Fire Engineering & Disaster Management Prerecorded International Scientific Conference Védelem online cooperated with the University of Public Service 23rd of February, 2021. Budapest, Hungary

Book of abstracts

Védelem Tudomány

Budapest

2021.

Fire Engineering & Disaster Management
Prerecorded International Scientific Conference
Védelem online – cooperated with the University of Public Service 23rd of February, 2021. Budapest, Hungary

Book of abstracts

Publisher:
Védelem Tudomány Journal

VÉDELEM TUDOMÁNY
KATASZTRÓFAVÉDELMI ONLINE TUDOMÁNYOS FOLYÓIRAT

Budapest
2021

Edited by László Bodnár and György Heizler

ISBN 978-615-01-1362-3

Welcome speech by Colonel Dr. habil. Gyula Vass

Dear colleagues and friends/Ladies and gentleman,

My name is Colonel Gyula Vass, PhD., head of the Institute for Disaster Management and I am the Conference Chair of Fire Engineering & Disaster Management Pre-recorded International Scientific Conference. I wish that you are well, I am glad to open the Conference here in Budapest, Hungary at the University of Pubic Service. I am delighted to welcome so many of you. This period is uncertainty for the entire World due to Covid 19 Pandemic, which affected and modified our lives and activities for the past months and will probably be present in the near future. Due to the pandemic, it is understandable that this conference will be quite different from previous conferences, although we can already find several examples for online conferences in international level. One of the features of such conferences is that at the time of the conference, presenters are not required to be present in real time, even in the virtual conference space, due to the fact that the presentations will be available in pre-defined videos on a pre-defined platform. The primary goal of our Fire Engineering & Disaster Management Pre-recorded International Scientific Conference is to present the actual researches in the field of Fire Engineering, Fire Protection accordingly lectures related to the fire protection will dominate during the conference, but covering the educational portfolio of the University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, there will also be presentations in the topic of the Disaster Management and Security developed at the scientific level. The language of the conference is English.

The following 5 topics were created at the conference:

1. Fire engineering
2. Fire protection
3. Firefighting and rescue operations management
4. Disaster management
5. Safety and security

These topics are include more sections, chaired by the chairman and co-chairs.

I sincerely hope you will enjoy the conference! I wish you all a very fruitful conference!

Colonel Dr. habil. Gyula Vass
Chair of the conference

Scientific Committee

- Alexander Fekete, TH Köln, Germany
- Andrea Majlingova, Technical University in Zvolen, Slovakia
- Anita Petrovic, Higher Education Technical School of Professional Studies in Novi Sad, Serbia
- Ágoston Restás, University of Public Service, Budapest, Hungary
- Assan Zhaulybayev, Kokshetau Technical institute MES, Republic of Kazakhstan
- Batista Carlos Antonio, Federal University of Parana, Brazil
- Belle Johannes, University of the Free State, Bloemfontein, Republic of South Africa
- Bilha Wanjiku Muchiri, Kenyatta University, Nairobi, Kenya
- Branko Savic, Higher Education Technical School of Professional Studies in Novi Sad, Serbia
- Danica Kacikova, Technical University in Zvolen, Slovakia
- Éva Lublóy, Budapest University of Technology and Economics, Hungary
- Filippo Berto, Norwegian University of Science and Technology, Trondheim, Norway
- Gábor Kovács, University of Public Service, Hungary
- Gabriel Sas, Luleå University of Technology, Luleå, Sweden
- Gall Anthony, University of Óbuda, Budapest, Hungary
- Gergő Érces, University of Public Service, Budapest, Hungary
- György Balázs, Budapest University of Technology and Economics, Hungary
- Gyula Nagy, University of Óbuda, Hungary
- Gyula Vass, University of Public Service, Budapest, Hungary
- Izabela Gabryelewicz, University of Zielona Góra, Poland
- Jayne Kamau, Kenyatta University, Nairobi, Kenya
- Jozef Svetlík, University of Zilina, Slovakia
- József Ambrusz, University of Public Service, Budapest, Hungary
- József Hesz, University of Public Service, Budapest, Hungary
- Lajos Kátai-Urbán, University of Public Service, Budapest, Hungary
- Lajos Takács, Budapest University of Technology and Economics, Hungary
- László Bérczi, University of Public Service, Budapest, Hungary
- László Bodnár, University of Public Service, Budapest, Hungary
- László Szűcs, University of Óbuda, Budapest, Hungary
- Linda Makovicka Osvaldova, University of Zilina, Slovakia
- Martin Zachar, Technical University in Zvolen, Slovakia
- Michael Försth, Luleå University of Technology, Luleå, Sweden
- Mikael S Hedenqvist, KTH Royal Institute of Technology, Stockholm, Sweden
- Milanko Verica, University of Novi Sad, Serbia
- Mirjana Laban, University of Novi Sad, Serbia

- Ncube Alice, University of the Free State, Bloemfontein, Republic of South Africa
- Oisik Das, The University of Auckland, New Zealand
- Ozunu Alexandru, Babes-Bolyai University, Cluj-Napoca, Romania
- Patryk Krupa, University of Zielona Góra, Poland
- Péter Pántya, University of Public Service, Budapest, Hungary
- Péter Ruzsonyi, University of Public Service, Hungary
- Piwowarsky Julius, Apeiron, the College of Public and Individual Security, Poland
- Sándor Rácz, University of Public Service, Budapest, Hungary
- Seeram Ramakrishna, National University of Singapore, Singapore
- Shwababa Siviwe, Rhodes University, Grahamstown, Republic of South Africa
- Tandlich Roman, Rhodes University, Grahamstown, Republic of South Africa
- Tomasz Zweglinski, Main School of Fire Service, Warsaw, Poland
- Xu Qiang, Nanjing University of Science and Technology, China
- Zhan Dou, Beijing University, China
- Zoltán Rajnai, University of Óbuda, Budapest, Hungary
- Zoltán Török, Babes-Bolyai University, Cluj-Napoca, Romania
- Zsuzsanna Kerekes, University of Public Service, Budapest, Hungary

Organizing Committee

- Gyula Vass, University of Public Service
- György Heizler, Védelem Tudomány Journal
- Péter Ruzsonyi, University of Public Service
- Ágoston Restás, University of Public Service
- Lajos Kátai-Urbán, University of Public Service
- József Ambrusz, University of Public Service
- József Hesz, University of Public Service
- Péter Pántya, University of Public Service
- Zsuzsanna Kerekes, University of Public Service
- Gergő Érces, University of Public Service
- Sándor Rácz, University of Public Service
- László Bodnár, University of Public Service

Chair of the conference: Colonel Gyula Vass, PhD

Co-chairs of the conference:
Qiang Xu, Alexandru Ozunu, György Heizler, Ágoston Restás

Table of contents

Subsection 4

Chair: Oisik Das, Co-chair: Gergő Érces

1. János Gyapjas - Regina Haris: Fire Safety in building construction
2. Péter Tóth: New Hungarian standard for testing facade fire propagation
3. Jozef Svetlík–Makovická Linda Osvaldová: Temperature on car doors exposed to fire – pre-test
4. Andrea Majlingova - Patryk Tischler: Compartment Fire Modelling

Section B – Fire protection

Subsection 1

Chair: Zoltán Rajnai, Co-chair: Ferenc Kanyó

1. Zsófia Tóth-Pataki - János Szép - Zsuzsanna Kerekes - Ágoston Restás: Role of radiation heat in the thermodynamic classification of polystyrene thermal insulators
2. Mónika Szalai: Danger of dust explosion and importance of testing for explosive dusts
3. Viktor Hlavicka: Cracks in normal strength concrete and mortar subjected to elevated temperatures
4. Makovická Linda Osvaldová: Determination of selected fuel values of wood in case of forest fire in an area of natural disaster

Subsection 2

Chair: Anthony Gall, Co-chair: László Bérczi

1. Zsófia Raffai–Hermina Horváth: Examination of the transport
2. Nikoletta Ragács - Zsuzsanna Kerekes - János Szép - Ágoston Restás: Effect of Thermodynamic Behavior of Isolation Materials on smoke generation
3. János Gyapjas - László Bérczi: Heat and smoke extraction from the point of view of the fire protection authority, in terms of with obtaining occupancy permit
4. Krisztina Komlai - Ágoston Restás - Zsuzsanna Kerekes: Fire Resistance Thermodynamic Test of Self-supporting Double Skin Metal Faced Sandwich Panels

Subsection 3

Chair: Linda Makovicka Osvaldova, Co-chair: Lajos Takács

1. Péter Debreceni: Review of National Forest Fire Prevention System in Hungary Innovative Strategies for Fire Prevention

2. Péter Tóth– Péter Pántya: The role of ÉMI LLC. in Hungarian fire protection
3. Rhoda Mensah: Advances in Assessment Methods for Fire Safety
4. Péter Pántya: Issues of energy sources in the field of Fire Protection

Subsection 4

Chair: Verica Milanko, Co-chair: József Hesz

1. Péter Pántya: Basics of the fire protection of alternative energy sources
2. Lajos Király - Ágoston Restás: Examination of ATEX rule changes in Hungary
3. Nikoletta Ragács - Zsuzsanna Kerekes - Ágoston Restás: Thermodynamic behavior of isolation materials exposed to radiation heat
4. Mónika Nováky: Analysis both of the Official Fire Protection and Special Fire Protection Authorities in the System of Integrated Disaster Management

Subsection 5

Chair: Martin Zachar, Co-chair: Géza Zólyomi

1. Seeranm Ramakrishna –Oisik Das – Ágoston Restás: Microscale Combustion Calorimetry (MCC)
2. László Bérczi – Diána Farkas: Research on the development of the fire investigation procedures
3. István Mészáros - Lajos Kátai-Urbán - Zsolt Cimer –Gyula Vass: Hospital evacuation

Section C – Firefighting and rescue operation management

Subsection 1

Chair: Andrea Majlingova, Co-chair: Péter Pántya

1. Balázs Stocker - László Bodnár: Shortcomings in cooperation during the marching of the fire engine
2. Zsolt Huszka –Sándor Rácz: Presentation of occupational safety solutions against hazards during the firefighting
3. László Bodnár: Physical load test of firefighters based on the carried overload
4. József Kersák - Péter Pántya: Technical development opportunity in the field of practical training in rescue fire protection

Subsection 2

Chair: Danica Kacikova, Co-chair: Sándor Rácz

1. Patricio Sanhueza: Issues about the wildfire situation in Chile
2. Levente Gál- Sándor Rácz: Presence of Factors Influencing a Decision Based on Signals of the Fire Alarm System
3. Roland Bánhegyi - Sándor Rácz: Firefighting in case of solar panels
4. Máté Rekeny - Ágoston Restás: Comparative Effectiveness Analysis of Fire Engines Focusing on Forest Fires

Subsection 3

Chair: Siviwe Shwababa, Co-chair: László Bodnár

1. György Kós: Rapid Fire Progress (RFP).
2. Johanna Farkas: Coping strategies of firefighters
3. Bilha Muchiri: Fire Investigation and Response in Muranga County, Kenya: Success and Challenges
4. Tamás Igaz-Danszky - József Hesz: Development of Operation Control at Hungarian Disaster Management

Subsection 4

Chair: Jayne Kamau, Co-chair: Rajmund Kuti

1. Róbert Urszuly: Extinguishing fires from solar systems
2. Alexander Fekete - Péter Pántya: Fire, multi-risk and technical rescue needs in Germany and Hungary. Organizational differences and similarities
3. Péter Pántya: Extra load and limitations by the PPE's on the members of the Fire Protection
4. Roland Veszpremi –Péter Pántya: Fire interventions at railways

Subsection 5

Chair: Ferenc Varga, Co-chair: László Pimper

1. Tamás Miskei: Intervention challenges in cases of fire and damage to electric vehicle charging stations
2. Ishan Al-Khawaldeh - Restás Ágoston: Forest Wildfire Crisis Management
3. Tomasz Zweglinski–Péter Pántya: LNG conditional scenario flow model for incidents in road transport
4. Péter Tomka –Péter Pántya: Identifying Firefighters and Vehicles on the Fire ground

Section D – Disaster management

Subsection 1

Chair: Ozunu Alexandru, Co-chair: Árpád Muhoray

1. Árpád Muhoray: 20 years of Hungarian Disaster Management
2. Zoltán Török - Alexandru Ozunu - Cristian Malos - Andrei Radovici: Natech Risk at Romanian Seveso establishments and industrial parks
3. Csaba Almási - Gyula Vass - Lajos Kátai-Urbán: Transport of materials belonging to ADR Class 3 with agricultural tractor in Hungary
4. Mikulas Monosi - Jaroslav Flachbart: Drone application in extreme conditions

Subsection 2

Chair: Tomasz Zweglinski, Co-chair: Lajos Kátai-Urbán

1. János Petrányi - Attila Zsitnyányi - Gyula Vass - Lajos Kátai-Urbán: New capabilities in the Hungarian Radiation Early Warning and Monitoring System
2. Ahmad Alhosban– László Bodnár: The Adopted Approach to the disaster management of Covid-19 Pandemic in Jordan /role of the National Center for Security and Crisis Management (NCSCM)
3. Dávid Nemes: Case Study of Drone Applications Supporting Preventive Flood Management in the Rakaca Water Reservoir
4. Siviwe Shwababa: Enhancing Disaster Preparedness in the midst of the Covid -19 Pandemic

Subsection 3

Chair: Zoltán Török, Co-chair: József Ambrusz

1. Hermina Horváth - Lajos Kátai-Urbán –Gyula Vass: Investigation of fire safety aspects of dangerous goods shipments
2. Réka Kirovné Rácz: The Correlation of Climate Change and the Disasters due to Precipitation in Hungary
3. Bernardo Castro: Challenges of the disaster management in Chile
4. Réka Kirovné Rácz: Drought and Desertification as a Disaster

Subsection 4

Chair: Izabela Gabryelewicz, Co-chair: Galina Horváth

1. Nóra Szűcs-Vásárhelyi - József Dobor - György Pátzay: Demonstration of hazardous soil contaminants from a disaster management perspective

2. Kátai-Urbán Lajos - Zsolt Cimer - Ádám Berger: Remediation board versus protective ring
3. Alice Ncube -J. Ndovella: Resilience mechanisms displayed by informal settlement dwellers towards shack fires in South Africa
4. László Teknős: Analysis of evaluation of the relation between agriculture and Disaster Management

Subsection 5

Chair: Patryk Krupa, Co-chair: Júlia Hornyacsek

1. Lajos Kátai-Urbán – Zsolt Cimer– Zoltán Cséplő – Gyula Vass: Examination of the technical competencies required to fulfill the industrial safety responsibilities
2. Chris Hetkämper: How to locate central service points for emergency services?
3. Tamás Parrag - Lajos Kátai-Urbán - Zsolt Cimer: Environmental safety effects of micropollutants and microplastic.
4. Zsófia Kugler: Activity of the Knowledge Centre for Water Sciences and Disaster Prevention

Section E – Safety and security

Subsection 1

Chair: Alexander Fekete, Co-chair: Péter Ruzsonyi

1. József Ambrusz - Alida Kiss: Scientific research difficulties of post-earthquake rehabilitations
2. Julius Piwowarski: Security environment – theoretical model in Polish security sciences
3. Júlia Hornyacsek - Gergely Kovács: Application possibilities of Augmented Reality and Virtual Reality in the training of defense professionals
4. Kálmán Serfőző - György Pátzay - József Dobor: Disaster management representation and summary of the most important elements, controllers, systems and devices required for the operational safety of a fictitious hazardous plant

