



Conference framework program



**Faculty of Automotive
and Construction
Machinery Engineering**
WARSAW UNIVERSITY OF TECHNOLOGY



**LUBLIN UNIVERSITY
OF TECHNOLOGY
MECHANICAL
ENGINEERING FACULTY**



Liptovský Mikuláš
14.12÷16.12 2022



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SCIENTIFIC COMMITTEE

Stanisław Radkowski – Honorary President
Peter Droppa – President
Paweł Drożdżel – President
Jędrzej Mączak – President

Members:

Bogdan Antoszewski	Radovan Madleňák
Tomasz Barszcz	Michał Makowski
Roman Barczewski	Andriy P. Marchenko
Dalibor Barta	Stefan Medvecký
Marijonas Bogdevicius	Wojciech Moczulski
Otakar Bokůvka	Andrzej Muszyński
Anna Borucka	Andrzej Niewczas
Sebastian Brol	Miroslav Neslušan
Tatiana Čorejová	Tomasz Nowakowski
Zbigniew Dąbrowski	Marek Opielak
Boris Ďurkech	Radosław Pakowski
Jacek Dybała	Zbigniew Pater
Tomasz Figlus	Vladimír Popardovský
Józef Gacek	Andrzej Puchalski
Marek Jaśkiewicz	Jozef Puttera
Julia Gościańska-Łowińska	Milan Sága
Józef Jonak	Jiří Stodola
Andrzej Kaźmierczak	Jan Szczepaniak
Jerzy Kisilowski	Andrzej Świderski
Grzegorz Klekot	Anna Timofiejczuk
Przemysław Kubiak	Andrzej Tylikowski
Witold Luty	Tadeusz Uhl
Bogusław Łazarz	Wiesław Zwierzycki
	Bogdan Żóttowski

CONFERENCE COMMITTEE

Miroslava Čúttová	–	Chairman
Marcin Jasiński	–	Co-chairman
Krzysztof Szczurowski	–	Secretary
Anna Borucka	–	Treasurer
Eva Popardovská		Martin Bartoš
Pavol Lukášik		Vladimír Kadlub
Aleksandra Waszczuk-Młyńska		Piotr Miś



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

CONFERENCE PROGRAMME of 19th ITSDC

14.12.2022 (Wednesday)

13³⁰-14³⁰ – Registration (Armed Forces Academy of General M. R. Štefánik)

14³⁰-14⁵⁰ – Opening ceremony of XVIII ITSDC

14⁵⁰-16⁵⁰ – Plenary session – SAFETY & RELIABILITY – S1

16⁵⁰-17¹⁰ – Coffee Break

17¹⁰-19¹⁰ – Plenary session – VEHICLES – S2

15.12.2022 (Thursday)

15⁰⁰-15⁴⁰ – Plenary session – SHIPS – S3

15⁴⁰-16⁴⁰ – Plenary session – ANNIVERSARY SESSION – S4

16⁴⁰-17⁰⁰ – Coffee Break

17⁰⁰-18³⁰ – Poster session

16.12.2022 (Friday)

14³⁰-15⁵⁰ – Plenary session – MILITARY – S5

15⁵⁰-16¹⁰ – Coffee Break

16¹⁰-18¹⁰ – Plenary session – SECURITY & DEFENSE – S6



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SESSION 1 - SAFETY & RELIABILITY (S1)

(Chairmen: Prof. P. Droppa / Prof. S. Brol)

14:50 **Damian FREJ, Marek JAŚKIEWICZ**

USE OF MOBILE PHONES BY PEDESTRIANS - PILOT STUDIES

15:10 **Marek JAŚKIEWICZ, Damian FREJ**

STAND FOR SIMULATING FRONT, REAR AND SIDE CRASH TESTS AT LOW SPEED

15:30 **Miroslav BLATNICKÝ, Ján DIŽO, Denis MOLNÁR, Dalibor BARTA**

ANALYSIS OF NORMATIVE REQUIREMENTS AND TECHNICAL SPECIFICATIONS IN THE DESIGN OF HANDLING EQUIPMENT FOR THE AMUSEMENT INDUSTRY

15:50 **Stanisław RADKOWSKI, Marcin JASIŃSKI**

CHALLENGES OF SMART AGRICULTURE INDUSTRY

16:10 **Aleksandra WASZCZUK-MLYŃSKA, Stanisław RADKOWSKI**

RELIABILITY ANALYSIS OF ELECTRICAL SIGNALS OF EXECUTIVE COMPONENTS

16:30 **EC Test Systems**

EC TEST SYSTEMS COMPANY PRESENTATION



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SESSION 2 - VEHICLES (S2)

(Chairmen: prof. T. Figlus / prof. D. Barta)

