,** 4 papers
Lecture hall 211, 2nd floor, 4 invited lectures
* refreshments will be provided during the sessions
17.00 – 19.00 **Welcome party**
Business club FME, 5th floor

Thursday - September 22nd, 2022

09.00 – 10.00 **Session A,** 3 papers
Lecture hall 211, 2nd floor
10.00 – 11.00 **Session B/1,** 3 papers
Lecture hall 211, 2nd floor
11.00 – 11.20 **Coffee break**
Lecture hall 211, 2nd floor
11.20 – 12.00 **Session B/2,** 2 papers
Lecture hall 211, 2nd floor
12.00 – 13.20 **Session C/1,** 4 papers
Lecture hall 211, 2nd floor
13.20 – 15.00 **Lunch**
Business club FME, 5th floor
15.00 – 17.00 **Session C/2,** 6 papers
Lecture hall 211, 2nd floor
19.30 – 22.30 **Conference dinner**
Business club FME, 5th floor

Friday - September 23rd, 2022

09.00 – 10.40 **Session D,** 5 papers
Lecture hall 211, 2nd floor
10.40 – 11.00 **Coffee break**
Lecture hall 211, 2nd floor
11.00 – 13.15 **Session E,** 8 papers + 2 presentation
Lecture hall 211, 2nd floor
13.15 – 13.30 **Closing Session and announcement of the XXV MHCL conference, which will be held in 2024 in Vienna**
Lecture hall 211, 2nd floor
13.30 – 15.00 **Lunch**
Business club FME, 5th floor

Presentation Technique
All papers must be presented in English. No simultaneous translation will be provided.
The **maximum** time slot per paper is:

35 min. for invited papers **including discussion**;
20 min. for regular papers **including discussion**.

Beamer for electronic presentation (PowerPoint or similar tools) with a connected PC is available in the conference rooms. We suggest copying your files to our computer in the conference room before the session starts.

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PLENARY SESSION – INVITED PAPERS

PLENARY SESSION

Chairmen: Nenad Zrnić, Georg Kartnig

Robert Schulz, Stefan Hecht, Wendel Frick - [University of Stuttgart]
APPLICATIONS AND USE OF ROPES IN THE CONVEYING TECHNOLOGY

Christian Landschuetzer - [Graz University of Technology]
E-COMMERCE AND CEP-LOGISTICS

Luigi Solazzi - [University of Brescia]
THE EFFECT OF WIND ON CRANE STRUCTURES

Martin Egger - [University of Applied Sciences Upper Austria]
DIGITAL AUTOMATIC COUPLING FOR RAIL FREIGHT

SESSION A – HOISTING AND CONVEYING EQUIPMENT AND TECHNOLOGIES

SESSION A

Chairmen: Luigi Solazzi, Tone Lerher

Marco Ferrari, Georg Kartnig
DEVELOPMENT OF A MULTIFACTORIAL METHOD FOR CONDITION MONITORING OF FIBER ROPES FOR CRANES

Miloš Đorđević, Nenad Zrnić
DESIGN OF THE ROTATING AUXILIARY LIFTING DEVICE WITH MECHANIZED SPAN ADJUSTING AND LIFTING CAPACITY OF 20 t

Michael Denzel, Michael Prenner, Nikolaus A. Sifferlinger
A PROBABILISTIC PARTICLE REPLACEMENT MODEL TO SIMULATE BULK MATERIAL DEGRADATION DURING CONVEYING PROCESSES USING DEM

SESSION B – CONSTRUCTION AND MINING EQUIPMENT AND TECHNOLOGIES

Chairmen: Vlada Gašić, Michael Prenner

Przemysław Moczko, Damian Pietrusiak, Wojciech Rafajłowicz, Jędrzej Więckowski
SEMI-ACTIVE DAMPING SYSTEM AS ELEMENT IMPROVING WORK SAFETY

Ana Petrović, Nikola Momčilović, Miloš Jovanović, Branko Petrović
OPTIMIZATION OF THE BUCKET WHEEL BOOM LENGTH USING STRUCTURAL RELIABILITY APPROACH

Aleksandar Stefanović, Nebojša Gnjatović, Goran Milojević, Stevan Đenadić, Marko Urošević
ANALYSIS OF THE IMPACT OF THE FREQUENCY-CONTROLLED BUCKET WHEEL DRIVE ON THE DYNAMIC RESPONSE OF THE EXCAVATOR SUPERSTRUCTURE

Nebojša Gnjatović, Srđan Bošnjak, Ivan Milenović, Aleksandar Stefanović, Marko Urošević
GANTRY BUCKET CHAIN STACKER-RECLAIMER FOR CRUSHED GYPSUM

Marko Urošević, Nenad Zrnić
THE IMPACT OF THE ECCENTRICITY OF THE TENSION PULLEY ON THE DYNAMIC RESPONSE OF THE STACKER SUPERSTRUCTURE

SESSION C – LOGISTICS AND INTRALOGISTICS SYSTEMS

SESSION C/1

Chairmen: Christian Landschuetzer, Boris Jerman

Michael Schadler, Dominik Stadlthanner, Bastian Mayer, Michael Schedler, Christian Landschützer
A METHOD FOR PRE-SORTING MIXED MAIL USING CONVOLUTIONAL NEURAL NETWORKS AND TRANSFER LEARNING

Philipp Trost, Georg Kartnig, Michael Eder
SIMULATION STUDY OF AUTOSTORE-SYSTEMS

Shrutarv Awasthi, Nils Gramse, Christopher Reining, Moritz Roidl
UAVs FOR INDUSTRIES AND SUPPLY CHAIN MANAGEMENT