Subsection 2

Chair: Julius Piwowarski Co-chair: Gábor Kovács

1. Balázs Barina - József Dobor: Characterization, use and hazards of chemicals with dangerous properties that may occur in nuclear power plants

2. Noémi Kiss - József Dobor: Summary, characterization, potential hazards of radioactive isotopes, which are most often used in industry and healthcare
3. Alida Kiss - Orsolya Varga - László Bekő: Detection of post-earthquake building damages in Zagreb based on Sentinel-1 radar data
4. Gábor Patai - Sándor Rácz: Accidents in case of prison transport at penal institutions from the perspective of firefighters

Subsection 3

Chair: Johannes Belle, Co-chair: Alice Ncube

1. Katalin Berta: Involvement of animal rescue organizations in disasters
2. Izabela Gabrielawicz –Patryk Krupa –Péter Pántya: Safety management in terms of the level of safety culture in uniformed services
3. Roman Tandlich: A Brief Introduction to TIEMS International Certification - TQC
4. Dávid Petrétei: Victim identification after the Hableány disaster

Subsection 4

Chair: Roman Tandlich, Co-chair: Wędrychowicz Maciej

1. Mirjana Laban - Vudakin Milanko –Vlastimir Radonjanin – Suzana Draganić: Knowledge for Resilent Society
2. Shariphanov Syrym – Shahuov Talgat - Assan Zhaulybayev: The composition of the human capacity flow and Mosque for safety assessment of escape
3. László Manga – Lajos Kátai - Urbán–József Solymosi: Radiation protection devices for nuclear emergency preparedness

Section A – Fire engineering

Subsection 1

Quiang Xu: *Evaluate the Flammability and Fire Behavior of Wood of Ancient Buildings*

Bio sketch:

Xu Quiang is a professor at the Nanjing University of Science and Technology. He obtained his Master degree and also his Doctor Degree of Engineering at the Nanjing University of Science and Technology. He made his post-Doctoral Fellow at "Fire Technology Group" in Commonwealth Scientific and Industrial Research Organisation, Australia. He participated in the National Scholarship Programme of the Slovak Republic for the Support of Mobility of Students, PhD Students, University Teachers, Researchers and Artists, Flammability and fire behaviour research of selected polymers for energy efficient buildings, Technical University in Zvolen, Slovakia. His research interests are characterization of flammability, Ignition and Flame Spread, Measurement and Test Methods for fire safety research, Calorimetry and Experimental Thermodynamics and Kinetics.

Abstract:
Wood is one of the main building materials of ancient architecture. The frequent ancient wooden building fires causes tremendous losses to the building itself and the cultural relics in the building. Exploring the law of fire occurrence and development of ancient wooden buildings is of great significance to ensure the safety of ancient buildings.

Flóra Hajdu - Gabriella László - Zsuzsanna Kerekes - Nikoleta Csápaiová - Rajmund Kuti: *Examination of fire spread in simulation environment*

Bio sketch:

Dr. Flóra Hajdu works as an assistant professor at Department of Mechatronics and Machine Design, Széchenyi István University. She received Mechatronic Engineer Msc. and Vehicle Engineer Msc. degrees from Széchenyi István University. She finished her PhD studies at Széchenyi István University Doctoral School of Multidisciplinary Engineering Sciences in 2020, the title of her thesis was Numerical examination of nonlinear systems with special regard to automotive and mechatronic applications. During her PhD research she started to model firefighting vehicles. After her Phd studies

she started to research in the field of fire spread simulation. Her research interest also includes system modeling, numerical simulations and engineering design.

Zsuzsanna Kerekes was born 1958 in Budapest. She began her high studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Nikoleta Csápaiová was born in 1992 in Komárno in Slovakia. She studied fire engineering at the University of Žilina, which she succesfully completed in 2016. She started her doctorate degree specializing in vehicle fires in 2017 at the same university. She has been working for the Ministry of Interior of the Slovak Republic since 2015 as a professional firefighter. Her assignment is fire investigation at the Fire and Rescue Corps of the Slovak Republic.

Rajmund Kuti was born in 1969 in Szőny. He finished his undergraduate studies at the University of Pécs in fire safety engineering. He obtained his MSc degree at Miklós Zrínyi National Defence University, with the specialization of chemical and disaster protection. He began his doctorate degree in military technical science at Miklós Zrínyi National Defence University in 2009. He achieved habilitated doctoral degree in 2015 in military technical science at the University of Public Service. He has been a university lecturer since 2006, he is currently a full professor at the Department of Mechanotrincs and Machine Design, Fire Protection and Safety Technology Group at Széchenyi István University, Győr, Hungary. Moreover, he is a certified fire protection expert. His research fields are fire protection, fire engineering, water management, mechanical engineering, CBRN engineering.

Abstract:
Aim of the research:

- Examination fires in buildings
- Understanding the combustion process and the spread of the fire
- Scientific examination of the negative effects of the heat load on the building structures
- Due to the environmental damage, it is very difficult to obtain permission for 1:1 scale fire experiments, but good results can also be achieved with computer simulation.
- In order to better understand the spread of fire and its effects on building structures, a model of a unit fire in a living room was examined in numerical simulation
- The model and the simulation process is explained in our presentation.

Katalin Kopecskó: *The vulnerability of Portland cement, the advantage of geopolimer*

Bio sketch:

Katalin Kopecskó Associate Professor at the Department of Engineering Geology and Geotechnics Budapest University of Technology and Economics in Hungary. Graduated in Chemical Engineering (1990) and has postgraduate degree in Concrete Technology (2004). She has her PhD degree in Civil Engineering since 2006. Her PhD thesis was prepared on "Chloride ion binding capacity of steam-cured cement clinkers and cements". She teaches Chemistry for Civil Engineers in BSc and Material Science for CE in MSc as well as PhD subjects (Durability of Construction Materials; Relationship between structure and behaviour of concrete, Alkali activated materials in civil engineering). Her research fields are: deterioration processes and durability of construction materials and concrete, hydration of cement and supplementary cementitious materials, bio mineralization, X-ray diffraction (XRD) and thermal analyses (TG/DTG/DTA).

Abstract:
Geopolimer is used as a structural material. Still can be used either in steel structures or in reinforced concrete elements. There are two roles of the concrete in reinforced concrete structures. The first is the alkaline environment provided passivity of the steel against corrosion. The second is to provide resistance against high temperature. Unfortunately, concrete can deteriorate. The decreasing Ph of concrete leads to the depassivation of reinforcement. On the other hand, in case of fire the concrete may avoid the whole structure against collapse, however the material of concrete changes and needs afterword diagnostic refer.

Ádám Nagysolymosi - Katalin Kopecskó- Zsuzsanna Kerekes - Ágoston Restás: *Structural changes of fiber-reinforced composite plastics under the influence of heat*

Bio sketch:

Ádám Nagysolymosi graduated from the fire protection department of SZIE-YMÉK in 2020. His diploma work was about the fire resistance of fiberglass plastics. And he is currently working as a construction manager.

Katalin Kopecskó Associate Professor at the Department of Engineering Geology and Geotechnics Budapest University of Technology and Economics in Hungary. Graduated in Chemical Engineering (1990) and has postgraduate degree in Concrete Technology (2004). She has her PhD degree in Civil Engineering since 2006. Her PhD thesis was prepared on "Chloride ion binding capacity of steam-cured cement clinkers and cements". She teaches Chemistry for Civil Engineers in BSc and Material Science for CE in MSc as well as PhD subjects (Durability of Construction Materials; Relationship between structure and behaviour of concrete, Alkali activated materials in civil engineering). Her research fields are: deterioration processes and durability of construction materials and concrete, hydration of cement and supplementary cementitious materials, bio mineralization, X-ray diffraction (XRD) and thermal analyses (TG/DTG/DTA).

Zsuzsanna Kerekes was born 1958 in Budapest. She began her hight studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the National University of Public Service, Budapest.

Abstract:
In buildings if a fire occurs, the building structures are exposed to some kind of enclosed fire effect, so structures must also be dimensioned for heat load. A common method of scaling is modelling, for which several material properties must be specified. It is necessary to know the behavior of the material against heat and fire. Knowing these, it is possible to calculate the strength reduction of the building structural elements.

Subsection 2

Balázs Nagy – Gergő Érces - József Hesz: *Evaluation of BIM-based workflows in fire safety engineering*

Bio sketch:

Balázs Nagy, PhD is an assistant professor at the Budapest University of Technology and Economics, Faculty of Civil Engineering, Deptartment of Construction Materials and Technologies 3. Műegyetem rkp, 1111 Budapest, Hungary. email: nagy.balazs@emk.bme.hu

Dipl. eng. Gergő Érces, PhD., architect, fire protection engineer, University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, Department of Fire Protection and Rescue Operations Management, associate professor. After obtaining an MSc degree in architecture from the Budapest University of Technology and Economics in 2009, he received a fire protection engineering certificate in 2011 at the Ybl Miklós Faculty of Architecture of Szent István University. In the field of technical sciences, he obtained a PhD academic degree in 2019 at the Doctoral School of Military Engineering at the University of Public Service. His career started as a professional firefighter at the Budapest Fire Department in 2010, where he worked in the field of fire investigation, and from 2012 he worked at the Capital Disaster Management Directorate in the field of fire prevention. Since 2017 he has been a lecturer in fire prevention courses at the Department of Fire Protection and Rescue Operations Management of the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. At the university, he works as a research engineer in the field of disaster management and fire prevention.

Col. József Hesz, PhD is an associate professor at University of Public Service, Institute of Disaster Management, Department of Fire Protection and Rescue Operations Management. He works at the National Directorate General for Disaster Management of the Ministry of the Interior. His research interests are: disaster management, fire protection, firefighting operations management.

Abstract:
Building information modelling and management (BIM) is a process supported by various tools, applications and technologies involving the generation, optimization, and management of digital representations of physical and functional characteristics and information of constructions throughout its entire lifecycle. BIM can be used to provide, or store information related to fire safety. Some of these applications are known and used already, however, many possibilities are nowadays still in the research and development. In our research, we evaluated the possible BIM-based individual applications based on scientific literature and composed a workflow of a construction project that is organizing the use of engineering design and management involving BIM. We discussed the possibilities of BIM applications throughout the analysis of building constructions for fire loads, fire and smoke propagation and evacuation simulation, integrated smart monitoring systems for fire alarm and incident management as well as innovative fire prevention solutions such as AR/VR applications. Our research goal is to facilitate the interconnection of BIM engineering applications and fire protection. We concluded that BIM can be used throughout the whole lifecycle of a building project and all fire safety engineering applications can optimize and generate changes in the building design if these assessments interact to each other and use the same dynamically developing BIM model.

Norber Érces - László Kajtár: *The impact of a conventional operated biomass boiler on the environment*

Bio sketch:

Norbert Érces was born on the 25. of August 1986, in Budapest. He has begun his studies in 2005 at Faculty of Mechanical Engineering at the Budapest University of Technology and Economics. During his studies, he chose to specialize in building service engineering. In 2014 he obtained an MSc degree in comfort building engineering, and this year he worked as a PhD student in the Department of Building Services and Process Engineering. He works as a department engineer since 2017 at the department. His research topic is investigation of biomass fired systems. His educational activities include HVAC system planning, gas supply, use of renewable energy, air conditioning, laboratory measurements, water supply and sewerage.

Abstract:
Abstract: In the case of solid-fuel installations, there is still a large number of traditional wood-fired equipment operating without proper combustion control. Depending on the economic and infrastructural development, these devices are one of the main sources of air pollution. Of course, the emission of pollutants depends primarily on the quality of the fuel or on the behaviour of the user, but can also be significantly reduced with the proper boiler setting. In our study, we tested the operation of a conventional, manual-feed, wood-fired boiler for household use, depending on the opening angle of the combustion air control door. Studies have shown that a constantly changing position of the draft control door has an adverse effect on carbon monoxide emissions as well as the energy produced. In the case of a constant draft door setting, the preset values that can be considered ideal for energy yield and CO emissions were determined for the two fuel types.

Ágoston Restás - Edit Lucza - János Szép - Zsuzsanna Kerekes: ***Reuse of Polyethylene Waste as Building Material in view of Fire Protection***

Bio sketch:

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Edit Éva Lucza was born in 1986 in Budapest. He began his higher education in 2009 at the Faculty of Applied Arts of Szent István University, where he graduated as a teacher of mathematics and Hungarian language and literature. In 2019, he graduated from the Miklós Ybl Faculty of Architecture of Szent István University with a degree in Architecture, Fire and Disaster Protection. In 2019, he began his MSc studies in Plant Engineering at the Faculty of Mechanical Engineering of Szent István University. From 2021 he has been a lecturer at the Miklós Ybl Faculty of Architecture of the University of Óbuda. He is expected to begin his doctoral studies in the fall of 2021. His field of research is the study of the use of recycled materials in construction from the point of view of fire safety.

Szép János was born 1971 in Győr. He passed his MSc degree in 1989 at the Budapest University of Technology, structural engineering specialization. He has been university lecturer since 2006 at Széchenyi István University (SZE) Győr. He obtained his PhD degree in 2015 at the Doctoral School of Multidisciplinary Engineering Sciences in Győr. He has been vice dean for educational affairs at Faculty of Architecture, Civil Engineering and Transport Sciences in SZE since 2015, head of Department of Structural Engineering and Geotechnics since 2019. His main fields of interest are: soil-structure interaction, fire design at loadbearing structures, behaviour of constructions materials at elevated temperature.

Zsuzsanna Kerekes was born 1958 in Budapest. She began her hight studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Abstract:
In the course of our work, we examined different types of polymer tiles from a fire protection point of view. We investigated their behavior against radiant heat. In addition, we performed a small flame propagation test on them. The standard tests provide an opportunity to compare the data collected during the tests with other façade cladding currently used in construction practice, as well as with thermal insulation materials. The aim of the tests is to get an answer to which fire protection classes the tiles we are currently examining can be classified and what kind of construction task they are suitable for performing according to the current regulations.

Oisik Das – Ágoston Restás – Michael Försth - Gabriel Sas - Mikael Hedenqvist: *Naturally-occuring Bromophenol to develop fire retardant gluten bioplastics*

Bio sketch:

Oisik Das is an employee at the structure and Fire group of Department of Civil, Environmental and Natural Resources Engineering at Luleå University of Technology (LTU). Oisik Das has extensive background in materials research including biocomposites, biochar, polymer processing, material characterisation, nanoindentation, pyrolysis, etc. His special interest is flammability of composite structures and materials wherein he investigates the reaction-to-fire behaviour of polymeric composites used for structural and semi-load bearing applications. Oisik Das also conducts research on novel fire retardants such as naturally-occurring lanosol, which is obtained from marine red algae. Additionally, his recent research interests pertain to the fire behaviour of concrete structures and wooden façades. Oisik Das was one of the first researchers to demonstrate a balance between mechanical and fire-retardant behaviour of composites using sustainable biochar. He is currently leading a STINT project, that is attempting to propagate the aforementioned phenomenon using biopolymers and renewable materials. Oisik Das is very active in publishing and in 2020, he published over 20 journal articles. His current h-index is 20 with over 1500 citations. He has authored over 60 peer-reviewed articles; 7 book chapters and also an academic textbook related to fundamental polymer science. Oisik Das has 7 years of teaching experience in four different countries of Sweden, Singapore, New Zealand and India. He is very passionate about pedagogic activities and have recently published an article stating some key strategies for continuing experimental research during university and lab closures as a result of pandemics.

