

COMET_a 2016

3rd INTERNATIONAL SCIENTIFIC CONFERENCE

7th - 9th December 2016

Jahorina, Republic of Srpska, B&H



University of East Sarajevo

Faculty of Mechanical Engineering

Conference on Mechanical Engineering Technologies and Applications

CONFERENCE PROGRAM COMET_a 2016

07th – 09th December 2016.
East Sarajevo – Jahorina, B&H, RS
Hotel Bistrica

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SCIENTIFIC CONFERENCE
"Conference on Mechanical Engineering
Technologies and Applications"
COMETa 2016, East Sarajevo - Jahorina 2016.

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December 07, 2016 (Wednesday)

- 08:00 – 11:00 - Registration
- 11:00 – 11:30 - Opening Conference
- 11:30 – 12:00 - Welcome Cocktail
- 12:00 – 13:30 - Plenary session
- 13:30 – 15:00 - Lunch
- 15:00 – 16:30 - Technical Session I
Applied mechanics and mechatronics
- 15:00 – 16:30 Technical Session II
Machine Design, simulation and modeling
- 16:30 – 16:45 - Coffee Break
- 16:45 – 18:15 - Technical Session III
Manufacturing technologies and advanced materials
- 16:45 – 18:30 - Round table discussion: – topic: "Education of Mechanical Engineers" (moderator: full professor Radivoje Mitrović and full professor Darko Knežević)
- 20:00 - Dinner

December 08, 2016 (Thursday)

- 08:00 – 08:30 - Registration
- 08:30 – 10:00 - Technical Session IV
Product development and Mechanical systems
- 08:30 – 10:00 - Technical Session V
Energy and environmental
- 10:00 – 10:15 - Coffee Break
- 10:15 – 12:15 - Presentations of companies, products and equipment
- 12:15 – 12:30 - Coffee Break
- 12:30 – 14:00 - Round table discussion: – topic: "The effect of the cooperation of the University with the real sector" (moderator: Associate professor Slaviša Moljević and associate professor Ranko Antunovic)
- 14:00 – 15:00 - Lunch
- 15:00 – 19:00 - Free activities or visit to Sarajevo
- 16:00 – 17:30 - Workshop – topic: "Project QIMSEE", (moderator: assistant professor Sanda-Midžić Kurtagić and associate professor Ranko Antunovic)
- 20:00 - Gala Dinner

December 09, 2016 (Friday)

- 08:30 – 10:00 - Technical Session VI
Maintenance, Quality and organization
- 10:00 – 10:15 - Coffee Break
- 10:15 – 11:45 Technical Session VII
Student section
- 11:45 – 12:00 - Coffee Break
- 12:00 – 13:30 - Workshop – "Conference report and conclusions. Closing of Conference.", (moderator: associate professor Ranko Antunovic and associate professor Biljana Marković)
- 13:30 - Lunch

PLENARY LECTURES

1. **Radivoje Mitrović**, Faculty of Mechanical Engineering Belgrade, Serbia
ENGINEERING IN THE FUNCTION OF ECONOMIC DEVELOPMENT
2. **Isak Karabegović**, Technical Faculty Bihac, Bosnia and Herzegovina
ROLE OF ROBOTICS IN THE GLOBAL AUTOMATION OF
PRODUCTION PROCESSES IN THE WORLD WITH PREDICTIONS OF
THE FUTURE
3. **Slavko Krajcar**, Faculty of Electrical Engineering and Computing, Croatia
"ENERGY AND CLIMATE CHANGE - FROM PARIS TO +2 ° C and
something more"