Jakob Marolt, Bojan Rosi, Tone Lerher
REINFORCEMENT LEARNING RELOCATION ASSIGNMENT IN THE MULTIPLE-DEEP STORAGE SYSTEM

SESSION C/2

Chairmen: Christian Landschuetzer, Boris Jerman

Goran Đukić, Tihomir Opetuk, Luka Klarić, Maja Trstenjak
RULA METHOD FOR ERGONOMIC RISK ASSESSMENT OF WORK TASKS – CASE STUDY ON LOAD MANIPULATION AND ITS POSSIBLE IMPROVEMENTS

Friedrich Niemann, Christopher Reining, Hülya Bas, Sven Franke
APPLICATIONS OF HUMAN ACTIVITY RECOGNITION IN INDUSTRIAL PROCESSES - SYNERGY OF HUMAN AND TECHNOLOGY

Tone Lerher, Aleš Belšak, Rok Skerbiš, Jure Tumpej, Žiga Volavšek, Domen Stamenov, Marko Motaln
PLANNING AND CONSTRUCTION OF THE LIFTING AND TOWING DEVICE OF THE AUTONOMOUS MOBILE ROBOT MiR 100 FOR THE DELIVERY OF TRANSPORT TROLLEYS IN INTRALOGISTICS)

Marina Matić, Sanja Bojić, Dejan Lukić, Mijodrag Milošević
OPTIMIZATION OF A PRODUCTION SYSTEM – AN EVOLUTION OF A SIMULATION MODEL TOWARD A DIGITAL TWIN

Danijel Pavković, Mihael Cipek, Zdenko Kljaić, Tomislav Josip Mlinarić
A FUZZY LOGIC-BASED CLASSIFIER FOR RAILWAY TRACK CONDITION ESTIMATION AND TRACTIVE EFFORT CONDITIONING USING DATA FROM REMOTE SENSORS

Milena Kajba, Tina Cvahte Ojsteršek, Borut Jereb
DIGITAL TWINS IN DIFFERENT INDUSTRY FIELDS – A LITERATURE REVIEW

SESSION D – CONSTRUCTIONS AND DESIGN ENGINEERING

Chairmen: Nebojša Gnjatović, Damian Pietrusiak

Boris Jerman, Miha Peruš, Jurij Hladnik, Mile Savković, Franc Majdič
BUCKLING OF THE MULTISTAGE HYDRAULIC CYLINDERS

Goran Pavlović, Mile Savković, Nebojša Zdravković, Goran Marković, Marko Todorović
LOW-WEIGHT DESIGN OF A MONOSYMMETRIC BOX GIRDER OF A DOUBLE GIRDER BRIDGE CRANE WITH TWO TROLLEYS

Aleksandra Arsić, Vlada Gašić, Nenad Zrnić
SURVEY ON DESIGN PROCEDURES IN NUMERICAL SIMULATIONS OF END-PLATE MOMENT CONNECTIONS

Jurij Hladnik, Nenad Zrnić, Vlada Gašić, Boris Jerman
SLAT CONVEYOR WORKING CONDITIONS AT ELEVATED TEMPERATURES

Marko Todorović, Goran Marković, Mile Savković, Nebojša Zdravković, Goran Pavlović
ACTUATOR PLACEMENT OPTIMIZATION FOR HYDRAULIC SCISSOR LIFT

SESSION E – MARITIME AND PORT LOGISTICS

Chairmen: Nikitas Nikitakos, Branislav Dragović

Cyril Alias, Jonas zum Felde, Helmut Broß, Sven Severin
EVALUATING THE IMPACT OF MOBILE ONBOARD CRANES ON THE LOGISTICS PERFORMANCE OF A DECENTRALIZED WATERBORNE CONTAINER TRANSPORTATION SERVICE

László Vida, Béla Illés, Ágota Bányainé-Tóth
NEW CONTAINER HANDLING PROCESS RESULTS IN NEW INTERMODAL FREIGHT TRANSPORT OPTION

Dong Yang, Chengkun Li, Lu Li
MARITIME CLUSTER RELATEDNESS AND POLICY IMPLICATIONS

Branislav Dragović, Romeo Meštrović, Nenad Zrnić, Andro Dragović
MODELLING THE SEAPORT AUTOMOBILE TERMINAL AS AN OPERATIONAL SYSTEM: A THERETHICAL APPROACH

Thalis Zis
IMPACTS OF DISRUPTIONS IN SHIPPING ON ROUTE CHOICE

Romeo Meštrović, Branislav Dragović, Nenad Zrnić, Andro Dragović, Kenan Perazić
MODELLING THE SEAPORT AUTOMOBILE TERMINAL AS AN OPERATIONAL SYSTEM: A CASE STUDY

Vasiliki Petsini, Dimitrios Papachristos, Nikitas Nikitakos
BUSINESS ANALYSIS OF MARITIME LOGISTIC 4.0

Alexandros Dedes, Michail Dimitriadis-Evgenidis, Efstathios Giannakis, Maria Manolakaki, George K. Vaggelas
CYBERSERCURITY IN CONTAINER SHIPPING: POTENTIAL THREATS AND IMPACTS

Deda Djelović
PRESENTATION TITLE: THE PORT OF BAR (''LUKA BAR'' AD) - PORT CAPACITY AND DEVELOPMENT PLAN

Željko Stojović, Aleksa Ćorić
PRESENTATION TITLE: STATUS, TRENDS AND THE FUTURE PERSPECTIVES OF THE AD MARINA BAR