Michael Försth gained his MSc (1995) at Uppsala University, Sweden, in Engineering Physics. He received his PhD (2001) in Physics at Chalmers University of Technology, in Gothenburg, Sweden. He has been researcher, research manager, and section manager at RISE Research Institutes of Sweden before becoming full-time professor in structural engineering at Luleå University of Technology in 2019. Michaels has a wide scope in his research interests but the core of his research is focused on radiative heat transfer, pyrolysis and fire dynamics. In addition to his research Michael has also made contributions within fire regulations in bus fire safety (United Nations Economic Commission for Europe, The Working Party on General Safety provisions, UN ECE GRSG) and cable fire standardization (CENELEC TC20/WG10).

Gabriel Sas is Chaired Professor of Structural Engineering, division of Structural and Fire Engineering at Luleå University of Technology, Sweden. He received his PhD title in 2011 and the Docent title in 2017 from the same university. Before taking his current position in 2020, Gabriel has primarily worked in the R&D sector in Norway as researcher, scientific leader or manager of applied research projects within bridge and dam engineering. His research is focused on promoting sustainability by prolonging the life of existing structures. He believes in using a multidisciplinary approach, where the strength of one method mitigates the weakness of another one, to solve complex problems such as for example to find out what is the true capacity of a bridge. This implies to intertwine different methods, e.g., numerical analysis, monitoring, condition assessment, structural testing or reliability analysis, in a seamless and resource-effective way, i.e., applying the right tool or method at the right step.

Mikael Hedenqvist is Professor and heads the Polymeric Materials Division at the Department of Fibre and Polymer Technology, Royal Institute of Technology, Stockholm. He works on synthetic and biobased polymers (proteins, polysaccharides, polyesters) on topics such as processing of polymers, long-term properties and mass transport, electric and mechanical properties of polymers, foams and composites (experiments and simulations/modelling). He is editor-in-chief of Polymer Testing and has co-authored more than 260 peer-review papers (including 13 reviews) and 9 book chapters. He has co-authored the textbook Fundamental Polymer Science, U. W. Gedde, M. S. Hedenqvist, 2nd Ed., Springer, Berlin, 2019.

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Abstract:
It is important to determine what is wheat gluten and why attaining fire retardancy is important. The authors examine the main protein of wheat, the consists of gliadin and glutenin, the co-product of cereal processing industry in the Nordic countries. The application areas of the research are furniture, electrical casings, packaging, etc. The susceptible to burning is the health hazard and property loss. So these must be treated with fire retardants (FRs). The authors conclude from the examination that lanosol is a potent naturally-occuring FR in gluten bioplastics. Lanosol performs better than other conventional brominated FRs. Lanosol reduces tensile strength but increases modulus and it should be used in gluten for targeted applications.

Subsection 3

Judit Veresné Rauscher: *Evacuation scenarios and repeated runs for evacuation simulations*

Bio sketch:

Judit Rauscher is architect and fire protection engineer. She is currently studying at Óbuda University Doctoral School on Safety and Security Sciences, her doctoral research focuses on evacuation in healthcare institutes. She has been dealing with evacuation for more than 10 years, including computer based evacuation simulation. She has presented her work and results in fire protection planning at more international conferences in recent years, and joined international organizations to further develop herself. In addition to work and study, she also participates in the preparation of legislation and in the training of the field of fire protection.

Abstract:
The aim of the present study is to show what evacuation scenarios need to be examined during the evacuation calculations and according to which aspects they should be developed. I examined international regulations, recommendations, and literature data and compared them with domestic expectations and practices. Using an approach and examples, I show how usage patterns, geometric features, person characteristics and starting positions can influence the number and nature of evacuation scenarios. In addition, I show the extent of repeated runs due to the statistical settings of the input parameters and how it is worth evaluating the obtained results.

Gyula Vass - Gergő Érces - Sándor Rácz: *Fire protection in smart cities*

Bio sketch:

Colonel Dr. habil. Gyula Vass was born in 1957. He has been leading the Institute of Disaster Management since 2017. He has master's degrees in civil engineer (1991) and fire engineering (1986). He defended his PhD thesis in the field of military sciences, disaster management in 2006 at the Zrínyi Miklós National Defence University. In 2016 he habilitated at Ludovika-UPS and from 2017, he is full-time associate professor. He has positions at Fire and Disaster Management organisations as a firefighter, fire prevention officer, industrial safety expert and different fire chiefs. He is a member of the Scientific Council for Disaster Management, the Technical Scientific Section for Nuclear Accident Prevention and the Nuclear Energy Certification Commission.

Dipl. eng. Gergő Érces, PhD., architect, fire protection engineer, University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, Department of Fire Protection and Rescue Operations Management, associate professor. After obtaining an MSc degree in architecture from the Budapest University of Technology and Economics in 2009, he received a fire protection engineering certificate in 2011 at the Ybl Miklós Faculty of Architecture of Szent István University. In the field of technical sciences, he obtained a PhD academic degree in 2019 at the Doctoral School of Military Engineering at the University of Public Service.
His career started as a professional firefighter at the Budapest Fire Department in 2010, where he worked in the field of fire investigation, and from 2012 he worked at the Capital Disaster Management Directorate in the field of fire prevention. Since 2017 he has been a lecturer in fire prevention courses at the Department of Fire Protection and Rescue Operations Management of the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. At the university, he works as a research engineer in the field of disaster management and fire prevention.

Sándor Rácz was born on 11 of April 1973 in Nyírbátor. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and after that the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2015 at the Doctoral School of Military Engineering at the University of Public Service. He received his scientific degree in 2019. He is currently an assistant professor at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also worked at the Municipal Fire Department of Budapest and at the Professional Fire Department of Budapest District IX as a Deputy Commander.

Abstract:
Nowadays, the principle of smart urban development is already a priority in modern urban planning and development. In line with international trends, nations almost without exception have a smart city development strategy. Although the European Union does not have comprehensive smart city regulation, the area is receiving special attention. The big framework programs of the EU typically are: energy efficiency, resource management, economic competitiveness, innovation and involvement of communities in the renewal of governance. Within the framework of the European Commission's joint research programming initiative, Urban Europe has launched a research and development cooperation. The program addresses European urban development in five thematic areas: urban economies,

prosperity and finance, resilient environment, access and connectivity, and governance and participation. The evaluation system supporting the smart strategies of Hungarian settlements defines complex indicators according to thematic areas in six subsystems: smart mobility, smart environment, smart people, smart living, smart governance, and smart economy. One of the monitoring topics in the smart living subsystem is safety. In this monitoring topic we research how the future of fire protection - one of the cornerstones of safety – in smart cities will develop.

Katalin Nagy: *How Different Kinds of Built-in Fire Prevention Equipment Work Together*

Bio sketch:

Katalin Nagy, Fire prevention and safety engineer
Association of Fire Prevention Engineers – chairman
HFR TvMI – work group leader
Hungarian Fire Prevention Association – work group leader
Ludor Kft. – professional director
ludor@ludor.hu
http://www.ludor.hu

Abstract:
In increasingly complex buildings planned heat and smoke exhaust is critical to ensure safe escape routes. The cooperation of various types of fire prevention equipment was examined in full-scale tests. Meanwhile, the developments in measurement methods allowed for more detailed investigations. Full-scale tests by Dr. Covelli et al. demonstrated that targeted smoke extraction is essential in places both protected and unprotected by sprinklers, However, both functions should be considered when creating a system. A series of French studies, concluded in 2020, in addition to further reaffirming the current principles in regulation, presented the 10 golden rules of natural smoke extraction.

Jinheng Xu: *Tree Seed Fibers Flammability Analysis by MCC and TGA*

Bio sketch:
Mr. Xu Jinheng is now a sophomore in School of Chemistry, Nankai University, China. He conducts continuous research, primarily in the field of chemistry and fire engineering. He is currently doing a deep research in the topic of the flammability of tree seed fibres.

Abstract:
Poplar and plane tree are widely planted as street trees in cities. The seed fibers of both two kinds of tree pose a significant fire risk. Microscale combustion calorimetry (MCC) and thermogravimetric analysis (TGA) were used to study the flammability of two kinds of fluffy seed fibers. Both Method A and B procedures were used in MCC tests, while TGA tests were conducted in Nitrogen and Air atmospheres. The peak heat release rate is higher for method B compared to method A at a given heating rate. From Method B, the net calorific value of the specimen gases, for poplar is 16.09 kJ/g and for plane tree is 16.65 kJ/g. These values are similar to other biomass namely, rice husk and wheat straw, which have high level of fire risk.

Subsection 4

János Gyapjas - Regina Zsófia Haris: *Fire Safety in building construction*

Bio sketch:

Col. János Gyapjas deputy director, Bács-Kiskun County Disaster Management Directorate – János Gyapjas has a degree in fire safety engineering (Bsc) and disaster management engineering (Msc), and currently he is an applicant for Ph.D. His field of research is disaster management and fire safety engineering. He is the founding president of the Fire Safety Section of Chamber of Civil Engineers of Bács-Kiskun County. He regularly organises notable conferences on fire safety engineering.

Regina Zsófia Haris, Fire safety officer – Her first experience with firefighting was a devastating fire in the college building of her hometown. She was a teenager at that time, and this sad event directed her to the fire safety field. She has been a volunteer firefighter ever since, and she obtained a degree in fire safety engineering 8 years ago. She has been working for the Fire Prevention Department of Bács-Kiskun County Disaster Management Directorate since 2012 as a fire safety officer. She focuses on enforcing fire safety related regulations and building codes either during design, construction or operation.

Abstract:

The following presentation supports our claim that the representation of fire safety in the building construction is not optimal. The aim of our scientific research was to find typical insufficiencies by the method of focus group interviews and questionnaire. Twelve typical constructional insufficiencies were identified, whereof six stands out by occurrence. Fire safety professionals are rarely involved in the process of construction and obtaining occupancy permit. Constructional insufficiency in non-licensed building construction is also a common occurrence. Based on the results in this study we propose the optimalization of constructional fire safety

Péter Tóth: *New Hungarian standard for testing facade fire propagation*

Bio sketch

Péter Tóth was born on 25th of July 1971 in Budapest. He began his studies in 2000 at the Technical University of Budapest and obtained the MSc degree in Civil Engineering. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently the Chief Scientific Officer of ÉMI LLC, expert member of the Standing Committee of Construction and the GRP-Advisory Group on Construction of European Commission. He is also a PhD Candidate. His research topic is "Development of testing method of facade fire propagation" The expected time for his thesis defence is 2022.

Abstract:

Abstract: There is a continuous change in building technologies and in building materials. The risk of serious facade fires has been increased due to extensive use of combustible materials on facades during the last 20 years. The existing national testing and classification methods shall be reviewed and modified regularly in order to follow these changes. This presentation briefly describing the alterations and the new features of the Hungarian testing standard MSZ 14800-6:2020.

Jozef Svetlík – Linda Makovická Osvaldová: *Temperature on car doors exposed to fire – pre-test*

Bio sketch:

Doc. Ing. Jozef Svetlík, PhD. is currently the head of the Department of Fire Engineering, University of Žilina in Žilina. In 2001, he completed his university studies in the field of crisis management. In 2002, he joined the Department of Fire Protection as an assistant professor. In 2009 he defended his dissertation on the topic "Multi-criteria selection of firefighting equipment". Since 2018 he has been a full associate professor in the field of rescue services. He defended his habilitation thesis on the topic "Experimental investigation of car fires". In his educational and scientific research activities in 2002, he deals with the issue of water supply by fire brigades in fighting fires, tactics of intervention by rescue services, as well as vehicle fires, especially personal motor vehicles. He actively participates in solving scientific research tasks in the subject area. These are the tasks of international (FP7, IPCEI) and national grant schemes.

doc. Bc. Ing. Linda Makovická Osvaldová, PhD. is an associate professor at the Department of Fire Engineering at the Faculty of Security Engineering. She is involved in teaching the subjects of Safety and Health Protection in the Fire and Rescue Corps, Fire Safety of Technological Processes and Fire Testing, and in teaching Erasmus+ students. In her scientific and educational activities, she deals with the issues of occupational safety and health protection of rescue forces, testing of materials used in technological processes and in building constructions, as well as with natural materials in forest fires and their impact on the safety of rescue corps in firefighting. She works within the field of occupational safety and fire prevention (development of e-learning modules for training of employees). She is an active member of both domestic and foreign organizations: The Slovak Association for Occupational Safety and Health and Fire Protection; Common vision: Work safety in the building industry in the Czech Republic; and The American Association of International researchers (AAIR). She is a member of several editorial boards of foreign and domestic magazines: Bezpečná práca, Journal of Engineering and Architecture, Acta Universitas Matthiae Belii séria Enviromentálne manažérstvo, European Journal of Environmental and Safety sciences, Delta journal. Her scientific research activities are varied and published both in indexed journals and in indexed conferences. She is active in international fora where she has presented the results of various projects.

Abstract:
Fires of passenger motor vehicles are a part of life. They can be seen in the streets at any hour, and most often happen when the vehicle is parked. The article deals with the effects of simulated fire on the structural elements of cars (doors) while recording the temperatures and the flow of radiant heat. The experiment was carried out in a fire room and verified the methodology of evaluating the behavior of car doors under thermal stress caused by a fire from a liquid spill. The results of experiments can serve as a basis for the car fire simulations in both enclosed and open spaces.

Andrea Majlingova – Patrik Tischler: *Compartment Fire Modelling*

Bio sketch:

Andrea Majlingova is an Associated Professor at Technical University in Zvolen, Slovakia. She lecturing and researching in this University, at the Faculty of Wood Sciences and Technology, Department of Fire Protection. She has an MSc degree (Forestry, Technical University in Zvolen, Slovakia), holds a PhD in Rescue Services (University of Žilina, Slovakia) and in Forest Management (Technical University in Zvolen, Slovakia). Her research fields are: Geoinformatics for Disaster Risk Managemement, fire and disaster management intervention and support, analysing the fire risks with using wood materials.

Abstract:

Modelling of fire behaviour represents an important part of science or fire engineering allowing the experts to study and understand behaviour of a fire. The outputs of fire modelling are important as for fire prevention, fire investigation practice, but also for building designers and for incidents commanders (firefighters) to choose the most effective and safe fire tactics. There are introduced the fire models and software used for compartment fire modelling.

Section B – Fire protection

Subsection 1

Zsófia Tóth-Pataki - János Szép - Zsuzsanna Kerekes - Ágoston Restás: ***Role of radiation heat in the thermodynamic classification of polystyrene thermal insulators***

Bio sketch:

Zsofia Toth-Pataki was born 1989 in Budapest. She began her hight studies in 2008 at the Széchenyi István University (SZE) Győr., and obtained the Bsc degree in civil engineering, settlement engineering specialization. She began her fire engineer studies in 2018 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University. She's planning to start her Msc studies as infrastructure engineer, geotechnics specialization. She has been a member of the fire protection laboratory of the ÉMI Nonprofit Company for years. Nowadays she is a Technical director at a general construction company and in addition, she completes her internship in fire protection design. She has been university lecturer since 2021 at Széchenyi István University (SZE) Győr. She has been interest about fire protection since 2013. Main fields of interest are thermal insulation systems.

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Szép János was born 1971 in Győr. He passed his MSc degree in 1989 at the Budapest University of Technology, structural engineering specialization. He has been university lecturer since 2006 at Széchenyi István University (SZE) Győr. He obtained his PhD degree in 2015 at the Doctoral School of Multidisciplinary Engineering Sciences in Győr. He has been vice dean for educational affairs at Faculty of Architecture, Civil Engineering and Transport Sciences in SZE since 2015, head of Department of Structural Engineering and Geotechnics since 2019. His main fields of interest are: soil-structure interaction, fire design at loadbearing structures, behaviour of constructions materials at elevated temperature.