Session I: APPLIED MECHANICS AND MECHATRONICS

Chairpersons: Isak Karabegović, Miroslav Živković, Novak Nedić

1. **Isak Karabegović, Vlatko Doleček**
THE TENDENCY OF APPLICATION OF INDUSTRIAL ROBOTS IN THE
AUTOMOTIVE, ELECTRICAL ENGINEERING AND METAL INDUSTRIES
WORLDWIDE
2. **Dragan Rakić, Miroslav Živković, Nikola Milivojević, Dejan Divac**
STABILITY ANALYSIS OF A CONCRETE GRAVITY DAM USING SHEAR
STRENGTH REDUCTION METHOD
3. **Vladimir Milovanović, Miroslav Živković, Gordana Jovičić, Aleksandar
Dišić, Miroslav Milutinović**
EXPERIMENTAL AND NUMERICAL STRENGTH ANALYSIS OF WAGON
FOR CONTAINERS TRANSPORTATION
4. **Radivoje Mitrović, Ivana Atanasovska, Nataša Soldat**
NUMERICAL ANALYSIS OF DYNAMIC BEHAVIOR OF BALL BEARING
DEPENDING ON EXTERNAL RADIAL FORCE
5. **Radoslav Tomović**
DYNAMIC MODEL OF RIGID ROTOR IN ROLLING BEARING
6. **Nebojša Radić, Dejan Jeremić**
MECHANICAL BUCKLING OF DOUBLE-LAYERED GRAPHENE SHEETS
EMBEDDED IN AN ELASTIC MEDIUM USING A NONLOCAL NEW
FIRST-ORDER DEFORMATION THEORY
7. **Aleksandar Milašinović, Zdravko Milovanović, Darko Knežević**
LAGRANGE MULTIPLIERS OF THE CONSTRAINT FORCES OF THE
SLIDER CRANK MECHANISM
8. **Nikola Vučetić, Aleksandar Košarac, Mirko Blagojević, Ranko
Antunović**
ANALYTICAL DETERMINATION OF DRIVE SHAFT NATURAL
FREQUENCIES
9. **Nikola Vučetić**
IMBALANCE INFLUENCE ON ROLLING BEARING OPERATING
TEMPERATURE
10. **Dragan Trifković, Branimir Krstić, Dajana Vujanović**
CORROSION AS A CAUSE OF FAILURE OF AIRCRAFT CYLINDRICAL
ELEMENTS – CASE OF STUDIES

11. **Saša Prodanović, Novak Nedić**
ANALYSIS OF POSSIBILITIES FOR THE STATIC DECOUPLING
CONTROL APPLICATION IN TITO SYSTEMS
12. **Jovan Šulc, Vule Reljić, Brajan Bajči, Dragan Šešlija**
DESIGN AND DEVELOPMENT OF EXPERIMENTAL SETUP FOR
ANALYSIS AND SYNTHESIS OF CONTROL LAWS IN MANIPULATOR
CONTACT WITH ENVIRONMENT
13. **Zlata Jelačić**
CONTACT FORCE PROBLEM IN THE SERVICE ROBOT CONTROL
DESIGN

December 07, 2016 (Wednesday)

(Conference Room No.2, 15:00 – 16:30)

