



ICMT2015

International Conference on Military Technologies

MAY 19 – 21, 2015

Brno, Czech Republic

Final Program

Welcome to the Conference

Dear International Conference on Military Technologies – ICMT 2015 participants. We warmly welcome you in Brno, city in the middle of Europe, where the conference is taking place. Below you will find the final program of the conference. We hope you will enjoy your stay, find a lot of inspiration both during scientific sessions and informal discussions.

Program Overview

19 MAY 2015

14:00	–	17:00	Registration	CC ¹
14:00	–	17:00	Conference Opening Ceremony for All Supporting Programme	Rotunda
9:00	–	17:00	Visiting the IDET Exhibition	BVV

20 MAY 2015

8:00	–	12:00	Registration	CC
9:00	–	17:00	Avionics and Armament, Radar Systems	Hall D
9:00	–	17:00	Military Cybernetics and Robotic Systems	Hall C
9:00	–	17:00	Communication and Information Systems	Hall E
8:40	–	18:00	Air Force and Aircraft Technology	Hall A
10:20	–	15:10	Poster Session	Halls
18:00	–	22:00	Conference Dinner	CUoD ²
9:00	–	17:00	Visiting the IDET Exhibition	BVV

21 MAY 2015

8:00	–	10:00	Registration	CC
9:00	–	17:00	Military Engineering, Geospatial and Meteorological Support	Hall A
9:00	–	17:00	Special and Combat Vehicles	Hall D
9:00	–	17:00	Weapon Systems & Materials and Technology in Special Manufacturing	Hall C
10:20	–	15:10	Poster Session	Halls
9:00	–	17:00	Visiting the IDET Exhibition	BVV

¹Congress Centre

²Club University of Defence

20 MAY 2015

AVIONICS AND ARMAMENT, RADAR SYSTEMS / HALL D

Jalovecky	Makula	9:00 – 10:20	<p>The APAPI Optical System Assembly with LED Light Sources and Its Visibility in Inhomogeneous Atmosphere <i>S. Luzica, R. Bloudicek and S. Rydlo</i></p> <p>Analysis of Possibilities to Target Detection by Using Secondly Emitted Signals <i>M. Kaczurova, J. Vesely and M. Kaczur</i></p> <p>Aircraft Altitude Used for Atmospheric Pressure Determination <i>L. Gregor, L. Drazan and J. Vesely</i></p> <p>Electronic Starting Control Unit for Small Jet Engine <i>M. Dub, J. Bajer and M. Stepanek</i></p>
10:20 – 10:40			Coffee Break / Poster Session
Makula	Jalovecky	10:40 – 12:20	<p>Gradient Methodology for 3-Axis Accelerometer Static Calibration <i>K. Draganova et al.</i></p> <p>Aerometric System For General Aviation <i>J. Auersvald and K. Drazler</i></p> <p>Walsh-Hadamard Sequences for Binary Encoding of Radar Signals <i>Z. Matousek, M. Babjak and J. Ochodnický</i></p> <p>Analysis of GPS Satellites Position Determination Using MATLAB Environment <i>T. Vaispacher, R. Breda and F. Adamcik</i></p> <p>Vector Magnetometer used as Magnetometric Security Subsystem <i>P. Lipovsky et al.</i></p>
12:20 – 13:30			Lunch. Messhall in Congress Centre
Dub	Vesely	13:30 – 14:50	<p>The Identification Possibilities of the Measured Parameters of an Aircraft Model and Pilot Behavior Model on the Flight Simulator <i>M. Jirgl, J. Boril and R. Jalovecky</i></p> <p>Impact Assessment of Power Electronics on Experimental Aircraft Receiver <i>M. Zeinert and P. Makula</i></p> <p>Microwave Generator <i>R. Krizan and L. Drazan</i></p> <p>Thermal Tracking System <i>F. Cerny, R. Jalovecky and R. Bystricky</i></p>
14:50 – 15:10			Coffee Break / Poster Session
Vesely	Dub	15:10 – 17:00	<p>Development of DSP Algorithm for DME Coherency Measurement <i>P. Dycka and P. Makula</i></p> <p>The Measurement of TDOA Short Baseline <i>S.V. Doan, J. Vesely and P. Janu</i></p> <p>The Algorithm and Simulation of Crows Nest Antenna <i>B.N. Vu, P. Bojda and M. Andrlé</i></p>