Zsuzsanna Kerekes was born 1958 in Budapest. She began her hight studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Abstract:
The coating of buildings and facilities with insulating material is of paramount importance in connection with energy efficiency. Insulation is manufactured differently depending on the type, but they are certified according to a uniform standard. In the present dissertation, we examine the three most common "white" EPS, XS and graphite materials, whether the so-called EUROCLASS EN 11 925 so-called small flame test. Furthermore, do the effects of cutting surfaces in practical use on fire protection show a difference between "factory cut" surfaces and "home cut". The small flame test showed that since there is no flame combustion, so the flame propagation does not give a meaningful qualification among the EPS samples. Therefore, further tests should be continued with radiant heat. On the other hand, the radiant heat reaches the material over a larger area, so that an early effect of the fire can be better modeled. Burning of the materials is always preceded by the preliminary heat load, with significant damage, which already makes a significant difference between the individual samples. This is because the deformation increases at a very faster rate than the burnout itself.

Mónika Szalai: *Danger of dust explosion and importance of testing for explosive dusts*

Bio sketch:
Monika Szalai was graduated as chemical engineering MSc in 1997 from the Faculty of Chemical Engineering of Budapest University of Technology. In 2014, she graduated as a fire protection engineer. In 2017, she graduated as an occupational safety engineer. Areas of work: chemical technology design, explosion protection, she is an explosion protection specialist.

Abstract:
When assessing dust explosion risks in industrial environments, one challenging and poorly understood question is "what should we test"? For liquids and gases, flammability data (at least under atmospheric pressure and normal temperature conditions) are well understood and available in the open literature for most common liquids and gases. Such data for dusts is more limited because of the major impact of particle size, moisture content and even particle morphology. The complexity is compounded often as many products are made up of a number of components, so that there is a virtually unlimited number of "materials" in existence with properties different from the individual components. Even worse is the situation that those secondary components are not always obvious in the name.

The main hazard characteristics of powders associated with dust explosion can be categorized as ignition sensitivity, explosion severity, flammable limits and electrostatic properties.

Main hazard characteristics of combustible dusts

- Ignition sensitivity
- Explosion severity
- Flammable limits
- Electrostatic properties

The main hazard characteristics of combustible dusts can be determined by laboratory tests.

This presentation provides some insight into what tests need to be performed to design the appropriate equipment for an explosive hazard for a given explosive technology, to select appropriate explosion-proof equipment, and to identify explosive zones in accordance with the ATEX Directives.

Viktor Hlavicka: *Cracks in normal strength concrete and mortar subjected to elevated temperatures*

Bio sketch:

Viktor Hlavička is a civil engineer, obtained his PhD in 2019. He works as an assistant professor at the Department of Construction Materials and Technologies in the Budapest University of Technology and Economics. His main fields of research are the experimental testing and modelling of thermally damaged concrete and anchors in concrete. He is a member of the Hungarian Group of fib (International Federation for Structural Concrete).

Abstract:
Being exposed to high temperatures (fire), various chemical and physical changes happen in concrete, resulting in the loss of load-bearing capacity. Several researchers investigated changes in the compressive strength, tensile strength and modulus of elasticity of different types of concrete exposed to high temperature. On the other hand, only a few papers focused on the cracks and the crack propagation in thermally damaged concrete. The main goals of the presented research are examination of the properties of cracks and crack propagation in thermally damaged concrete and provision of parameters for finite element and other calculations.

Linda Makovická Osvaldová: *Determination of selected fuel values of wood in case of forest fire in an area of natural disaster*

doc. Bc. Ing. Linda Makovická Osvaldová, PhD. is an associate professor at the Department of Fire Engineering at the Faculty of Security Engineering. She is involved in teaching the subjects of Safety and Health Protection in the Fire and Rescue Corps, Fire Safety of Technological Processes and Fire Testing, and in teaching Erasmus+ students. In her scientific and educational activities, she deals with the issues of occupational safety and health protection of rescue forces, testing of materials used in technological processes and in building constructions, as well as with natural materials in forest fires and their impact on the safety of rescue corps in firefighting. She works within the field of occupational safety and fire prevention. Her scientific research activities are varied and published both in indexed journals and in indexed conferences. She is active in international fora where she has presented the results of various projects.

Abstract:
Forest fires are quite a common phenomenon, even on the European continent. Even if this phenomenon was quite rare in our territory in the past, it needs to be given close attention in the future. Fire-fighting requires great manpower and resources, in many cases on a long-term scale. The equipment, machinery and tactics of intervention units specializing in forest fire-fighting are always changing. Forest fire-fighting has become the subject of much research, and predictive scenarios for forest fire development are designed and tested. The latest equipment, geographic information systems (GIS), knowledge of geomorphological and climate conditions, and meteorological conditions are all included in fire simulations. An important factor for such a simulation is knowing what kind of fuel naturally occurs in the area of the potential forest fire. This article aims to compare methods of testing the fire characteristics and differences in fuel properties according to the position of the wood on the tree (branch, trunk and root) for various coniferous tree species (spruce, fir, pine and larch). To determine these characteristics, the test method, in particular the dimensions of the samples, had to be modified. The results of the experiments are presented in this article in the form of charts.

Subsection 2

Zsófia Raffai – Hermina Horváth: *Examination of the transport of high consequence flammable dangerous goods*

Bio sketch:

Maj. Hermina Horváth is an assistant lecturer at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service since 2012. She was born on 17 of April 1988 in Szekszárd. She began her studies in 2006 at the Miklós Zrínyi National Defence University obtained the BSc degree in defence administration as a defence administration officer and in 2009 the MSc degree in defence administration as a defence administration manager, disaster specialization. She began her PhD studies in 2013 at the Doctoral School of Military Engineering at the University of Public Service. Her research topic is emergency planning at railway marshalling yards, and dangerous goods transportation. She is also has a certificate of training as safety adviser for the transport of dangerous goods by road, rail and inland waterway. In addition she is the secretary at Scientific Students Association at the Faculty of Law Enforcement at UPS. She received the excellent lecturer title of the Institute in 2017.

Zsófia Raffai is a graduate student of Department of Industrial Safety at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. She was born on 27 of January, 1999 in Zalaegerszeg. She started the scientific activity at Scientific Student's Conference in November 2020, where she took third place, thus advancing to the national round. Her research topic is the system of transport of dangerous goods and public security planning. She applied for the master's degree in Disaster Management at the University of Public Service, which started in September 2021.

Abstract:
The purpose of the poster was to give a short professional presentation of the transport of high consequence flammable dangerous goods. Being aware of public safety planning and dangerous goods with a high risk to public security is not only important for those who work with dangerous goods on a daily basis, but it is also an essential topic for those who live near facilities with such activities, routes or rest areas. In order to protect the inhabitants' lives and the environment, the prevention of accidents during the shipping of dangerous goods is necessary, together with the quick and professional elimination of a possible occurrence. One of the goods with a high risk to public safety is flammable and explosive substances, which pose a serious threat to human life and the environment, because where there is a substance with this property, there is a constant risk of fire. Companies and plants engaged in the transport and storage of dangerous goods must prepare a safety plan in order to maintain public safety.

Nikoletta Ragács - Zsuzsanna Kerekes - János Szép - Ágoston Restás: *Effect of Thermodynamic Behavior of Isolation Materials on smoke generation*

Bio sketch:

Nikoletta Ragács was born 1992 in Budapest. She began his hight studies at the Szent Istvan University in Budapest, and graduated in fire safety engineer. Since 2014 fire safety engineer at the National Directorate General for Disaster Management. She has been working in the fire safety design and contruction. Her research topic is "burning of the plastic and rockwool thermal insulators, polystyrene, polyurethane foams, thermoanalytical tests"

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Szép János was born 1971 in Győr. He passed his MSc degree in 1989 at the Budapest University of Technology, structural engineering specialization. He has been university lecturer since 2006 at Széchenyi István University (SZE) Győr. He obtained his PhD degree in 2015 at the Doctoral School of Multidisciplinary Engineering Sciences in Győr. He has been vice dean for educational affairs at Faculty of Architecture, Civil Engineering and Transport Sciences in SZE since 2015, head of Department of Structural Engineering and Geotechnics since 2019. His main fields of interest are: soil-structure interaction, fire design at loadbearing structures, behaviour of constructions materials at elevated temperature.

Zsuzsanna Kerekes was born 1958 in Budapest. She began her hight studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Abstract:
In our work, we investigated the thermodynamic nature of three insulating materials as a function of temperature and time. The thermoanalytical analysis is performed by thermogravimetry, differential thermal analysis, and mass spectrometry with evolving gas analysis. The aim of the test is to determine the change in a selected material before the appearance of flame. In thermal analysis, the study of the change in mass and enthalpy of selected samples as a function of temperature and during the heating of materials over a time interval and the evolution of gases. The results of thermoanalytical studies show in advance how a material can behave, what changes take place as under fire. The decomposition process and temperature provide information on the appearance of the expected toxic gases. There is a relationship between smoke generating ability and thermodynamic properties, they still contain combustible material.

János Gyapjas - László Bérczi - Haris Regina Zsófia: *Heat and smoke extraction from the point of view of the fire protection authority, in terms of with obtaining occupancy permit*

Bio sketch:

Col. János Gyapjas deputy director, Bács-Kiskun County Disaster Management Directorate – János Gyapjas has a degree in fire safety engineering (Bsc) and disaster management engineering (Msc), and currently he is an applicant for Ph.D. His field of research is disaster management and fire safety engineering. He is the founding president of the Fire Safety Section of Chamber of Civil Engineers of Bács-Kiskun County. He regularly organises notable conferences on fire safety engineering.

B.Gen. Dr. László Bérczi PhD. Inspector General for Fire Service, National Directorate General for Disaster Management – He has gained extensive experience on the field of firefighting and fire protection in his more than twenty years of career both in country and in the capital city of Budapest. He has been working in leadership positions for almost 17 years, he controlled several serious firefighting operations. Beside his professional management activity, he has been training firefighting and fire protection experts, lectures in professional conferences, furthermore he takes role in work of several NGOs, and professional organization of the fire safety field. He is a member of the Scientific Council of Disaster Management, he is the head of the fire protection project group, and the chairman of CTIF Hungarian National Committee. As a member of the Subcommittee on Disaster Management and Fire Protection of the Examination Committee of Law Enforcement he is qualified examiner. Several of his studies were published related to fire safety field. He is the honorary professor of Ybl Miklós Faculty of Civil Engineering in Szent István University. He has a degree in safety advisory for the transport of dangerous goods.

Regina Zsófia Haris, Fire safety officer – Her first experience with firefighting was a devastating fire in the college building of her hometown. She was a teenager at that time, and this sad event directed her to the fire safety field. She has been a volunteer firefighter ever since, and she obtained a degree in fire safety engineering 8 years ago. She has been working for the Fire Prevention Department of Bács-Kiskun County Disaster Management Directorate since 2012 as a fire safety officer.

Abstract:
Ensuring proper heat and smoke extraction is very important in fire protection. Its significance is also emphasized by earlier fire events. According to our hypothesis, the prevalence of certain sub-areas of heat and smoke extraction is not optimal. Construction is such a sub-area, therefore in our study we mainly deal with implementation. This can be improved by identifying connection network, methods, typical and recurrent insufficiencies, and making targeted suggestions. Relevant on-site experience is gained by the fire prevention authority, therefore this perspective was chosen in our study. We consider the construction of heat and smoke to be problematic, so greater emphasis is put on occupancy permit inspections. Our research methods were focus group interviews, questionnaires, and the analysis of documentation and regulation. Nodes were identified and a model of occupancy permit inspections was set up. The general situation assessment gradually declines from design through construction to operation. The safety awareness of investors and operators is considered to be low, and the problems experienced during construction and operation are considered to be relatively common. We identified 8 typical problems in the design phase and 10 in the construction phase. We present a complex solution plan. Based on the results, we recommend continuing the research, using it for educational purposes, and for the reviewing of regulations.

Krisztina Komlai - Ágoston Restás - Zsuzsanna Kerekes: *Fire Resistance Termodinamic Test of Self-supporting Double Skin Metal Faced Sandwich Panels*

Bio sketch:
Krisztina Komlai was born on 14 February 1989 in Pécs. She began her studies in 2007 at the Budapest University of Technology and Economics Faculty of Chemical Technology and Biotechnology and obtained the BSc degree in Chemical Engineering. She began her MSc studies in 2013 at the University of Pannonia and obtained the MSc degree in Materials Engineering. She is currently a testing engineer at the Fire Testing Laboratory of ÉMI Non-profit Limited Liability Company for quality control and innovation in building. She is currently studying as Fire Safety Engineer and her research topic is “Fire resistance test of self-supporting double skin metal faced sandwich panels”. The expected time for her thesis defence is spring 2021.

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Zsuzsanna Kerekes was born 1958 in Budapest. She began her hight studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Abstract:
Nowadays, the use of sandwich panels is a very common construction technology. These construction products are composite panels with metal faces on the outside and internal insulating core between them. Sandwich panels are often used in the construction of halls, warehouses and other industrial buildings due to their easy installation and short construction time. Their advantages include the availability of panels of different types, thicknesses and colours on the market, which provide freedom of choice according to different aesthetic, functional and technical requirements. In addition it is important to pay attention to fires affecting sandwich panels, the properties of which depend on the material of the core, the method of installation and the quality of construction.

Subsection 3

Péter Debreceni: *Review of National Forest Fire Prevention System in Hungary - Innovative Strategies for Fire Prevention*

Bio sketch:

Peter Debreceni was born on 17th of March 1975 in Vác. He began his studies in 1994 at the University of Sopron and obtained the MSc degree in Faculty in Forestry in 2000. He has been working for Natinal Food Chain Safety Office as forest inspector since 2001. His research topic is forest fire prevention. His specialties are design and analysis of forest fire database, operation and development of fire ban system, preparing and developing forest fire prevention plans. He has been a member of EU Commission Expert Group of Forest Fire since 2006. He is awarded with bronze medal for volunteer support of Disaster Managent by Minister of Interior in 2020.

Abstract:
The forest fire prevention activity is implemented in cooperation with the forestry authority and disaster management. Data collection and analysis of wildfires carried out, periods of high fire risk are determined and a fire ban is announced within the framework of the Forest Fire Information System. Based on the fire hazard classification of forest areas, forest fire protection plans are prepared and updated by authorities and forest managers. Providing appropriate information on forest fire for citizens is a core element of forest fire prevention. A communication plan has been prepared to organize communication actions and awareness raising campaigns. In this short study I would like to outline the structure of the forest fire prevention system in Hungary and to identify that topics where development and the incorporation of innovative techniques are needed.

Péter Tóth - Péter Pántya: *The role of ÉMI LLC. in Hungarian fire protection*

Bio sketch

Péter Tóth was born on 25th of July 1971 in Budapest. He began his studies in 2000 at the Technical University of Budapest and obtained the MSc degree in Civil Engineering. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently the Chief Scientific Officer of ÉMI LLC, expert member of the Standing Committee of Construction and the GRP-Advisory Group on Construction of European Commission. He is also a PhD Candidate. His research topic is "Development

of testing method of facade fire propagation" The expected time for his thesis defence is 2022.

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organisations at the incidents.