Session II: MACHINE DESIGN, SIMULATION AND MODELING

Chairpersons: Dragan Milčić, Mirko Blagojević, Lozica Ivanović

1. **Nenad Marjanovic, Nenad Kostic, Nenad Petrovic, Mirko Blagojevic, Milos Matejic**
TEACHING-LEARNING-BASED OPTIMIZATION ALGORITHM FOR
SOLVING MACHINE DESIGN CONSTRAINED OPTIMIZATION
2. **Marko Denić, Nenad Petrović, Vesna Marjanović**
ANALYSIS OF WIND TURBINE LATTICE TOWER TYPE CONCEPTS
3. **Jovan Pavlović, Dragoslav Janošević, Vesna Jovanović, Saša Marković**
GENERATING VARIANT SOLUTIONS OF DRIVE MECHANISMS OF A
LOADER MANIPULATOR
4. **Blaža Stojanović, Sandra Veličković, Marko Ristić, Saša Jovanović, Aleksandar Skulić**
INFLUENCE OF TORQUE VARIATION ON STRESS OF TIMING BELT
5. **Goran Pavlović, Vladimir Kvrđić, Mile Savković, Milomir Gašić, Nebojša Zdravković**
THE INFLUENCE OF THE POSITION OF LONGITUDINAL STIFFENERS
TO THE OPTIMUM DIMENSIONS OF THE BOX SECTION OF THE
SINGLE-GIRDER BRIDGE CRANE
6. **Slavica Miladinović, Blaža Stojanović, Sandra Veličković**
OPTIMIZATION AND PREDICTION OF SAFETY COEFFICIENT FOR
SURFACE DURABILITY OF PLANETARY GEAR USING TAGUCHI
DESIGN AND ARTIFICIAL NEURAL NETWORK
7. **Slobodan Garić, Lozica Ivanović, Slavica Miladinović, Vladimir Milovanović**
NUMERICAL ANALYSIS OF ALUMINUM COMPOSITE CYLINDRICAL
GEARS
8. **Nadica Stojanović, Jasna Glišović, Nenad Marjanović, Ivan Grujić**
OPTIMIZATION OF VENTILATED DISC BRAKE VANES FOR HEAVY
DUTY VEHICLE
9. **Ivan Grujić, Nadica Stojanovic, Aleksandar Davinic, Radivoje Pesic, Danijela Miloradovic**
OPTIMIZATION OF CONNECTING ROD LENGTH
10. **Đorđe Miltenović, Milan Banić, Aleksandar Miltenović, Milan Tica**
POWER LOSSES AND EFFICIENCY OF WORM GEARS IN EXTREME
OPERATING CONDITIONS
11. **Maja Čavić, Marko Penčić, Milan Rackov, Ivan Knežević, Miodrag Zlokolica**
DYNAMIC ANALYSIS OF THE THERMOFORMING MACHINE WORKING
MECHANISM

12. **Krešimir Vučković, Ivan Čular, Stjepan Risović**
EFFECTS OF FINITE ELEMENT TYPE, MESH SIZE AND FRICTION ON
SPUR GEAR NOMINAL TOOTH ROOT STRESS RESULTS
13. **Amna Bajtarević, Fuad Hadžikadunić, Nedeljko Vukojević**
NUMERICAL ANALYSIS OF SINGLE GIRDER SUSPENSION
OVERHEAD CRANE

December 07, 2016 (Wednesday)

(Conference Room No.1, 16:45 – 18:15)