20 MAY 2015

MILITARY CYBERNETICS AND ROBOTIC SYSTEMS / HALL C

de Boisboissel	Krivanek	9:00 – 10:20	<p>The Method of Errors Eliminating in the Process of Container Handling <i>M. Zajac and J. Swieboda</i></p> <p>Simulation Model of Logistic Support for Functioning of Ground Handling Agent, Taking into Account a Random Time of Aircrafts Arrival <i>A. Kierzkowski and T. Kisiel</i></p> <p>PHA Analysis of the Process in Intermodal Transport <i>M. Zajac and J. Swieboda</i></p> <p>Modelling the Passenger Flow at an Airport Terminal to Increase the Safety Level <i>A. Kierzkowski and T. Kisiel</i></p>
10:20 – 10:40			Coffee Break / Poster Session
Motsch	Cermak	10:40 – 12:20	<p>Radiation Intensity Mapping in Outdoor Environments Using a Mobile Robot with RTK GNSS <i>T. Jilek</i></p> <p>Simulation of Surface-to-Air Missile Units <i>J. Farlik</i></p> <p>Networked Interoperable Real-Time Information Services as a Partial Solution of Command And Control Systems Interoperable Connection <i>V. Majek and O. Gazarkova</i></p> <p>Operations with Fuzzy Numbers in the Task Divided Targets <i>V. Majek and V. Slouf</i></p> <p>Cyclic Gait Learning Based on The Ant Colony Optimization <i>M. Neubauer and A. Stefek</i></p>
12:20 – 13:30			Lunch. Messhall in Congress Centre
Bergeon	Casar	13:30 – 14:50	<p>Conceptual Operational Architecture of The Air Force Simulator <i>J. Farlik</i></p> <p>Component Based Design of Mini UAV Systems <i>P. Cermak and J. Martinu</i></p> <p>Mini UAVs Detection by Radar <i>M. Kratky and L. Fuxa</i></p> <p>UAV Assisted Landing on Moving UGV <i>Y.T. Bergeon et al.</i></p>
14:50 – 15:10			Coffee Break / Poster Session
Farlik	Jilek	15:10 – 17:00	<p>Manipulating Mechanism of Sensors of Wheeled Chassis <i>J. Casar, J. Fischer and J. Korinek</i></p> <p>Low Cost 3D Mapping for Indoor Navigation <i>Y. Bergeon et al.</i></p> <p>Uses of Lethal Autonomous Weapon Systems <i>G. de Boisboissel</i></p> <p>Utilization of Optimization Methods Cooperation for the Improvement of Optimization Process <i>J. Casar and A. Stefek</i></p> <p>The Mathematical Description of Simulator of Fire Units for Testing and Operational Staff Training Intention <i>V. Majek and O. Gazarkova</i></p>

20 MAY 2015

COMMUNICATION AND INFORMATION SYSTEMS / HALL E

Ondryhal	9:00 – 10:20	<p>Significant Reliability Improvement of NMR Systems <i>M. Amiri and V. Prenosil</i></p> <p>FlexiGuard: Modular Biotelemetry System for Military Applications <i>J. Schlenker et al.</i></p> <p>Packet Filtering by Artificial Neural Network <i>M. Turcanik</i></p> <p>Benefits of the Use of Asynchronous Methods in a WCF Service and its Client, Synchronizing Resource Access between these Methods <i>I. Kostal</i></p>
10:20 – 10:40 Coffee Break / Poster Session		
Vranova	10:40 – 12:20	<p>Portal CEFME for Military Universities Cooperation <i>L. Burita, K. Halouzka and V. Maly</i></p> <p>An Evaluation of Cyber Threats to Industrial Control Systems <i>J. Vavra and M. Hromada</i></p> <p>Advanced GIS Functions for Tactical Radio Communication Planning <i>L. Lukas</i></p> <p>Factors Influencing Information Environment of the Security Forces Members <i>A. Paduchova and L. Lukas</i></p> <p>Global Extreme of Cost Function for Retina Pictures Registration <i>J. Ivanka</i></p>
12:20 – 13:30 Lunch. Messhall in Congress Centre		
Platenka	13:30 – 14:50	<p>Tactical and Operational Software Library <i>P. Stodola and J. Mazal</i></p> <p>Optimal Distribution of Observation Posts in The Operation Area <i>O. Litvaj and P. Stodola</i></p> <p>Low-cost 3D Scanner Using Off-the-Shelf Technologies <i>P. Frantis and M. Toman</i></p> <p>Perspective Methods of Radar Pulse Classification <i>M. Svarc, L. Brnak and M. Richteroiva</i></p>
14:50 – 15:10 Coffee Break / Poster Session		
Mazalek	15:10 – 17:00	<p>Analysis of the Impact of IPSec on Performance Characteristics of VoIP Networks and Voice Quality <i>A. Mazalek, Z. Vranova and E. Stankova</i></p> <p>Monitoring and Analysis of Modulated Signals in the HF Band <i>V. Platenka and M. Richteroiva</i></p>