Abstract:
The diverse activities of ÉMI Nonprofit LLC. are related to the Hungarian Disaster Management in many respects, especially to the field of fire protection. ÉMI Nonprofit LLC. is currently the largest organization in Hungary dealing with the conformity assessment and testing of construction products. The test reports, technical assessments, certificates and specialist resolutions issued by it are the accepted basic documents of fire protection planning. ÉMI also contributes to the preparation of Hungarian fire protection technical guidelines and fire protection legislation and standards. It shares its international experience in publications.

Péter Pántya: *Issues of energy sources in the field of Fire Protection*

Bio sketch:

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organizations at the incidents.

Abstract:
The built environment gives a frame to our life at home and during our working hours, travelling between them. In this circumstances multiple dangers are present to the people, some are by the built area and some by the standalone energy sources or the energy network. The fire protection has two brotherly sides. One is the prevention line, for example by the authority work (licensing, control) and the other line is the intervention, for the firefighting and technical rescues. In this presentation analyzed some challenges and issues for the Fire Protection organizations in built environment and demonstrating some solutions to help the fire officers during the prevention and intervention duty close different energy sources.

Subsection 4

Péter Pántya: *Basics of the fire protection of alternative energy sources*

Bio sketch:

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organizations at the incidents.

Abstract:
We make our lives easier with various technical possibilities and machines. They are traditionally powered by electricity from transmission lines or by conventional diesel and petrol fuels. The different energy sources also pose tasks and challenges in the field of fire protection. A review of the basic, related knowledge is now done to see what these alternative directions are and what their characteristics are. What additional issues do each non-traditional energy source raise in the field of fire safety.

Lajos Király - Ágoston Restás: *Examination of ATEX rule changes in Hungary*

Bio sketch:
Lajos Kiraly was born on 22nd of April in Tatabanya. He began his studies in 2004 at the University of Szechenyi Istvan, Gyor and graduated as an environmental engineer and in 2014 the BSc degree in mechatronics engineer in Banki Donat Faculty of Obuda University. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently an EHS task owner in a multinational chemical industry, who works in the automotive industry and has market lead worldwide. His research topic is "research developments in ATEX." The expected time for his thesis defence is spring 2021.

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu

Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Abstract:
Today, there are a number of legal requirements in the field of the protection of explosion. Of these requirements, a significant is the 99/92/EC (also known as 'ATEX 137' or the 'ATEX Workplace Directive') on minimum requirements for improving the health and safety protection of workers potentially at risk from explosive atmospheres. The text of the Directive and the supporting EU produced guidelines are available on the EU-website. Directive 94/9/EC (also known as 'ATEX 95' or 'the ATEX Equipment Directive') on the approximation of the laws of Members States concerning equipment and protective systems intended for use in potentially explosive atmospheres. The text of the Directive and EU produced supporting guidelines are available on the EU website.

Nikoletta Ragács - Zsuzsanna Kerekes - Ágoston Restás: *Thermodynamic behavior of isolation materials exposed to radiation heat*

Bio sketch:

Nikoletta Ragács was born 1992 in Budapest. She began his hight studies at the Szent Istvan University in Budapest, and graduated in fire safety engineer. Since 2014 fire safety engineer at the National Directorate General for Disaster Management. She has been working in the fire safety design and contruction. Her research topic is "burning of the plastic and rockwool thermal insulators, polystyrene, polyurethane foams, thermoanalytical tests"

Szép János was born 1971 in Győr. He passed his MSc degree in 1989 at the Budapest University of Technology, structural engineering specialization. He has been university lecturer since 2006 at Széchenyi István University (SZE) Győr. He obtained his PhD degree in 2015 at the Doctoral School of Multidisciplinary Engineering Sciences in Győr. He has been vice dean for educational affairs at Faculty of Architecture, Civil Engineering and Transport Sciences in SZE since 2015, head of Department of Structural Engineering and Geotechnics since 2019. His main fields of interest are: soil-structure interaction, fire design at loadbearing structures, behaviour of constructions materials at elevated temperature.

Zsuzsanna Kerekes was born 1958 in Budapest. She began her hight studies in 1976 at the Pannon University in Veszprém, and obtained the MSc degree in chemical engineering, silicate chemistry specialization. She began her dr.univ studies in 1981 at the Doctoral School of Budapest University of Technology Faculty of Chemical Technology and Biotechnology. She has been an university lecturer since 1999-2020 at Ybl Miklós Faculty of Architecture and Civil Engineering Fire-safety Engineering Óbuda University as fire protection laboratory leader. She obtained a PhD degree in 2015 and habil degree in 2019. Instructor since 2019 at the University of Public Service. She has been working in her profession for 40 years in various fields: material structure research, ceramics, glass, analytics. Her research topic is "research and development combustion mechanism of non-combustible and combustible materials,".

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Abstract:
Due to the diversity of the materials sold, the differences due to the production technology, the different areas of application and the variety of coating systems, completely new features appear. That is, they will behave differently not only under direct flame but also under heat load. When non-flammability, fire propagation limit, chemical composition, tensile strength, densities, thermal conductivity value are given in the rating, the features related to thermal radiation are not. Yet the presence of flame is always preceded by heat. In our work, we examine whether it is sufficient to give a direct flame effect for the classification of insulation materials, or whether heat-insulating insulators exposed to radiant heat show significant damage. In our work, we investigated the thermodynamic nature of three insulating materials as a function of temperature and time. The aim of the test against radiant heat is to determine the change in a heat load in a selected material without a direct flame effect.

Mónika Nováky: *Analysis both of the Official Fire Protection and Special Fire Protection Authorities in the System of Integrated Disaster Management*

Bio sketch:

Dr. Mónika Nováky firefighting lieutenant colonel was born on 3 of July 1969 in Barcs. She began her studies at the Police College and obtained the BSc degree in customs investigator and in 2005 border police organiser. She began her studies at the Janus Pannonius University and graduated in law. She began her PhD studies in 2015 at the Doctoral School of Military Engineering at the University of Public Service and obtained a PhD degree in 2019. Her research topic is „Legal and technical development of the application of European voluntary humanitarian aid capacities in disaster management". From 2014 she is teaching at the Institute of Disaster Management at the University of Public Service. She is an assistant professor.

Abstract:
The system of tasks of the professional disaster management body comprises a very wide range of activities. The tasks based on industrial security, fire protection and civil protection include authority prevention of disasters, organization and management of protection, implementation of rescue in emerged civil emergencies, as well as liquidation of the harmful consequences and realization of restoration-reconstruction. In addition, the industrial security, the professional field of water affairs and water protection have been performing more widely authority and professional authority activities in the past periods. Authority activity is the important part of disaster management, prevention, planning and organization activity. The fire protection authority takes licensing, prohibiting and limiting measures, conducts fire inspections, issues authority certificates and imposes fire protection fines during its activity.

Subsection 5

Seeram Ramakrishna - Oisik Das - Agoston Restás: *Microscale Combustion Calorimetry (MCC)*

Bio sketch:

Vigneshwaran Shanmugam is an Assistant Professor at the Saveetha School of Engineering at the Saveetha Institute of Medical and Technical Sciences, Tamil Nadu, India. Vigneshwaran completed his Ph.D. at the Kalasalingam Academy of Research and Education, Tamil Nadu, India, and his postgraduate and graduate studies at Anna University, Tamil Nadu. His research interests lie in the field of bio-composites, ranging from theory to design to characterization. He has worked actively with researchers in the field of polymers, in particular on the development of environmentally sustainable bio composites. He worked for 3 years in the Ministry of Environment, Forest and Climate Change, the Government of India funded the project. He has published around 25 publications in international journals.

Oisik Das is an employee at the structure and Fire group of Department of Civil, Environmental and Natural Resources Engineering at Luleå University of Technology (LTU). Oisik Das has extensive background in materials research including biocomposites, biochar, polymer processing, material characterisation, nanoindentation, pyrolysis, etc. His special interest is flammability of composite structures and materials wherein he investigates the reaction-to-fire behaviour of polymeric composites used for structural and semi-load bearing applications. Oisik Das also conducts research on novel fire retardants such as naturally-occurring lanosol, which is obtained from marine red algae. Additionally, his recent research interests pertain to the fire behaviour of concrete structures and wooden façades. Oisik Das was one of the first.

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared

his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the National University of Public Service, Budapest.

Abstract:
Heat release measurement is based on the oxygen depletion theory. The MCC experimental method leads to a forced complete combustion. The MCC apparatus has to pyrolysis modes. For the first method the authors heated the samples in inert atmosphere, usually nitrogen, in the pyrolysis stage. The volatile gases are purged from the pyrolysis zone and mixed with excess oxygen for complete oxidation in the combustor. The second method follows a sample pyrolysis in a mixture of nitrogen and oxygen gases prior to complete oxidation of effluent in the combustion chamber. The measurements from the MCC experiment are peak heat release, time, temperature, total heat release, heat release capacity, residual mass. As a result the authors present the application and limitation possibilities.

László Bérczi – Diána Farkas: *Research on the development of the fire investigation procedures*

Bio sketch:

B.Gen. Dr. László Bérczi PhD. Inspector General for Fire Service, National Directorate General for Disaster Management – He has gained extensive experience on the field of firefighting and fire protection in his more than twenty years of career both in country and in the capital city of Budapest. He has been working in leadership positions for almost 17 years, he controlled several serious firefighting operations. Beside his professional management activity, he has been training firefighting and fire protection experts, lectures in professional conferences, furthermore he takes role in work of several NGOs, and professional organization of the fire safety field. He is a member of the Scientific Council of Disaster Management, he is the head of the fire protection project group, and the chairman of CTIF Hungarian National Committee. As a member of the Subcommittee on Disaster Management and Fire Protection of the Examination Committee of Law Enforcement he is qualified examiner. Several of his studies were published related to fire safety field. He is the honorary professor of Ybl Miklós Faculty of Civil Engineering in Szent István University. He has a degree in safety advisory for the transport of dangerous goods.

Diana Farkas officer - National Directorate General for Disaster Management - She has experience in arhitecural design, building regulation and fire protection authority work. She was gradulated in Architecture and has a degree in fire safety engineering in building design. She has been working for the National Directorate General for Disaster Management for seven years. She participated in the organisation of the fire investigators competitions. She helps the work of B.Gen. Dr. László Bérczi PhD. in the CTIF.

Abstract:
In research on the development of fire investigation procedures we examined the corner stones; the personal conditions, the material conditions, the international results, the professional competitions and the achievements. These development possibilities were evaluated separately. Firstly the current situation and then the direction and schedule of development were presented. In the last 8 years the results has become tangible, the evidence of which is the effectiveness of fire investigation procedures, the rising proportion of proven causes.

István Mészáros - Lajos Kátai-Urbán - Zsolt Cimer–Gyula Vass: *Hospital evacuation*

Bio sketch:

István Mészáros: Former general director of technical affairs and security liaison officer (in field of Critical Infrastructures) by Semmelweis University. Organized a number of complex disaster management exercises in healthcare environment. In 2017 arranged the „Security specialist of the year" honourable award from Security Managers' Association in Hungary. Nowadays he is doctoral student in National University of Public Services, the topic of his research the complex business continuity planning in hospitals from disaster management side.

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military technical sciences (2005) at

Zrínyi Miklós Defence University and habilitation degree (2015) at UPS, Budapest.

Zsolt Cimer is a chemical engineer, engineer-economist, fire protection engineer and associate professor. He is the vice dean of the Faculty of Water Science at the University of Public Service in Hungary. His research specialization is defence design, industrial safety, explosion protection and risk analysis.

Colonel Dr. habil. Gyula Vass was born in 1957. He has been leading the Institute of Disaster Management since 2017. He has master's degrees in civil engineer (1991) and fire engineering (1986). He defended his PhD thesis in the field of military sciences, disaster management in 2006 at the Zrínyi Miklós National Defence University. In 2016 he habilitated at Ludovika-UPS and from 2017, he is full-time associate professor. He has positions at Fire and Disaster Management organisations as a firefighter, fire prevention officer, industrial safety expert and different fire chiefs. He is a member of the Scientific Council for Disaster Management, the Technical Scientific Section for Nuclear Accident Prevention and the Nuclear Energy Certification Commission.

Abstract:
The purpose of this study is to illustrate the special cases of a fire in a hospital (intensive, perinatal intensive department), that may be encountered by the fire-fighters. Due to these special circumstances, the evacuation time of the facility can be significantly increased. There are unusual evacuation and rescue methods, which requires special devices and more intense human resources. The evacuation of a hospital is more than the usual evacuation plan, the goal is to maintain the health care services during and after the evacuation, so it is necessary to apply the Evacuation Plan of the Hospital Disaster Plan during a fire evacuation. This requires much more accurate and complex training from both sides, either the fire-fighters and the medical staff. Also its effectiveness depends on a large extent of the architectural and fire protection design of the building, its modernity, the available medical and rescue equipment and the number of medical staff.

Section C – Firefighting and rescue operation management

Subsection 1

Balázs Stocker - László Bodnár: *Shortcomings in cooperation during the marching of the fire engine*

Bio sketch:

Balázs Stocker was born on 2nd of May 1980 in Budapest. After completing his military service, he graduated at the High School of Law Enforcement in Budapest and worked as a police officer for several years. Since 2007 he has been working at the Budapest Disaster Management Directorate as a firefighter, in the position of special equipment operator and driver. Between 2008 and 2016, in addition to his work as a firefighter, he worked as an ambulance driver at the National Ambulance Service in Hungary. Here, in addition to his driving duties, he co-operated with the ambulance doctor in the patient care. He is currently a student at the University of Public Service, Faculty of Law Enforcement at the Institute for Disaster Management, specializing for Fire Protection and Rescue Operations Management.

László Bodnár was born on 31 of January 1992 in Budapest. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and in 2016 the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently an assistant lecturer at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He is also a PhD Candidate. His research topic is "research and development of methods to increase the effectiveness of firefighting in case of wildfires." The expected time for his thesis defence is spring 2021.

Abstract:
The march to the intervention area takes from the place of departure of the alarmed fire forces and equipment until the arrival of the event specified in the signal. The march is carried out using the distinctive light and sound signal at the same time, within the framework of the highway code. However, fast and efficient marching is influenced by a number of factors, including the behaviour of the drivers in the traffic when a vehicle with a distinctive sign appears. In the poster, the authors present general errors and their possible solutions, referring primarily to his own driving experience. As a

result of the poster, we will learn about the difficulties of the migration logistics, and the authors will present their suggestions to help the migration of the fire engine.

Zsolt Huszka – Sándor Rácz: *Presentation of occupational safety solutions against hazards during the firefighting*

Bio sketch:

Zsolt Huszka was born on 9 of June, 1987 in Orosháza, Hungary. He became a professional firefighter in 2006, and started this year the basic firefighting course, and completed it in 2007. After that he completed the operations management course and then the operations management reference course. He has extended his knowledge through various trainings in addition to classic fire protection competencies, such as the relevant DWS C + M modules or the control of dangerous goods transport. Now he is a student at the University of Public Service, Faculty of Law Enforcement Institute of Disaster Management.

Sándor Rácz was born on 11 of April 1973 in Nyírbátor. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and after that the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2015 at the Doctoral School of Military Engineering at the University of Public Service. He received his scientific degree in 2019. He is currently an assistant professor at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also worked at the Municipal Fire Department of Budapest and at the Professional Fire Department of Budapest District IX as a Deputy Commander.