17:10 Martin HALUŠKA, Miroslav MARKO

TRIBOTECHNICAL DIAGNOSTICS – MOTOR OIL (MO) CASTROL EDGE
SAE 5W30 CHARACTERISTICS CONTROL ON ŠKODA OCTAVIA II

17:30 Jindřich STEHLÍK, Miroslav MARKO

EVALUATION OF MOTOR OIL DEGRADATION (MO) SHELL HELIX HX-8,
SAE 5W-30 ON BMW 330D XDRIVE

**17:50 Maja ANTKOWIAK, Krzysztof WIĘCŁAWSKI, Jędrzej MĄCZAK,
Krzysztof SZCZUROWSKI, Tomasz FIGLUS**

ALGORITHM AS A TOOL FOR INJECTOR'S DIAGNOSTICS

**18:10 Adrian POŁANIECKI, Krzysztof SZCZUROWSKI,
Krzysztof WIĘCŁAWSKI, Jędrzej MĄCZAK**

APPLICATION OF THE DMEW METHOD FOR TESTING THE INJECTOR ON
THE VEHICLE

18:30 Matúš RIEČIČIAR, Peter DROPPA

SIMULATION ANALYSIS OF THE PLANETARY TRANSMISSIONS OF
WHEELED MILITARY VEHICLES IN MATLAB ENVIRONMENT

**18:50 Kinga SZOST, Adam GAŁĘZIA, Krzysztof SZCZUROWSKI,
Jędrzej MĄCZAK**

SIMULATION MODEL OF A FAULT TOLERANT CONTROL SYSTEM FOR
TWO TYPES OF GEARBOX



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SESSION 3 - SHIPS (S3)

(Chairmen: prof. M. Zawisza / prof. D. Samoilenko)

15:00 **Paweł PISKUR**

PARTICLE IMAGE VELOCIMETRY (PIV) METHOD FOR MILITARY APPLICATION

15:20 **Piotr SZYMAK, Andrzej GRZĄDZIELA**

MEASUREMENT OF HYDROACOUSTIC SIGNATURES OF METAL AND POLYAMIDE PROPELLERS IN THE CTO TOWING TANK



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SESSION 4 - ANNIVERSARY SESSION (S4)

(Chairmen: prof. P. Droppa / prof. J. Mączak / prof. P. Drożdziel)

15:40 **Jędrzej MAĆZAK, Paweł DROŹDZIEL, Peter DROPPA**

PROFESSOR STANISŁAW RADKOWSKI – SCIENTIST AND CREATOR



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

POSTER SESSION

(Chairmen: prof. A. Droździel / prof. J. Maćzak)

1. **Vadym ISHCHUK, Ján DIŽO, Miroslav BLATNICKÝ, Kateryna KRAVCHENKO**
IMPROVEMENT OF ADHESION OF A LOCOMOTIVE
2. **Ján DIŽO, Miroslav BLATNICKÝ, Vadym ISHCHUK, Sebastián SOLČANSKÝ, Dalibor BARTA, Paweł DROŹDZIEL**
EVALUATION OF RIDE COMFORT FOR PASSENGER OF A RAILWAY WAGON DEPENDING ON VARIOUS PARAMETERS OF A SUSPENSION SYSTEM
3. **Dalibor BARTA, Ján DIŽO, Denis MOLNÁR, Miroslav BLATNICKÝ, Paweł DROZDZIEL, Sebastián SOLČANSKÝ**
ANALYSIS OF THE IMPACT OF ROAD IRREGULARITIES ON TOWED VEHICLE BEHAVIOR
4. **Vladimír POPARDOVSKÝ, Emma HUNKOVA**
VIBRATION ANALYSIS OF ELECTRIC DUCTED FAN
5. **Michal MOZOLA, Vratislav KREHEĽ**
THE EFFECT OF AIM SPEED ON THE ACCURACY OF LONG GUN FIRE
6. **Peter DROPPA, Vladimír KADLUB, Pavol LUKÁŠIK, Natália ČEPELOVÁ**
CONSUMPTION OF SPARE PARTS DURING THE MAINTENANCE OF MILITARY EQUIPMENT
7. **Miroslava CÚTTOVÁ, Eva POPARDOVSKÁ, Peter DROPPA, Dávid KOŠOVAN**
STRENGTH ANALYSES OF THE SELECTED FDM PRINTABLE MATERIALS USED IN UNMANNED VEHICLES APPLICATION
8. **Sebastian BROL, Robert WRÓBLEWSKI**
DEGRATATION OF PNEUMATIC IMPULSER
9. **Tomasz SADOWSKI**
SUMMARY OF PROGRESS IN PROJECT : "DOB-SZAFIR/11/A/015/01/2020"
"READING AND PROTECTING DATA STORED IN INSTRUMENT CLUSTERS."
10. **Krzysztof WIĘCŁAWSKI, Rafał MATYSIAK, Krzysztof SZCZUROWSKI, Jędrzej MAĆZAK, Tomasz FIGLUS**
IOT AND 5G AS A NEW ERA OF TECHNOLOGY AND THREATS IN AUTOMOTIVE APPLICATIONS
11. **Marcin JASIŃSKI, Krzysztof SZCZUROWSKI, Krzysztof WIĘCŁAWSKI, Marek WOLIŃSKI**
COMBUSTIBLE ATMOSPHERE INJECTION SYSTEM FOR ANALYSING FIRE HAZARDS DUE TO RICOCHET AND FIRE
12. **Dawid PACEK, Przemysław BADUROWICZ, Krzysztof SZCZUROWSKI**
INFLUENCE OF FAILURE AND DAMAGE OF DIFFERENT PROJECTILES DURING HIGH-ENERGETIC IMPACT ON THE POSSIBILITY OF INVESTIGATING BARREL TRACES IN FORENSIC COMPARISON TESTS