20 MAY 2015

AIR FORCE AND AIRCRAFT TECHNOLOGY / HALL A

	Kacer Cicmanec	8:40 – 10:20	<p>Small Engine Inlet Distortion Testing Device <i>J. Pecinka et al.</i></p> <p>Non-destructive Inspection of Honeycomb Sandwich Using Infrared Thermography <i>V. Triska and G.T. Bugajski</i></p> <p>Aerodynamic Characteristics of Airfoil with Single Plain Flap for Light Airplane Wing <i>M.D. Todorov</i></p> <p>Keynote: Czech Air Force <i>Czech Air Force Representant</i></p> <p>Keynote: Czech Air Force <i>Ministry of Defence Representant</i></p>
		10:20 – 10:40	Coffee Break / Poster Session
	Bauer Boril	10:40 – 12:20	<p>Keynote: Air Industry <i>Partner</i></p> <p>Keynote: Air Industry <i>Partner</i></p> <p>Conditions for Abandonment Out of a Helicopter Using Personal Rescue Parachute <i>P. Kalavsky et al.</i></p> <p>Influence of Clamping on the Structural Response of Aircraft Propeller Blade <i>R. Vysoky</i></p> <p>CFD Simulation of Flow over the Dimpled Sphere <i>V. Spalensky, V. Horak and D. Rozehnal</i></p>
		12:20 – 13:30	Lunch. Messhall in Congress Centre
	Hub Jilek	13:30 – 14:50	<p>Concept of Improving Pilots Sensory Illusion Resistance <i>A. Petru and P. Frantis</i></p> <p>The Effects of Unsteady Flow on Aerodynamic Characteristics of a Tactical Airplane's Wing <i>A. Svoboda and D. Rozehnal</i></p> <p>TJ100 Inlet Distortion Testing <i>J. Pecinka et al.</i></p> <p>CFD Analysis of Air Flow Through the Nozzle of Circulation Wind Tunnel <i>V. Havranek and D. Rozehnal</i></p>
		14:50 – 15:10	Coffee Break / Poster Session
	Rozehnal Hub	15:10 – 16:50	<p>Appropriate Workload as a Tool to Education on the Air Simulators <i>J. Kacer</i></p> <p>Airport Winter Maintenance Pavement Surface Temperature Measurement Concerns <i>L. Cicmanec</i></p> <p>Hardened Aircraft Shelters Storage Condition Concerns <i>O. Botlik and L. Cicmanec</i></p> <p>Adaption of Fighter Interception to the Changing Conditions <i>T. Pechacek</i></p> <p>Internal Recirculation Channel Application in Centrifugal Compressors <i>A. Jilek, P. Kmoch and M. Poledno</i></p>

20 MAY 2015	A/F & A/C / HALL A			16:50 – 17:10 Coffee Break / Poster Session	
	Kacer			Combat Damage Diagnostics of Aircraft Surface by Optical Way <i>S. Hajda</i> FEM Analysis of TS-20 Jet Engine Compressor Clearance <i>J. Hub</i>	
	Cicmanec				
	17:10 – 18:00				