Abstract:
The number of civil work accidents is decreasing year after year, so they are developing in a predictable way. However, accidents in case of firefighting are fluctuating in frequency. One of the reasons for this is that it is not possible to create a suitable working environment in case of an intervention. Technically designed protection solutions, such as guardrails or protective guards, cannot be used. To compensate it, a unique occupational safety system has been developed at the fire departments, which includes personal protective equipment, the practice-orientation of the trainings and the necessary psychological preparation. These are complemented by novel technologies as well as safe intervention procedures.

László Bodnár: *Physical load test of firefighters based on the carried overload*

Bio sketch:

László Bodnár was born on 31 of January 1992 in Budapest. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and in 2016 the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently an assistant lecturer at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He is also a PhD Candidate. His research topic is "research and development of methods to increase the effectiveness of firefighting in case of wildfires." The expected time for his thesis defence is spring 2021.

Abstract:
Humanity has been in constant contact with fire throughout the history. During this time, they also learned the beneficial and dangerous effects of fire. Fire generates regularly around the world, so the science of firefighting needs constant research and development. The physical work of firefighters is notoriously tiring. On the one hand, this can affect the health of firefighters during a longer intervention, so it would be useful to increase the physical performance of firefighters, and on the other hand, reducing the physical load also provides an opportunity to increase the effective intervention. In the paper, I point out the limitations of the load capacity of firefighters and demonstrate the need to increase the ability to extinguish with free movement. In order to achieve this goal, I am conducting my own test, which does not require significant resources, but their results can already provide guidance for a tool development. As a result of the test, I propose to use a novel, innovative technical tool during the firefighting.

József Zsolt Kersák - Péter Pántya: *Technical development opportunity in the field of practical training in rescue fire protection*

Bio sketch:

József Zsolt Kersák was born on April 21, 1976 in Pincehely. He has been working as a professional firefighter since 2000, his current position as deputy commander. He studied in Keszthely in 2011 as an agricultural engineer for economic and rural development. He started as a disaster management organizer at the National University of Public Service in 2013, graduating in 2019 as a disaster management manager(MSc). From 2019 he is a

National University of Public Service Doctoral School of Military Engineering. He is also a PhD Candidate. His research topic is „The task of the German civil defense is to analyze its equipment system and technical capabilities, and to examine its adaptation possibilities”.His other research area "Technical development of rescue fire protection". The expected time for his thesis defence is spring 2023.

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organizations at the incidents.

Abstract:
With the horizontal and vertical expansion of urbanization, threats, disasters and damage of civilizational and/or natural origin are having an unprecedented impact. Due to their course and intensity, the danger to human life and material goods, it is necessary to develop certain segments of the applied protection systems, such as fire practical education, in parallel with the development of technologies. This direction of development cannot be limited to domestic research and development, it is necessary in a broader sense to examine the good practices that have already been proven and applied internationally and the possibilities of their adaptation. New educational methods and tools can make fire protection and incident intervention more effective.

Subsection 2

Patricio Sanhueza: *Wildfires situation in Chile*

Bio sketch:

Patricio Sanhueza Bravo, is a Forest Engineer with a degree in Forest Sciences from the Faculty of Forest Sciences of the University of Chile. Since 1979, in his long professional career linked to Fire Management, he has been involved, among other activities, in numerous training programs, training, technical assistance and support in the budgeting and suppression of forest fires for different organizations in the country. He received advanced wildfire training from the United States Forest Service. Likewise, he has taken numerous advanced courses, internships, study tours in forest fire protection in Chile and abroad. At the international level, he has had extensive participation in numerous missions of training, technical assistance and support in forest emergencies to Latin American and Asia-Pacific countries. Likewise, he participates permanently in seminars, workshops and consultations of experts on forest fires organized by FAO and different United Nations Organizations.

Abstract:
Chile is located in South America. The country has a large forest area. The increase of the human rural activity resulted in many fires. In order to prevent the wildfires, many regulations were carried out to control the burnings. In the presentation the author summarizes the wildfire situation in Chile.

Levente Gál - Sándor Rácz: *Presence of Factors Influencing a Decision Based on Signals of the Fire Alarm System*

Bio sketch:

Levente Gál is the service commander of the Professional Fire Department of Kisvárda. He started his bachelor studies at the University of Public Service, at the Institute of Disaster Management specialization for Fire Protection and Rescue Operations Management. After that, he completed the Master studies in Disaster Management in 2019 at the University of Public Service. In addition, during his duty as a firefighter, he does a research in the topic of innovative development opportunities that facilitate the work of the interveners.

Sándor Rácz was born on 11 of April 1973 in Nyírbátor. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and after that the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2015 at the Doctoral School of Military Engineering at the University of Public Service. He received his scientific degree in 2019. He is currently an assistant professor at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also worked at the Municipal Fire Department of Budapest and at the Professional Fire Department of Budapest District IX as a Deputy Commander.

Abstract:
In the field of fire prevention, the design, installation and reliability of fire alarm systems are very important areas. In case of buildings with a fire alarm system, for example due to sensor contamination, negligent maintenance or environmental conditions, it is common to receive several times a signal at the same site. Experiences have shown that in case of a fire alarm transmitted by automatic device, due to the frequency of its occurrence, the firefighter considers the false fire alarm more likely than any other type of case. Interveners, due to the high incidence rate, become somewhat resistant to this process, they do not take into account the uniqueness of the case, and the presence of potential sources of danger. This miscalculation of probabilities leads to the development of overconfidence, which can put all participants in the intervention at risk and force them to improvise.

Roland Bánhegyi - Sándor Rácz: *Firefighting in case of solar panels*

Bio sketch:

Roland Bánhegyi was born on 27 of July 1978 in Mohács. He was graduated in high school in 1999 and in the same year he applied for admission to a military school in Budapest. A year later he got his first assignment in Pécs like a platoon commander. Seven years later in 2007 he gave up the military life and became a firefighter. In 2010 he became a firefighter technician. He began his studies in 2017 at the University of Public Service and obtained the BSc degree in fire protection and rescue operations management as a Disaster Manager in Fire Protcetion and Rescue Control. He is interesting in the topic of firefighting in case of electric vehicles and firefighting in case of dangerous substances.

Sándor Rácz was born on 11 of April 1973 in Nyírbátor. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and after that the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2015 at the Doctoral School of Military Engineering at the University of Public Service. He received his scientific degree in 2019. He is currently an assistant professor at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also worked at the Municipal Fire Department of Budapest and at the Professional Fire Department of Budapest District IX as a Deputy Commander.

Abstract:
Solar energy is progressing quickly, so there is a need for this development to be followed by the disaster management. This requires the acquisition and use of appropriate protective equipment and extinguishing material. Firefighting in case of solar panels can also be dangerous for firefighters, so it is important to be aware of the options that can be used to perform the effective and safe intervention. Firefighters should be preparing for fighting against installations under voltage if the solar panel or its immediate surrounding is burning. Firefighting can be performed successfully if we have the appropriate knowledge. At the international level, several experiments have been conducted for the effective tactics, some of them can be applied on the practical level.

Máté Rekeny - Ágoston Restás: *Comparative Effectiveness Analysis of Fire Engines Focusing on Forest Fires*

Bio sketch:

Máté Rekeny was born on 15 of May, 1986 in Esztergom. He has been a professional firefighter since 2008. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer in 2013. He is currently a student at the University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, Department of Fire Protection and Rescue Operations Management.

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu  Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the National University of Public Service, Budapest.

Abstract:
Wildfires are one of the most challenging disasters. The size of the burned areas due to outdoor fires is getting higher year by year. At the same time, the value of the damage and the cost of the firefighting is increasing. One of the keys to reduce these is to start the intervention as soon as possible. By reducing the withdrawal time, the period of free spread of fire can be most effectively reduced. This requires small and simple fire trucks that are effective on dirt roads and in the field. In the presentation, the author analyses the effectiveness of the simple fire trucks.

Subsection 3

György Kós: *Rapid Fire Progress (RFP)*

Bio sketch:

György Kós is a doctoral student at the University of Public Service, Doctoral School of Military Engineering. He graduated at the University of Public Service Institute of Disaster Management. He has extensive international experience in the following courses: Combat Medic/Tactical Trauma Life Support, Firefighter Advanced Survival Techniques. He is a fire chief at the volunteer fire department of Fábiánsebestyén. His research interest is firefighting, technical rescue, special vehicles and life - saving operations.

Abstract:
Between 2003 and 2012, 63 firefighters died in a flashover-related incident in the US. Fire regulations are significantly tightened, but in modern construction the plastic-based and chemically treated wooden furniture favor extreme fire spreads. In fact, in today's buildings, flashover is spreading eight times faster than 50 years ago.

Johanna Farkas: *Coping strategies of firefighters*

Abstract:

The firefighters experience may result an elevated risk of burnout, depression, and other mental disorders due to incidents at their work. The current approach to addressing these fields tends to focus on individuals coping. This study aims to determine the effects of stress in professional firefighters, and the types of coping strategies among Olson's Multisystem Assessment of Stress and Health (MASH) model. Eighty-two professional firefighters participated in this research from five urban fire departments. The Coping Inventory for Stressful Situations and Coping and Stress Profile were used to exam coping strategies. The survey shows that the members of the intervention staff are exposed to the greatest stress during their work. The vast majority of the stock responds to stress with adequate coping strategies. This suggests that firefighters are increasingly exposed to stress during their work and should be provided with more training and psychological support for dealing with work stress. As the data were not subjected to statistical analysis, the results are not considered scientifically relevant.

Muchiri Bilha: *Fire Investigation and Response in Muranga County, Kenya: Success and Challenges*

Abstract:
Fire is a disaster because, it has potential to cause loss of life, it consumes property and degrades the environment by releasing emissions. A big fire can disrupt lives seriously by consuming livelihoods, misery by life loss, closure of critical facilities e.g. the Mathai supermarket fire burned for 3 days and cause a standstill in Murang'a town. Fire disasters are common in the urban settings as well as in the rural areas. In urban settings, most fires are residential and commercial. Some of the residences are also rental houses and thus loss of homes and businesses.

Igaz-Danszky Tamás - Hesz József: Development of Operation Control at Hungarian Disaster Management.

Bio sketch:

Tamás Igaz-Danszky, 1st year doctoral student at the University of Public Service, Doctoral School of Military Engineering, employee of the Capital Directorate for Disaster Management, Operation Control Service. His research interests focus on the development of operation control service as a part of Disaster Management. He has been working for the Disaster Management for 16 years of which he has spent 12 years in Operation Control Service, until the present. In 2020 he graduate with an Msc degree in"Certified Disaster Manager" at the University of Public Service.

Col. József Hesz, PhD is an associate professor at University of Public Service, Institute of Disaster Management, Department of Fire Protection and Rescue Operations Management. He works at the National Directorate General for Disaster Management of the Ministry of the Interior. His research interests are: disaster management, fire protection, firefighting operations management.

Abstract:
When you are terrified because of danger you want help immediately. Capable hands that you can trust because of their numbers, knowledge, and tools. It is the responsibility of the Disaster Management Operations Control Service to organise and direct this help. But as technology advances and new improved tools become available, we have the opportunity to accelerate, clarify and revise the working of this important service. Examining national and international models of operation control open possibilities to integrate new protocols into our system and by that get you the help faster and more efficiently when it is needed as part of the "In the service of Hungary for security" principle.

Subsection 4

Róbert Urszuly: Extinguishing fires from solar systems

Bio sketch:

Robert Urszuly is 34 years old, father of two children. He has been a firefighter for 13 years in Budapest, the capital of Hungary, at the country's most alarmed fire brigade. He is currently studying at the University of Public Service. In addition to the fire department, he was a driver at the National Ambulance Service, among others. He is a trained industrial climber, who still works with expertise and practice. In addition to the fire department, he currently works for a company that installs solar panels. After graduating from high school, he qualified as an aircraft engineer, where he worked for a few years. After that, he worked as a car mechanic, also for a few years, but by then he was already a firefighter. All this experience makes him a good technician and a specialist in the solar topic.

Abstract:
Firefighters face unexpected challenges with the growth of new uses for alternative energy. These renewable energy sources save on the use of conventional fuels such as oil and other fossil fuels, but they carry unknown hazards themselves, requiring new firefighting strategies and procedures. These alternative energy use conditions include buildings equipped with solar energy systems that pose a number of significant hazards in the event of a fire. The article covers solar systems utilizing solar panels that generate heat and / or electricity and focus on the structural firefighting of buildings and structures, in particular solar panels used to generate electricity. However, before we go any further, I would like to briefly describe a relatively common installation format.

Alexander Fekete - Péter Pántya: *Fire, multi-risk and technical rescue needs in Germany and Hungary. Organizational differences and similarities*

Bio sketch:
Alexander Fekete research focuses on studying the systemic interrelations of natural, technical and man-made hazards with social vulnerabilities and critical infrastructures. Interdisciplinary disaster risk management, risk governance, urban resilience, risk and crisis communication, and target levels of safety and security are recent research and educational activities. Alexander Fekete previously worked from 2009-2012 as a Project Officer at the German Federal Office of Civil Protection and Disaster Assistance in the

field of Critical Infrastructure Protection. From 2005-2009 he was Research Scholar at the United Nations University – Institute for Environment and Human Security (UNU-EHS), conducting research on social vulnerability to floods and climate change adaptation. As a consultant he worked for WHO, the German Technical Cooperation (GTZ), and the German Committee for Disaster Reduction (DKKV). He has carried out fieldwork and workshops in Armenia, Iran, Japan, Sri Lanka and Switzerland. Alexander Fekete holds a diploma degree in Geography from the University of Würzburg a doctorate (Dr.-Ing.) from the University of Bonn and a Habilitation at University of Würzburg.

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organisations at the incidents.

Abstract:
The objective of this study is to make a comparison on how Germany and Hungary can provide answers for the challenges of different fire and technical rescue incidents. Major improvements in technical firefighting material but also training have been achieved for daily emergencies from the late 1970s to the today1,2. However, new challenges also arise, such as shift in hazard types due to technological and societal change, but also a new focus on natural hazards, multiple, sometimes cascading, risks.

Péter Pántya: *Extra load and limitations on firefighters*

Bio sketch:

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organisations at the incidents.

Abstract:
There are a lot of safety issues during the fire, disaster management tasks and interventions, mainly lifesaving, firefighting or technical rescue. Basicly personally, very close to the firefighters we can find more dangers to them. More dangers, extra loads and also limitations can caused by the personal protective equipment itself. A research described the elements, directions and also the effects these negative impacts for the protected members of fire protection or disaster management units, to varying degrees.

Roland Veszprémi - Péter Pántya: *Firefighter responses in case of railway accidents*

Bio sketch:

Roland Veszprémi is a fire engine driver since 2015 at the Professional Fire Department of Szolnok. Before it between 2012 and 2015 he was a firefighter at the same fire department. Now he is a student at the University of Public Service, Faculty of Lew Enforcement, Institute of the Disaster Management specialization for Fire Protection and Rescue Operations Management. His research interest is the Firefighter responses in case of railway accidents.

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation.

Abstract:
The investigation aims to explore the problems that arise during the intervention of the fire brigade in railway accidents and its possible solutions. The basic accident environment, the fire-fighting forces available in the interventions and their equipment, as well as the possibilities that can help the railway damage elimination are presented. A feasibility study of new technical and organizational solutions will also be presented, which will make fire brigade interventions more effective and faster in this area

Subsection 5

Tamás Miskei: *Intervention challenges in cases of fire and damage to electric vehicle charging stations*

Bio sketch:

Tamas Miskey, Commander Veszprém County Disaster Management Directorate
Disaster Response Operations Service
Doctoral Student, Doctoral School of Military Engineering
Research topic Firefighting and intervention challenges at high altitudes and in special conditions
E-mail: miskeytamas@gmail.com

Abstract:
As firefighter, we also must follow technological developments. In addition to electric cars, similarly-propelled public transport vehicles, motorbikes and trucks have also appeared. With the proliferation of electric and hybrid vehicles, the number of charging stations is also increasing rapidly. These are a potential hazard for intervening firefighters.