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

13. **Kuba JAŁOSZYŃSKI, Edyta MUCHA, Marek BŁĘDOWSKI, Rafal KOTAPKA, Bogusława DELCZYK-OLEJNICZAK, Robert PICH, Michał OCZKOWSKI**
EXPLORATION OF CRIMINAL TRACES IN THE HAZARDOUS AREA WITH CBRN FACTORS
14. **Adrian POŁANIECKI, Kinga SZOST, Michał MAKOWSKI, Jędrzej MAĆZAK**
CONSTRUCTION OF THE PHARMACEUTICAL EXTRACTOR STATION
15. **Jakub SZUDROWICZ, Marek SZUDROWICZ**
THE CONCEPT OF THE CONTROL SYSTEM OF THE LOW-TEMPERATURE CENTRIFUGAL EXTRACTOR
16. **Dmytro SAMOILENKO, Michał MAKOWSKI, Jędrzej MAĆZAK**
OPTIMIZATION OF THE HEAT EXCHANGE PROCESSES IN THE CENTRIFUGAL HERB EXTRACTOR
17. **Ewelina BOJARSKA**
COLD ETHANOL CANNABIS EXTRACTION
18. **Piotr WINIARSKI, Michał MAKOWSKI**
INVESTIGATION OF THE FLOW IN THE NON-INVASIVE RESPIRATORY HELMET
19. **Edward KOZŁOWSKI, Piotr OLESZCZUK, Norbert LESZCZYŃSKI, Anna BORUCKA, Andrzej ŚWIDERSKI**
DIAGNOSTICS OF TECHNICAL READINESS OF MULTI-OPERATIONAL FOREST MACHINES USING THE MARKÓW MODEL
20. **Andrzej KAŻMIERCZAK**
THE RESEARCH OF THE LOCOMOTIVE INTERNAL COMBUSTION ENGINE
21. **Łukasz JEDLIŃSKI**
MOVEMENT OF INVOLUTE PROFILE GEARS ALONG THE OFF-LINE OF ACTION
22. **Przemysław KUBIAK**
DETERMINING VEHICLE PRE-CRASH SPEED IN FRONTAL BARRIER CRASHES USING ARTIFICIAL NEURAL NETWORK FOR INTERMEDIATE CAR CLASS
23. **Krzysztof SZCZUROWSKI, Tomasz FIGLUS**
EFFECT OF ENERGY DISSIPATION METHOD ON BULLET DEFORMATION IN TESTS USING A VERTICAL BULLET TRAP
24. **Tomasz FIGLUS, Piotr SZAFRANIEC, Tomáš SKRÚCANÝ, Jaroslav MAŠEK**
THE USE OF TIME-FREQUENCY DISTRIBUTIONS IN THE STUDY OF VIBROACOUSTIC EFFECTS ON A MOTORCYCLIST
25. **Michał BORKENHAGEN, Krzysztof SZCZUROWSKI, Kinga SZOST**
SIMULATION MODEL OF A CONTROL SYSTEM FOR DSG GEARBOX USING MATLAB SIMULINK SIMSCAPE DRIVELINE
26. **Witold Wojciech SKÓRSKI, Piotr TADZIK, Maciej ZAWISZA**
VIBROACOUSTIC DIAGNOSTICS OF AIRCRAFT ELEMENTS