21 MAY 2015

MILITARY ENGINEERING, GEOSPATIAL AND METEOROLOGICAL SUPPORT / HALL A

Kovarik	Novotny	9:00 – 10:20	<p>Verification of Digital Analytical Models Case Study of the Cross-Country Movement <i>V. Talhofer et al.</i></p> <p>Soil Trafficability Analysis <i>M. Rybansky</i></p> <p>Geographical Data for Training, Planning and Tactical Implementation <i>A. Sivertun</i></p> <p>Analysis of Applicability of Web Data Sources for Rapid Mapping at Strategic Command Level <i>V. Kovarik</i></p>
10:20 – 10:40			Coffee Break / Poster Session
Kovarik	Novotny	10:40 – 12:20	<p>WMS Performance of Selected SQL and NoSQL Databases <i>S. Schmid, E. Galicz and W. Reinhardt</i></p> <p>Aerial and Satellite Images in Crisis Management <i>H. Svatonova</i></p> <p>Accuracy of the New Generation Elevation Models <i>M. Hubacek et al.</i></p> <p>A Relationship Between Radar Reflectivity and Rainfalls Recorded by The Ground Gauges <i>L. Almasiova</i></p> <p>Assessment Optimization Of Weather Forecast: Terminal Aerodrome Forecast (TAF) - For 24 Hours <i>K. Dejmal, J. Novotny and F. Hudec</i></p>
12:20 – 13:30			Lunch. Messhall in Congress Centre
Dvorak	Manas	13:30 – 14:50	<p>Impact of Outdoor Blast Wave on Building Structure <i>D. Makovicka</i></p> <p>Evaluation of the Technical State of Construction Structures <i>V. Kaplan, M. Skoloud and O. Rolnec</i></p> <p>Numerical Analysis of Explosion to Deflagration Process due to Methane Gas Explosion in Underground Structures <i>A.N. Kravtsov et al.</i></p> <p>Assessment of Impact Forces in Standards <i>J. Markova and K. Jung</i></p>
14:50 – 15:10			Coffee Break / Poster Session
Dvorak	Manas	15:10 – 17:00	<p>Methodology for Risk Assessment of Road Bridges Endangered by Blast Attack <i>M. Sykora and P. Manas</i></p> <p>Design of Building Protection in Peacekeeping Operations of the Armed Forces of the Czech Republic Based on Simulations of the Effects of Blast Wave <i>J. Rejmont and J. Stoller</i></p> <p>Complex Aid Tool for Designing Temporary Bridges from the MMT Bridge Set <i>M. Hanak and M. Benda</i></p> <p>Military Geology and Geopolitics <i>P. Beyr</i></p> <p>General Engineering for Storages of Ammunition and Explosives <i>O. Rolnec</i></p>

21 MAY 2015

SPECIAL AND COMBAT VEHICLES / HALL D

Valis	Stodola	9:00 – 10:20	<p>Application Diagnostics Methods for Modernization Vehicle IFV-2 <i>P. Droppa, P. Kalna and S. Filipek</i></p> <p>Improved Ballistic Protection of Vehicles Using Composites <i>M. Stivnicky and N. Adamec</i></p> <p>Discrete Simulation with a Variable Time Step in Assessing Costs to Mission <i>A. Breznicka, A. Chovanec and J. Stodola</i></p> <p>Effect of an Explosion of a Charge under the Hull of a Tracked Vehicle <i>B. Kopilakova et al.</i></p>
10:20 – 10:40			Coffee Break / Poster Session
Valis	Stodola	10:40 – 12:20	<p>Algorithms Vehicle Control Stability for Military Systems with 4 WS <i>V. Ferencey and M. Bugar</i></p> <p>Risks from Blind Spots of Trucks <i>M.J. Mazankova</i></p> <p>A Contribution to Shooting Resistance Evaluation of Military Vehicles <i>L. Novak and S. Cornak</i></p> <p>Monitoring of Military Vehicles Batteries <i>T. Turo</i></p> <p>Analysis of the Stress of the Planetary Transmission <i>V. Neumann</i></p>
12:20 – 13:30			Lunch. Messhall in Congress Centre
Valis	Stodola	13:30 – 14:50	<p>Degradation of Propeller Shaft Surface <i>J. Stodola</i></p> <p>Oil Additives Used as Indicator and Input for Preventive Maintenance Optimisation <i>D. Valis and L. Zak</i></p> <p>Selected Reliability Measures of Composites with Natural Fibres Tested in Climatic Environment <i>A. Krzyzak and D. Valis</i></p>
14:50 – 15:10			Coffee Break / Poster Session
		15:10 – 17:00	

21 MAY 2015

WEAPON SYSTEMS & MATERIALS IN SPECIAL MANUFACTURING / HALL C

Vitek	Jedlicka	9:00 – 10:20	<p>Software Complex for Simulation of Internal and External Ballistics of Artillery Shot <i>I.G. Rusyak et al.</i></p> <p>Effects of Initial Grain Temperatures on Homogeneous Propellant Rocket Motor Operation with Special Emphasis on Combustion Instability <i>D.G. Safta and I. Ion</i></p> <p>Infantry Fighting Vehicle in Case of Burst Firing <i>J. Balla, Z. Krist and I. Le Cong</i></p> <p>Two-Pulse Solid Propellant Rocket Motor Solution <i>P. Konecny</i></p>
10:20 – 10:40			Coffee Break / Poster Session
Jedlicka	Vitek	10:40 – 12:20	<p>Improvement of the Barrel Bore Quality of Hammer Forged Barrels <i>V. Nezval and S. Prochazka</i></p> <p>Bore Wear by 3BM-15 Projectiles <i>S. Beer, M. Kovarik and N.T. Sy</i></p> <p>Determination of Residual Wound Potential of the Bullet Penetrating the Target <i>B. Plihal et al.</i></p> <p>Relationship of Mass and Initial Velocity of the Pistol Projectile <i>J. Komenda, M. Kovarik and L. Jedlicka</i></p> <p>New Methods of Obtaining Materials and Structures for Light Armor Protection <i>M.V. Zagirnyak and V.V. Drahobetskyi</i></p>
12:20 – 13:30			Lunch. Messhall in Congress Centre
Vitek	Jedlicka	13:30 – 14:50	<p>Study of Phase Behavior of Carbon Dioxide as the Power Gas for Gas Guns <i>L. Do Duc et al.</i></p> <p>Influence of the Cartridge Lubrication on the Function of the Automatic Weapon <i>R. Vitek</i></p> <p>Ability of Utilization of PCA in Hyperspectral Anomaly Detection <i>F. Racek, T. Balaz and P. Melsa</i></p> <p>Fracture Properties of Welded Armored Steel SECURE 600 under Dynamic Loading at Different Temperatures <i>V. Hruby et al.</i></p>
14:50 – 15:10			Coffee Break / Poster Session
Jedlicka	Vitek	15:10 – 17:00	<p>Simulation as a Reliable Tool for Predicting the Degree of Armor Damage <i>R. Ridky and K. Bodisova</i></p>