Ishan Al-Khawaldeh - Ágoston Restás: *Forest Wildfire Crisis Management*

Bio sketch:

Ágoston Restás, PhD habil., PhD - Restas.Agoston@uni-nke.hu Dr Ágoston Restás (Eng., ret. Firefighter Lt. Colonel) habilitated associate professor at the National University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, head of the Department of Fire Protection and Rescue Operation Management. Restas holds mechanical engineering (1988), economist (1999) and disaster manager (2002) degrees. In 2008 Restás made his PhD thesis at the Miklós Zrínyi National Defense University, titled "Research and development of the aerial reconnaissance and extinguishing of forest fires". In 2013 Restas prepared his other PhD thesis at the Corvinus University of Budapest, titled "Decision-making of firefighting managers in emergencies". Habilitation was also passed in 2015 at the University of Public Service, Budapest.

Abstract:
Forest wildfire is an issue that has a worldwide concern, its management is taking a sort of firefighting measures rather than tackling fire symptoms at early stages. This approach in almost all cases has proven its failure in reducing the extent of damage. UAV's in future will play a vital rule in detecting the fire initiation symptoms or fire at early stages, that would make firefighting economically feasible.

Tomasz Zweglinski - Péter Pántya: *LNG conditional scenario flow model for incidents in road transport*

Bio sketch:

Tomasz Zweglinski - PhD in Security Sciences, Master of Fire Engineering, professional fire officer (Lt. Col.) and a specialist in civil protection and crisis/disaster management with more than 20 years of experience. An academic, working at the Internal Security Institute at a technical university named the Main School of Fire Service (Warsaw, Poland). PhD graduated from a military university (the National Defence Academy in Warsaw, Poland). Fire engineering and disaster management studied at the Main School of Fire Service (Warsaw, Poland) accordingly at the Fire Safety Engineering Faculty and the Civil Safety Engineering Faculty. High level coordination expert of the European Union Civil Protection Mechanism and disaster environmental expert of the Joint Environmental Unit UNEP/OCHA. EU CBRN Security Manager graduated from international post-graduate study in 2018, financed from the EU Internal Security Fund (DG HOME). Occupational safety expert graduated from the Warsaw Technical University and the Central Institute for Labour Protection – National Research Institute (Poland). National and international research and capacity building projects manager (incl. EU funding as well as Official Development Assistance funding). Table-top and field civil protection exercises organizer, trainer and evaluator (incl. UCPM Training Programme).

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organizations at the incidents.

Abstract:
A shift towards broader use of LNG is economically and environmentally justified. However, it triggers an obvious need for investigating on LNG risk through elaboration and validation of potential scenarios, the hazard might generate if materializes. This background knowledge and past experiences were elaborated in order to fulfil the poster's aim which is designing the LNG Conditional Scenario Flow Model for such cases as storage in a tank, road and pipeline transport. The model is conditional since the concept complies the emergency mitigation measures undertaken on different phases of the scenario development. This presentation is dedicated to fulfil this aim by answering the following question – what are the key scenario lines LNG incidents might follow? The proposed model is a suitable tool to be implemented for first responders and educational, training purposes. Furthermore, it might be utilized as a supporting scheme for pre and post incident analyses.

Péter Tomka - Péter Pántya: *Identifying firefighters and Vehicles on the Fire Ground*

Bio sketch:

Lieutenant Peter Tomka – Lt. Tomka joined the Budapest Fire Department in 2010 and is currently serving at the 10th District Fire Department as a squad commander. He holds Master's degrees in Disaster Management and Disaster Protection Engineering and is currently pursuing his doctorate at the University of Public Service, where he is researching the efficiency and safety of interior firefighting. He has won the Balogh Imre Memorial Competition in 2015 and has been awarded the Medal of Valor in 2019.

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organisations at the incidents.

Abstract:
The ability to identify and distinguish firefighters and vehicles is a key factor on how transparent the fire ground is. A survey previously conducted amongst firefighters reveals that it is necessary to better mark individual firefighters, the incident commander and firefighting vehicles. Individual firefighters can be marked by their call signs on their helmets, turnout gear and SCBA. Incident commanders and other crucial positions can use armbands, collars and vests to mark themselves. Magnetic or suction cup panels identify vehicle call signs, while adhesive labels can be used for technical parameters and roof markings.

Section D – Disaster management

Subsection 1

Muhoray Árpád: *20 years of Hungarian Disaster Management*

Bio sketch:

Árpád Muhoray PhD is a retired major general of civil protection, honorary university professor of University of Public Service. He graduated in the Military Academy of Armoured Troops Malinovszkij Rogyion Jakovlevics in former Soviet Union, in Moscow, his university degree is tank engineer. He served 25 years for the Hungarian Army, he was the commander garrison of town Zalaegerszeg. After the Army Mr. Muhoray joined the Hungarian Civil Protection, he was appointed to the county director of HDM in county Zala in 2000. Between 2002 and 2010 he was the Deputy Director General for Emergency Management of NDGDM, and commander of Operational Staff of Governmental Coordination Committee. Between 2010 and 2011 he was the director of Disaster Management Training Centre of NDGDM and in 2012- an assistant university professor of UPS in Institute of Disaster Management. Since 2020 honorary university professor. Mr. Muhoray obtained his PhD degree at the National Defence University in Budapest. He made several researches in the Hungarian Disaster Management on country and county level.

Abstract:

The presentation shows the direction and organization of disaster protection and the tasks of the National Directorate General for Disaster Management. The Act No. LXXIV. Of 1999 on the „Direction and Organisation of Disaster Protection and the Protection Against Serious Accidents Related the Hazardous Materials" entered into force 20 years ago. The establishment of the Act composed the new, modern, applicable Hungarian Disaster Management. In recent years the Disaster Management has been renewed both conceptionally and in relation, has been accessed the European norms. The author intends to address the issue of circumstances of establishment of HDM, and achievements his operations.

Zoltán Török - Alexandru Ozunu - Cristian Malos - Andrei-Titus Radovici: *Natech Risk at Romanian Seveso establishments and industrial parks*

Bio sketch:

Zoltán Török, 39, Associate Professor at the Faculty of Environmental Science and Engineering, within Babeș-Bolyai University of Cluj-Napoca, chemical engineer and PhD in Chemistry. His research focuses on chemical risk analysis connected with land-use and emergency planning, risks associated with tailings management facilities and disaster risk management. He was member in several national research project and partner leader of 2 international projects, co-author of 33 publications (18 Clarivate Analytics papers and author of one book).

Alexandru Ozunu, Professor at the Faculty of Environmental Science and Engineering within "Babes-Bolyai" University. Since 2017 prof. Ozunu is member of the Romanian Academy of Technical Sciences and starting with 2018 he is affiliated Professor at the University of the Free State, Disaster Management Training and Education Centre for Africa. His most important contribution to research is the development of the field of risk assessment and disaster management in the "Babes-Bolyai" University. He is the coordinator of the Research Institute for Sustainability and Disaster Management Based on High Performance Computing. He is President of the Romanian National Society of Environmental Science and Engineering and Editor-in-Chief of the Journal of Civil Protection and of the Journal of Environmental Research and Protection – ECOTERRA and co-editor of the Procedia Environmental Science, Engineering and Management Journal. He also founded the Environmental Engineering field of study at the Faculty of Environmental Sciences and Engineering and the "Risk Assessment and Environmental Safety" and "Sustainable development and Environmental Management" master programmes. He has concentrated his work in some major directions, such as environmental engineering, risk assessment, Natech disaster risk reduction, assessment of hazards and risks in polluting industries, vulnerability assessment and critical infrastructure protection. The outcomes of these research activities were published in more than 180 papers and he has been involved in organising numerous conferences and workshops. He has a broad international experience and throughout his career, has lead several multi-partner research projects at national and European level.

Cristian Valeriu Malos, Phd, Lecturer at the Faculty of Environmental Science and Engineering, Department of Environmental Science, Babeș-Bolyai University. Cristian V. Maloș joined Babeș-Bolyai University in 2008 and he was appointed lecturer in 2014, doing research on environmental projects, mainly conservation projects, and GIS. He has been involved in more than 25 projects related to GIS, land monitoring and conservation. Some of the responsibilities included the usage of models (GIS coupled) to evaluate water quality and develop land management strategies. At the same time mr. Maloș became familiar with the European legislative system, related to GIS and conservation. After some more years of teaching and researching as part of the Environmental Science and Engineering Faculty at Babes-Bolyai University, he is more involved in the field of GIS and conservation. Currently he teaches GIS and Spatial statistics. Also, he is involved in several research projects focused on ecosystem services and GIS.

Andrei-Titus Radovici, research assistant at Research Institute for Sustainability and Disaster Management Based on High Performance Computing within Babes-Bolyai University. He graduated bachelor and master in Environmental Science and currently PhD student at the Doctoral School of Environmental Science. His field of interest is the critical infrastructure protection and risk management, GIS for environmental studies and remote sensing for atmospheric studies.

Abstract:
In the last decades an increase of the frequency of natural and technological disasters, that threatened population's life and health and the environment, was noticed. Due to climate change effects, overpopulation and the dynamic behavior of the industrial processes, new hazards and related risks arise, such as the Natech events. Industrial sites in Romania are directly or indirectly exposed to a large range of natural hazards and therefore to Natech events. This study aims to create an inventory of the locations of SEVESO establishments and Industrial Parks in order to identify the degree of their exposure to earthquakes, floods and forest fires, the natural hazards most likely to cause a NaTech accident in Romania. Under these circumstances, the national multi-risk assessment becomes a necessity in order to prioritize those risks that require immediate mitigation measures.

Csaba Almási - Gyula Vass - Lajos Kátai-Urbán: *Transport of materials belonging to ADR Class 3 with agricultural tractor in Hungary*

Bio sketch:

Csaba Almasi was born on 23rd of November 1985 in Kecskemét. He has been working as a CBRN Reconnaissance Officer dealing with administration system of hazardous materials. He has experience in intervening and investigating needed to be accomplished at accidents occurring in transport or in dangerous establishments and involving dangerous goods and hazardous materials. He also has an experience in authority work supervising of all means of transport carrying dangerous goods. Almási has a BSc degree in agriculture engineering and an MA degree in disaster management. He began his PhD studies at the Doctoral School of Military Engineering at the University of Public Service in 2020, where he is currently an assistant lecturer as well. His research topic is "Investigation Procedure at Road Accidents Involving Dangerous Goods." The expected time for his thesis defence is spring 2024.

Colonel Dr. habil. Gyula Vass was born in 1957. He has been leading the Institute of Disaster Management since 2017. He has master's degrees in civil engineer (1991) and fire engineering (1986). He defended his PhD thesis in the field of military sciences, disaster management in 2006 at the Zrínyi Miklós National Defence University. In 2016 he habilitated at Ludovika-UPS and from 2017, he is full-time associate professor. He has positions at Fire and Disaster Management organisations as a firefighter, fire prevention officer, industrial safety expert and different fire chiefs. He is a member of the Scientific Council for Disaster Management, the Technical Scientific Section for Nuclear Accident Prevention and the Nuclear Energy Certification Commission.

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military technical sciences (2005) at Zrínyi Miklós Defence University and habilitation degree (2015) at UPS, Budapest.

Abstract:
In 1979, Hungary ratified the European (former worded "European") Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). During the in country application of the Agreement, it may be necessary to create more detailed rules tailored to the security challenges of the country concerned. Therefore, in 2004, Hungary drafted the first regulation on transport operations with vehicle types not covered by the Agreement, agricultural tractors and slow-moving trailers. The protection of our soil and water assets has a national economic importance, therefore the continuous professional cooperation between authorities and agri-industry operators is necessary.

Mikulas Monosi - Jaroslav Flachbart: *Drone application in extreme conditions*

Bio sketch:

Assoc. Prof. Eng. Mikulaš Monoši, PhD. - Monoši Mikuláš was born on April 18, 1955, in Bratislava. He graduated from the University of Defence in Brno in 1979 with a degree in mechanical engineering. Then he worked in technical positions at military units in Czechoslovakia. In 1986 he joined the Military Faculty at the University of Transport and Communications in Žilina, Slovakia. He completed his Ph.D. studies in the field of mechanization of transport structures. He obtained the title of associate professor in 1997 in the field of construction machinery and equipment. In his scientific research and professional activity, he deals with the reliability of firefighting equipment, solutions of technical security in crises, multi-criteria evaluation of firefighting equipment, and assessment of forest fire-fighting equipment. He presents the results of creative activity during Erasmus+ mobility at foreign universities and conferences in the Slovak Republic and abroad, e.g. in Hungary, Poland, and the Czech Republic.

Eng. Jaroslav Flachbart, PhD. - Jaroslav Flachbart was born on April 5th, 1959, in Kremnica, Slovak republic. He graduated the Mining University in Ostrava in 1982 in the field of Fire Protection and Industrial Safety. Subsequently, he worked in technical positions in a gas company in Žilina. In 1986 he became commander of the fire department in the district of Žilina. From 1997 to 2011 he was the director of the fire school in Žilina. He represented the Slovak Republic in the international association of fire schools EU - EFSCA. He completed his PhD studies in 2007. Since 2012 he has been working as an assistant professor at the Faculty of Security Engineering, University of Žilina. In his scientific-research and professional activities, he deals with the issue of education and training of firefighters, teaches the management of rescue services and the theory of investigating

the causes of fires. He is the co-author of several simulation devices designed for the training of rescuers.

Abstract:
The Fire and Rescue Service (F&RC) will upgrade its equipment. Drones quickly and effectively monitor the area of the intervention. F&RC bought two drones from DJI Mavic 2 Pro. Pilots may encounter various undesirable circumstances that affect the functionality of the drone. The main goal of the research was to experimentally test the drone in extreme conditions.

Subsection 2

János Petrányi - Attila Zsitnyányi - Gyula Vass - Lajos Kátai-Urbán: ***New capabilities in the Hungarian Radiation Early Warning and Monitoring System***

Bio sketch:

János Tamás Petrányi graduated from the Budapest University of Technology and Economics with a degree in electrical engineering, and later from the Óbuda University, Keleti Károly Faculty of Business and Management, expert engineering management. In the course of his work, he received an upper-level degree of radiation protection. He is a radiation protection expert in the field of nuclear energy and a full member of the Hungarian Chamber of Engineers as an independent technical expert. He finished his PhD study at the National public service university. He started his professional career at the Technical University of Munich in 2002 as a programmer, and after a stay abroad for almost a year, he worked at GAMMA Technical Corporation as a research and development engineer. He has been working for the same company ever since, in different positions. He served in the positions of technical director, head of the nuclear division and eventually director of R&D.In recognition of his professional work, in 2015 he was elected to the management board of the Radiation Protection Section of the Eötvös Loránd Physical Society. He has been a member of the editorial board of the online magazine "RADIATION PROTECTION" ever since. In 2016, he won the Radiation Protection Award for Excellence. He has been elected to be the congress president of the sixth European International Radiation Protection Association (IRPA) Congress in 2022.