Session III: MANUFACTURING TECHNOLOGIES AND ADVANCED MATERIALS

Chairpersons: Milentije Stefanović, Milan Zeljković, Ljubodrag Tanović

1. **Slobodan Tabaković, Saša Živanović**
SIMULATION OF KINEMATIC OF VIRTUAL PROTOTYPE OF A
MACHINE TOOL BASED ON HYBRID O-X MECHANISM
2. **Saša Živanović, Nikola Slavković, Branko Kokotović, Dragan
Milutinović**
MACHINE SIMULATION OF VIRTUAL RECONFIGURABLE 5 AXIS
MACHINE TOOL WHEN MACHINE WORKING ACCORDING TO THE
RUNNING PROGRAM
3. **Aleksandar Živković, Milan Zeljković, Miloš Knežev**
THERMAL MODEL OF HIGH SPEED MAIN SPINDLE
4. **Aco Antić, Milan Zeljković, Dejan Lukić**
INFLUENCE OF TOOL WEAR ON THE CHIPS SEGMENTATION AND
VIBRATIONS SIGNAL IN TURNING PROCESS
5. **Miloš Pjević, Ljubodrag Tanović, Vladan Čosović**
EXPERIMENTAL IDENTIFICATION OF THE INFLUENCE OF TOOL
GEOMETRY ON THE LATERAL AND RADIAL CRACK GROWTH
DURING MICRO CUTTING OF MARBLE
6. **Djordje Cica, Branislav Sredanovic, Davorin Kramar**
A PREDICTIVE MODEL OF CUTTING FORCES IN MQL TURNING
USING GENETIC ALGORITHM
7. **Adrian But, Rad Canarache**
SOLUTION TO INCREASE THE PRODUCTIVITY ON CNC MACHINING
8. **Milentije Stefanović, Dragan Adamović, Andreja Stefanović, Milija
Kraišnik**
ENVIRONMENTAL AND ENERGY ASPECTS IN THE DEVELOPMENT
OF TECHNOLOGY OF METAL FORMING
9. **Dragoslav Dobraš, Milisav Marković**
STANDARDS THAT DEFINE QUALITY OF WELDING
PHOTOSENSITIVE VISOR
10. **Nenad Bukejlovic, Dario Božičkovi, Zdravko Božičković**
WELDING BUCKET – WHEEL EXCAVATOR KRUPP C700
11. **Miroslav Radovanovic**
RESEARCH OF CUT QUALITY WHEN CUTTING CARBON STEEL WITH
ABRASIVE WATER JET
12. **Elvis Hozdić, Emine Hozdić**
AGENT STRUCTURES FOR SOCIO-CYBER-PHYSICAL WORK
SYSTEMS IMPLEMENTATION
13. **Milija Kraišnik, Milan Šljivić, Jelica Anić, Jovica Ilić**
COMPRESSIVE PROPERTIES OF COMMONLY USED POLYMERS
IN ADDITIVE MANUFACTURING PROCESSES

December 07, 2016 (Wednesday) (Conference Room No.2 or 3 16:45 – 18:30)

Round table discussion: – topic: "Education of Mechanical Engineers"
(moderator: full professor Radivoje Mitrović and full professor Darko Knežević)

December 08, 2016 (Thursday) (Conference Room No.1, 08:30 – 10:00)

Session IV: PRODUCT DEVELOPMENT AND MECHANICAL SYSTEMS

Chairpersons: Radivoje Mitrović, Adisa Vučina, Siniša Kuzmanović

1. **Radivoje Mitrović, Žarko Mišković**
INVESTIGATION ON INFLUENCE OF 3D PRINTING DIRECTION ON MECHANICAL PROPERTIES OF ABS PLASTIC PROTOTYPES
2. **Milan Rackov, Ivan Knežević, Siniša Kuzmanović, Maja Čavić, Marko Penčić, Sava Janići**
PROPOSAL OF ASSESSMENT METHOD OF DIFFERENT QUALITY SOLUTIONS OF UNIVERSAL GEAR REDUCERS
3. **Emine Hozdić, Elvis Hozdić**
APPLICATIONS OF ADDITIVE TECHNOLOGIES IN RECONSTRUCTIVE MEDICINE
4. **Nebojša Rašović, Adisa Vučina, Milenko Obad**
EXPERT SYSTEM SUPPORT IN PRODUCT DESIGN FOR ADDITIVE TECHNOLOGY AND REVERSE ENGINEERING
5. **Biljana Markovic, Miodrag Divcic**
CALCULATION OF THE BEARING MODIFIED RATING LIFE DURING NEW BEARING DESIGN
6. **Miodrag Milcic, Tomaz Vuherer, Janez Kramberger, Dragan Milcic, Boban Andjelkovic**
IMPACT FRACTURE BEHAVIOUR OF 2024–T351 ALUMINIUM ALLOY SHEETS JOINED BY FRICTION STIR WELDING
7. **Daniel Miler, Dragan Žeželj, Igor Lončarek**
CASE STUDY ON CAE TOOLS: OPTIMIZATION OF A 6-AXIS ROBOTIC ARM FOR MAG WELDING
8. **Milan Blagojevic, Svetozar Rajnhofer**
INSTALLATION OF RAILWAYS FOR WELDING PORTAL GUIDANCE
9. **Milos Matejic, Lozica Ivanovic, Nenad Kostić**
PARAMETRIC MODELING OF GEROTOR PUMP
10. **Nevena Stevanović, Zorica Djordjević, Saša Jovanović, Olivera Gavrilovic**
THE ANALYSIS OF STRESS-STRAIN STATE OF GEARS MADE FROM COMPOSITE MATERIALS
11. **Đurić Aleksija, Biljana Marković**
QUASI-DYNAMIC TESTING OF A BUTT-WELDED JOINT MADE OF ALUMINIUM ALLOY 6060 (AlMgSi_{0,5})