Poster Sessions

20 MAY 2015

Hall	Paper
E	The Security Risks Associated with Attacks on Soft Targets of State <i>L.D. Prochazkova and M. Hromada</i>
C	The Air Defence Missile System Effective Coverage Determination Using Computer Simulation <i>I. Hamtil, J. Farlik and M. Kratky</i>

21 MAY 2015

Hall	Paper
A	The Influence of the Tires on the Trafficability <i>K. Cibulova, Z. Hejmal and M. Vala</i>
A	Earthworks Designing on new Elevation Data of the Czech Republic <i>J. Sobotka</i>
A	Device for Launching the TMS Bridge <i>M. Benda</i>
A	Field Tests of High Performance Fiber Reinforced Concrete Slabs <i>J. Stoller and P. Dvorak</i>
A	Residential Object Vibrations Induced by T-72 Gunfire <i>Z. Hejmal, K. Cibulova and Z. Vintr</i>
A	The Field Testing of High Performance Fiber Reinforced Concrete Slabs under the TNT Load Explosion together with the Analytical Solution and the Numerical Modelling of those Tests Results <i>J. Stoller and E. Zezulova</i>
A	Military Geology and Geopolitics <i>P. Beyr</i>
A	Potential of the METRo Model for Grass Temperature Forecast <i>K. Dejmal and J. Novotny</i>
A	Analysis of Vehicle Movement Possibilities in Terrain Covered by Vegetation <i>M. Hubacek et al.</i>
A	Use of the Radar and Station Precipitation Measurement for Analysis of Orographic Convection <i>D. Saur</i>

Poster Presentation

- Posters will be presented directly in the hall where the relevant section is held.
- Poster boards will be available on Wednesday and Thursday, May 20 and 21 from 8:00 am depending on relevant section. The posters must be placed onto the poster boards not later than 10:20 am.
- The authors are required to present their posters to conference participants during poster session organized during both coffee breaks 10:20 – 10:40 and 14:50 – 15:10 of corresponding day.

Instruction for Authors

The length of one presentation is strictly 20 minutes, 15 minutes are planned for one ordinary presentation and 5 minutes for following discussion to the presentation.

The PC with MS PowerPoint and Adobe Acrobat Reader will be ready for your presentation, if you require special equipment, please let us know, we will try to do our best.

How to get to Conference ICMT'15

General information about access to Brno Exhibition Centre on the official web of BVV. Conference ICMT is situated to the Conference Centre.

City transport in Brno will bring you from the city centre to the Exhibition Centre (stop call Výstaviště) by tram No. 1 or by bus No. 84 and 44 (direction Pisarky).

How to go to Conference Banquet

Conference banquet will be in the building of *Club of University of Defence*, Šumavská street 4. After second conference day (May 20) at 17:15 (and 17:45 if necessary) navette will move the visitors from BVV to Šumavská. Departure from the statue before main entry of BVV area, 60 meters from the Congress Centre. Alternative: trolley-bus no. 25 and 26 go to Konečného náměstí, then tram no. 3, 12 to stop Klusáčkova then go walk downhill about 400 meters.

GPS coordinates: 49.2121728N, 16.5971447E

IDET Exhibition

IDET Exhibition: May 19 to 21, 2015. Each registered participant will obtain an electronic ticket to the e-mail given during a registration process.

Opening hours: 9:00 – 17:00.

Conference Charmain

Libor DRAZAN

Local Organizing Committee

Jan KOHOUT

Alexandr STEFEK

Vaclav KRIVANEK

Otakar PETRICEK