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

27. Szymon GONTARZ, Przemysław SZULIM, Karolina POPOWSKA

DIAGNOSTICS OF THE DOMAIN STRUCTURE DEFECTS OF A RADIALY
MAGNETIZED RUBBER-FERRITIC CONGLOMERATE

28. Peter DROPPA, Pavol LUKÁŠIK, Radovan STEPHANY, Vladimír KADLUB

CURRENT STATUS OF THE QUALITY OF OIL FILLINGS IN THE HEAVY
TECHNOLOGY OF THE ARMED FORCES OF THE SLOVAK REPUBLIC

29. Jędrzej MAĆZAK, Krzysztof SZCZUROWSKI, Marcin JASIŃSKI

MOBILE FORENSIC PLATFORM FOR QUICK IDENTIFICATION AT THE
SCENE OF A MASS EVENT – A TERRORIST ATTACK OR A CATASTROPHE



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SESSION 5 - MILITARY (S5)

(Chairmen: prof. M. Makowski / prof. J. Dižo)

14:30 Michał GMITRZUK, Marek SZUDROWICZ, Dariusz DANIELEWICZ

OPTIMIZATION AND SELECTION OF MATERIALS FOR VEHICLES
BALLISTIC PROTECTION IN TERMS OF THEIR RESISTANCE TO
FRAGMENTS AND ENVIRONMENTAL EXPOSURE

14:50 Krzysztof SZCZEŚNIAK, Michał GMITRZUK, Tomasz WRÓBEL

TESTING OF THE SPECIAL VEHICLE CREW SEAT EQUIPPED WITH AN
ACTIVE VIBRATION DAMPER

15:10 Przemysław BADUROWICZ, Dawid PACEK, Marcin JASIŃSKI

NUMERICAL AND EXPERIMENTAL ANALYSIS OF THE ARMOUR PLATE
DEGRADATION DURING PROJECTILE IMPACT

15:30 Pavol LUKÁŠIK

MONITORING OF ENGINE OIL DEGRADATION AND POSSIBILITIES OF
LIFE PREDICTION IN COMBUSTION ENGINE



XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

SESSION 6 - SECURITY & DEFENSE (S6)

(Chairmen: prof. J. Mączak / prof. P. Droppa)

- 16:10 **Krzysztof SZCZUROWSKI, Jędrzej MĄCZAK, Krzysztof ĆWIK, Adrian POŁANIECKI**
INTERCEPTION OF HIGH-ENERGY SOFT POINT MISSILES
- 16:30 **Marcin JASIŃSKI, Aleksandra WASZCZUK-MŁYŃSKA, Krzysztof SZCZUROWSKI, Przemysław BADUROWICZ, Adam WIŚNIEWSKI, Marek WOLIŃSKI, Tadeusz BARTKOWIAK**
STAND FOR THE IDENTIFICATION OF FIRE HAZARDS ARISING FROM THE USE OF FIREARMS
- 16:50 **Krzysztof SZCZUROWSKI, Krzysztof WIĘCŁAWSKI, Piotr MIŚ**
BOSCH CDR REPORT – INTERPRETATION, DIFFICULTIES, REQUIREMENTS
- 17:10 **Krzysztof WIĘCŁAWSKI, Krzysztof MAJEWSKI, Tomasz SADOWSKI, Jędrzej MĄCZAK, Krzysztof SZCZUROWSKI, Wojciech CEGLARSKI, Krzysztof ĆWIK**
ANALYSIS OF DATA STORED IN ELECTRONIC VEHICLE MODULES
- 17:30 **Jędrzej MĄCZAK, Michał MAKOWSKI, Ewelina BOJARSKA**
TEST BENCH FOR LIQUID FLOW RESISTANCE ASSESSMENT THROUGH A SPECIAL LOW TEMPERATURE FILTER
- 17:50 **Dmytro SAMOILENKO, Michał MAKOWSKI, Jędrzej MĄCZAK, Lech KNAP**
IMPROVEMENT IN PERFORMANCE CHARACTERISTICS OF THE HERB EXTRACTOR BASED ON 3D FLOW ANALYSIS



*The project is financed by the National Center for Research and Development under the "Security and Defense" programme,
(Project no. DOB-BIO10/04/02/2019),
(Project no. DOB-BIO10/11/02/2019),
(Project no. DOB-SZAFIR/11/A/014/01/2020),
(Project no. DOB-SZAFIR/11/A/015/01/2020).*



*The project is financed by the National Center for Research and Development under the Path for Mazovia
(Project no. MAZOWSZE/0070/19-00).*





XIX INTERNATIONAL TECHNICAL SYSTEMS DEGRADATION CONFERENCE

PLACE OF THE CONFERENCE

Akadémia Ozbrojených Síł generála M. R. Štefánika.

03101 Liptovský Mikuláš

Demänová 393

GPS: 49.067993, 19.590774