Session V: RENEWABLE ENERGY AND ENVIRONMENTAL

Chairpersons: Slavko Krajcar, Petar Gvero, Stojan Simić

1. **Marko Mančić, Dragoljub Živković, Milan Djordjević, Milena Rajić, Milena Jovanović**
OPTIMISATION OF A POLYGENERATION SYSTEM FOR THE ENERGY DEMANDS OF AN INDOOR SWIMMING POOL
2. **Sulejman Muhamedagić, Mirsada Oruč**
THE AIR QUALITY IN CITY OF ZENICA IN 2015
3. **Merima Maslo, Seadin Hadžiomerović**
ANALYSIS OF THE PROCESS OF AIR PREPARATION FOR THE PURPOSES OF AIR CONDITIONING USING REGENERATIVE SYSTEM FOR HEAT RECOVERY
4. **Maja Mrkić Bosančić, Srđan Vasković, Petar Gvero, Velid Halilović, Daliborka Petrović**
COMPARISON OF CO₂ EMISSIONS FOR SUPPLY CHAINS OF FUELS FROM BIOMASS AND COAL
5. **Srđan Vasković, Petar Gvero, Vlado Medaković, Azrudin Husika, Dragana Kalabić**
DETERMINATION VALUES OF SUBSIDIES IN ACCORDANCE WITH THE EXERGY QUALITY OF FUELS AND HEAT PRODUCED FROM BIOMASS
6. **Stojan Simić, Goran Orašanin, Dušan Golubović, Davor Milić**
ENERGY AND ENVIRONMENTAL ASPECTS OF ENERGY PRODUCTION FROM ANIMAL MANURE BIOGAS
7. **Ernad Šabanović, Marko Ikić, Slobodan Lubura, Milomir Šoja**
POTENTIAL AND WAY TO UTILIZE PV SYSTEMS IN PUBLIC BUILDINGS
8. **Ernad Šabanović, Marko Ikić, Slobodan Lubura, Milomir Šoja**
CONNECTING PV SYSTEMS ON THE GRID. SELECTION OF CONNECTION TOPOLOGY
9. **Goran Orašanin, Stojan Simić, Dušan Golubović, Jovana Pajkić, Davor Milić**
CONTROL OF WATER SUPPLY PUMPING SYSTEMS
10. **Veselin Blagojević, Dušan Gordić, Ranko Božičković, Vojislav Novaković**
ENERGY-SMART BUILDINGS THROUGH APPLICATION OF THE INTERNET OF THINGS (IOT)

PRESENTATIONS OF COMPANIES, PRODUCTS AND EQUIPMENT

Round table discussion: – topic: "The effect of the cooperation of the University with the real sector" (moderator: Associate professor Slaviša Moljević and associate professor Ranko Antunovic)

December 08, 2016 (Thursday)

(Conference Room No.2, 16:00 – 17:30)

Workshop – topic: “Project QIMSEE”,
(moderator: assistant professor Sanda-Midžić Kurtagić and associate professor Ranko Antunovic)

December 09, 2016 (Friday)

(Conference Room No.1, 08:30 – 10:00)

Session VI: MAINTENANCE, QUALITY AND ORGANIZATION

Chairpersons: Mitar Jocanović, Ranko Božičković, Snežana Nestić

1. **Mitar Jocanović, Velibor Karanović, Marko Orošnjak, Nebojša Nikolić, Darko Knežević**
LUBRICATING OILS FOR MODERN AUTOMATIC TRANSMISSIONS OF MOTOR VEHICLES
2. **Marko Orošnjak, Mitar Jocanović, Velibor Karanović**
SIMULATING THE EFFECTS THAT CONTAMINATION HAS ON A HYDRAULIC SYSTEM PERFORMANCE USING MATLAB/SIMULINK
3. **Vujadin Šarenac, Ranko Antunović, Mičo Plečić**
DIAGNOSTIC MONITORING OF HYDRO UNITS IN HPP VIŠEGRAD
4. **Anto Gajić, Siniša Gajić, Ljilja Rudić-Mikić, Jagoda Kršmanović**
DESCALING THE INNER SURFACE WATER STEAM PIPE STEAM BOILER TRACT "P 64", BY THERMALLY-OXYGEN TREATMENT (TKT) THE TPP UGLJEVIK
5. **Veselin Blagojević, Milan Despotović, Ranko Božičković, Siniša Božičković**
ENERGY ANALYSIS OF DOBOJ MUNICIPALITY
6. **Hrvoje Puškarić, Aleksandar Đorđević, Snežana Nestić, Aleksandar Aleskić, Gligorije Mirkov, Miladin Stefanović**
QUALITY-RELATED INDICATORS, PERFORMANCES AND RANKING IN HIGHER EDUCATION
7. **Ranka Gojković, Slaviša Moljević, Dušan Gordić**
IMPLEMENTATION OF ENERGY MANAGEMENT SYSTEMS ISO 50001:2011 IN B&H
8. **Vlado Medaković, Bogdan Marić, Ranka Gojković**
CLUSTER AS A MODEL ORGANIZATION FOR SMALL AND MEDIUM-SIZED ENTERPRISES
9. **Predrag Petrović**
RECONSTRUCTION OF THE TANK WAGON VALVE SYSTEM IN ORDER TO CONFORM WITH INTERNATIONAL STANDARDS

December 09, 2016 (Friday)

(Conference Room No.1, 10:15 – 11:45)

Session VII: STUDENT SESSION

Chairpersons: Saša Prodanović, Aleksandar Košarac, Srđan Vasković

1. **Andreja Milovanović, Milan Blagojević, Aleksandar Miljković**
APPLICATION OF REVERSE ENGINEERING IN FORMULA STUDENT CAR DEVELOPMENT

2. **Marijana Krajišnik**
ANALYSIS OF STATIC BEHAVIOR OF SET OF THE MAIN SPINDLE UNTIL QUILL BY USING ANSYS SOFTWARE
3. **Aleksandar Tomović, Marko Mumović, Vasilije Samardžić, Vuk Vujošević, Marko Rašović**
DEVELOPMENT OF CONSTRUCTION OF AN AUTONOMOUS LINE FOLLOWER ROBOT
4. **Marko Mumović, Aleksandar Tomović**
WALKING ROBOT BASED ON JANSEN MECHANISM
5. **Miladin Janjić, Nemanja Grahovac**
POSSIBILITY OF EFFICIENT HEATING AND SUPPLYING DOMESTIC HOT WATER RESIDENTIAL BUILDING WITH A COMBINATION OF TWO RENEWABLE ENERGY SOURCES
6. **Mirjana Jakanović, Jovana Pajkić**
THE WASTEWATER PURIFICATION PROCESS
7. **Kristo Batinić**
ELECTRICITY POWER GENERATION IN WATER SUPPLY SYSTEMS
8. **Danijela Mitrović, Marko Krnojelac**
POSSIBILITY OF REPLACING COAL IN THE HEATING PLANT WHICH IS RUNNING ON SOLID FUEL WITH WASTE WOOD BIOMASS

December 09, 2016 (Friday)

(Conference Room No.1, 12:00 – 13:30)

Workshop – “ Conference report and conclusions. Closing of Conference.“ ,
(moderator: associate professor Ranko Antunovic and associate professor Biljana Marković)