Attila Zsitnyányi has a degree in security engineering, disaster management and economics. He is currently pursuing a PhD studies at the University of Public Service Doctoral School of Military Engineering in Budapest. He has an Over 27 years of experience as an owner, CEO, investor of various companies in the field of defence and security industry. President of the Defence Industry Association of Hungary. Attila Zsitnyányi has been carrying out professional and scientific research work for more than 23 years in the field of development of safety technical equipment used in defence, disaster management and industrial safety. His main area of research is development of environmental measurement and control equipment, special camp and operation management systems, multifunctional vehicles and superstructure systems.

Colonel Dr. habil. Gyula Vass was born in 1957. He has been leading the Institute of Disaster Management since 2017. He has master's degrees in civil engineer (1991) and fire engineering (1986). He defended his PhD thesis in the field of military sciences, disaster management in 2006 at the Zrínyi Miklós National Defence University. In 2016 he habilitated at Ludovika-UPS and from 2017, he is full-time associate professor. He has positions at Fire and Disaster Management organisations as a firefighter, fire prevention officer, industrial safety expert and different fire chiefs. He is a member of the Scientific Council for Disaster Management, the Technical Scientific Section for Nuclear Accident Prevention and the Nuclear Energy Certification Commission.

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military.

Abstract:
New capabilities in the Hungarian Radiation Early Warning and Monitoring System. The Automated Radiological Industrial Safety Telemetry Network (RTH) part of the Hungarian National Radiation Monitoring, Signalling and Control System operated and maintained by the National Directorate General for Disaster Management has been modernised in recent years. In this modernisation process, 4 online radioactive aerosol and iodine monitors and 30 ambient gamma dose rate and meteorological parameter measuring stations were installed in this network. The unique automatic filter changer capability of the aerosol monitoring station makes it possible to operate the system unattended for at least one year and collect accurate real-time data regarding the current activity concentration of airborne radioactive alpha, beta, gamma active particles. The development of the new generation of the aerosol stations started in 2018 at Gamma Technical Corporation.

Ahmad Alhosban–László Bodnár: ***The Adopted Approach to the disaster management of Covid-19 Pandemic in Jordan /role of the National Center for Security and Crisis Management (NCSCM)***

Bio sketch:

Eng. Ahmad Alhosban is a PhD Candidate at the University of Public Service at the Doctoral School of Military Engineering in Budapest Hungary. His research field is Defence Electronics, Information technology and Communication. His research topic is Impact of GNNS Navigational Errors on the Required Performance of GBAS Approach Service Type D/F (GAST D/F) Landing Systems in CNS/ATM (Air Traffic Management) domain, research area of „use of Outer Space Navigation in Aviation (ATM)".

László Bodnár was born on 31 of January 1992 in Budapest. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and in 2016 the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently an assistant lecturer at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He is also a PhD Candidate. His research topic is "research and development of methods to increase the effectiveness of firefighting in case of wildfires." The expected time for his thesis defence is spring 2021.

Abstract:
László Bodnár was born on 31 of January 1992 in Budapest. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and in 2016 the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2016 at the Doctoral School of Military Engineering at the University of Public Service. He is currently an assistant lecturer at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He is also a PhD Candidate. His research topic is "research and development of methods to increase the effectiveness of firefighting in case of wildfires." The expected time for his thesis defence is spring 2021.

Dávid Nemes: *Case Study of Drone Applications Supporting Preventive Flood Management in the Rakaca Water Reservoir*

Bio sketch:

Dávid Nemes was born on 21 of October in Debrecen. He began his studies in 2016 at the University of Public Service and obtained the BSc degree in disaster management-civil protection in 2019. Now, he is working in Hajdú-Bihar county. His research topic is: drone applications supporting preventive flood management. r.

Abstract:
It's essential to deal with floods, as it is the most common natural hazard. Floods are predictable, but if we talk about fast floods, the situation is not the same. In Hungary, there were a lot of floods in the past. Hungary's hydrological hazard - due to its geographical location – is the highest on a European scale. Because of its geographical location during the last few years a few hydrological cases endangered human lives and material goods.

Siviwe Shwababa: *Enhancing Disaster Preparedness in the midst of the Covid -19 Pandemic*

Bio sketch:

Siviwe Shwababa is a qualified environmental scientist who holds a PhD from the University of Free State, in Bloemfontein South Africa. His areas of expertise entail environmental management and governance, improved environmental performance, protection of natural resources, restoration of degraded ecosystems, climate change mitigation and the implementation of disaster risk reduction measures in vulnerable communities. His responsibilities involve undertaking specialised work relating to environmental assessment, prioritisation of environmental risk areas, managing disaster risk reduction projects and research. He has further participated meaningfully, in numerous research projects across South Africa and has published disaster risk reduction scholarly articles in Hungary, Portugal and Germany. He is an Associate Researcher at Rhodes University in Makhanda, South Africa.

Abstract:
The combination of climate induced disasters with the Covid-19 pandemic can worsen the already strained socio-economic vulnerabilities. This research sought to better understand the global preparedness levels in managing such disasters amid the Covid-19 Pandemic. Through the comparative case study design methodology, the research involved, a careful comparison of data amongst global communities that were directly affected both by the pandemic and impact of climate induced disasters. The study revealed a reduction in disaster preparedness levels throughout the Covid-19 Pandemic.

Subsection 3

Hermina Horváth - Lajos Kátai-Urbán–Gyula Vass: *Investigation of fire safety aspects of dangerous goods shipments*

Bio sketch:

Maj. Hermina Horváth is an assistant lecturer at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service since 2012. She was born on 17 of April 1988 in Szekszárd. She began her studies in 2006 at the Miklós Zrínyi National Defence University obtained the BSc degree in defence administration as a defence administration officer and in 2009 the MSc degree in defence administration as a defence administration manager, disaster specialization. She began her PhD studies in 2013 at the Doctoral School of Military Engineering at the University of Public Service. Her research topic is emergency planning at railway marshalling yards, and dangerous goods transportation. She is also has a certificate of training as safety adviser for the transport of dangerous goods by road, rail and inland waterway. In addition she is the secretary at Scientific Students Association at the Faculty of Law Enforcement at UPS. She received the excellent lecturer title of the Institute in 2017.

Colonel Dr. habil. Gyula Vass was born in 1957. He has been leading the Institute of Disaster Management since 2017. He has master's degrees in civil engineer (1991) and fire engineering (1986). He defended his PhD thesis in the field of military sciences, disaster management in 2006 at the Zrínyi Miklós National Defence University. In 2016 he habilitated at Ludovika-UPS and from 2017, he is full-time associate professor. He has positions at Fire and Disaster Management organisations as a firefighter, fire prevention officer, industrial safety expert and different fire chiefs. He is a member of the Scientific Council for Disaster Management, the Technical Scientific Section for Nuclear Accident Prevention and the Nuclear Energy Certification Commission.

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military.

Abstract:
Nowadays the economic operators and the authorities concerned place particular emphasis on compliance with and control of the special rules for the transport of dangerous goods. Knowledge of the rules and regulations relating to flammable dangerous goods is essential for both actors, as a significant proportion of the dangerous goods transported are provided by such goods. In this article, we analyze the groups of flammable dangerous goods, the basic classification rules related to the transport of dangerous goods, and by analyzing international and domestic statistical data, we can see insight into the proportions of transport of flammable substances and the analysis of official control figures.

Réka Kirovné Rácz: *The Correlation of Climate Change and the Disasters due to Precipitation in Hungary*

Bio sketch:

Réka Magdolna Kirovné Dr. Rácz is a lecturer at the University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, Department of Disaster Management Operations. She studied at the Miklós Zrínyi National Defence University and graduated as a defence administrative manager in 2008. He graduated at the Doctoral School of Military Science in 2015.Her research areas are extreme weather events, climate change, disaster management tasks of the local governments.

Abstract:
Today, disaster management organizations, beside their traditional duties in fire prevention, civil protection and disaster management have to face serious challenges with special regard to the security and disaster management questions posed by climate change. As a segment of adaptation to the effects of climate change everyone has a role, a right and a responsibility, from citizens, to professional disaster management bodies, to those involved in home security. There is a tendency for the extremity of precipitation to increase. Precipitation is either too much or too little, which can cause both inland water and drought in the same area, in the same year. According to domestic climate change experts, in parallel with the decrease in precipitation, it will be typical that the extremity of precipitation will continue to increase, so the frequency of floods, lightning floods, inland waters and droughts is also expected to increase.

Bernardo Castro: *Chile disaster management*

Bio sketch:

Bernardo Castro Salas, Colonel (Retired) Chilean Army, General Staff Officer, Bachelor of Military Sciences, Magister in Strategic Planning and Management from the Army War Academy, Magister in Education mention Higher Level Teaching from the University of Los Andes Chile. Senior Consultant and Expert in Disaster Risk Management Res ONU A71 / 644 Dec 01, 2016, was Focal Point of the International Federation of the Red Cross and Red Moon and Chief of Staff of the National Emergency Office of the Ministry of the Interior and Public Security. He is an author of several papers on Disaster Risk Reduction and Management, for the National Academy of Political and Strategic Studies (ANEPE) of the Ministry of National Defense, for the Memorial of the Chilean Army, for the Center for Military Studies and Research (CESIM) for the Inter-American Defense Board, Washington DC and for the LoGer Scientific Journal.

Abstract:
The United Nations International Strategy for Disaster Reduction (ISDR / UNISDR), today, UNDRR, is a long-standing initiative that seeks to prevent and mitigate the effects of different threats, be they of natural origin, such as of the anthropogenic or caused by man and that since the 1980s, have been increased in their recurrence and intensity due to the effects of climate change, caused, preferably by the emission of greenhouse gases. Since the Decade for Disaster Risk Reduction (DRR) in 1980, which would later give rise to the First World Conference on Disaster Reduction, in the city of Yokohama, Japan, in 1985, where they were established ten principles that to this day govern these matters, one of them indicates that the main responsible for disaster reduction is the State.

Today, the international navigation chart in DRR is the Sendai Framework for Disaster Risk Reduction 2015 - 2030, a continuation of the Hyogo Framework for Action 2005 - 2015 and this time, for the first time, together with the main objective. It has set 7 goals, 13 principles and 4 priorities, which the signatory States have committed to fulfill. The effects of climate change and man-made disasters, including forest fires, continue to cause serious damage to people, their property, and public and private property, ultimately affecting the development of peoples, especially those more vulnerable and less developed.
The first task is to give priority to "Understanding Risk" and, in this way, the UNDRR invites us to continue moving from an effective response to efficient prevention and, trying to provoke a paradigm shift from Disaster Management, towards Risk Management and among them, those associated with fire engineering, since fires in general, we well know, destroy everything in their path, causing serious irreparable damage to people, their property and the sustainable development of people.

Réka Kirovné Rácz: *Drought and Desertification as a Disaster*

Bio sketch:

Réka Magdolna Kirovné Dr. Rácz is a lecturer at the University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, Department of Disaster Management Operations. She studied at the Miklós Zrínyi National Defence University and graduated as a defence administrative manager in 2008. He graduated at the Doctoral School of Military Science in 2015.Her research areas are extreme weather events, climate change, disaster management tasks of the local governments.

Abstract:
In my presentation, I present drought as a disaster related to climate change. I have tried to shed light on the effects of this water scarcity event, which is causing long-term and societal problems. The occurrence of natural disasters is difficult to prevent, given that they are due to the unpredictability or regularities of natural elements, and we need to be much more prepared for them. Reducing the risk of development can be achieved by curbing climate change through global cooperation. It is no coincidence that national disaster risk assessments had to be prepared and updated in the light of climate change on the basis of international conventions, as there is a strong link between climate change and the increase in the frequency and intensity of extreme weather events.

Subsection 4

Nóra Szűcs-Vásárhelyi - József Dobor - György Pátzay: ***Demonstration of hazardous soil contaminants from a disaster management perspective***

Bio sketch:

Nóra Szűcs-Vásárhelyi graduated from biology-environmental science at Eötvös Loránd University, Faculty of Science. After her university years, she started working as an administrative expert in the Department of Soil Mapping and Environmental Informatics of the Institute for Soil Science, Centre for Agricultural Research. In 2019, he successfully applied for the position of young researcher announced by the Department of Soil Chemistry and Turnover on the topic "Agronomic value of sewage sludge and sewage sludge-based materials and environmental risk of micro-pollutants as a function of sludge treatment". She is currently working as a research assistant, her field of research is the study of the applicability of waste for the purpose of soil improvement and examination of pollutants that have entered the soil during the use of these substances and analysis of environmental risks. Szűcs-Vásárhelyi started her doctoral studies at the Doctoral School of Military Engineering at the University of Public Service, Faculty of Military Science and Officer Training in 2019. In her doctoral research, she deals with the investigation and risk analysis of soil contaminants in military areas.

József Dobor is an associate professorat the University of Public Service, Institute of Disaster Management, Department of Industrial Safety. Education: 2006 Eötvös Loránd University, Faculty of Science, MA in Chemistry; 2011 Eötvös Loránd University, Doctoral School of Environmental Sciences, Environmental Chemistry, PhD; 2018 University of Public Service, Diploma in Disaster Management, MA. Degrees: 2012, PhD, Eötvös Loránd University, Faculty of Science; 2018, habil. doc., University of Public Service. Assistant lecturer (2012-2013), senior lecturer (2013-2018), associate professor (2018-). Research areas: chemistry, chemical-biological-radiological damage detection, radiation protection, detection of industrial damage events, industrial safety. Address: Hungary, 1101 Budapest, Hungária krt. 9-11. Nationality: Hungarian, Email: dobor.jozsef@uni-nke.hu

György Pátzay is a professor at the Budapest University of Technology and Economics (BUTE) Department of Chemical Technology and National University of Public Administration, Institute of Disaster Management, Department of Industrial Safety. Studies, degrees: 1995 chemical engineering, PhD, 2014 military engineering, habilitation. University Professor till 2015, Emeritus Professor till 2020. Research areas: chemical technology, chemistry, industrial safety, environmental protection, radiation protection, radiological waste. Address: Hungary, 1101 Budapest, Hungária krt. 9-11. Nationality: Hungarian, Email: patzay.gyorgy@uni-nke.hu

Abstract:
Contaminants entering the environment pose a serious risk both to humans and the ecosystem. Depending on the specific properties of the soil and the pollutant, contamination may spread into the surface or groundwater. In case of a damage event, risk of contamination spread as well as threat to health and ecology has to be assessed. Harmful substances entering the human body through direct or indirect uptake from soil and water can cause nervous system damage, cancer or even death. Due to the high level of industrial activity, it is important to handle these materials properly and to comply with the relevant safety regulations. Our aim is to present the most common soil contaminants, covering their possible sources and hazards.

Lajos Kátai-Urbán - Zsolt Cimer - Ádám Berger: *Remediation board versus protetctive ring*

Bio sketch:

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military technical sciences (2005) at Zrínyi Miklós Defence University and habilitation degree (2015) at UPS, Budapest.

Ádám Berger is an engineer at the Department of Water and Environmental Safety of the University of Public Service. In the course of his work, he examines the spread of dangerous substances in water and in soil. Nowadays he is a doctoral student at the Doctoral School of Military Engineering of University of Public Services. His field of research is Disaster Management. The topic of his research is about the resistance developed by hazardous materials to remediation boards and large artefacts against the irreversible effects of accidents.

Zsolt Cimer is a chemical engineer, engineer-economist, fire protection engineer and associate professor. He is the vice dean of the Faculty of Water Science at the University of Public Service in Hungary. His research specialization is defence design, industrial safety, explosion protection and risk analysis.

Abstract:
Different containers are being used in the industry to store hazardous liquids that vary in shape, size, and dimensions. The damage to the storage tanks may result in leakages, fires, or explosions. Injury can be caused by, fatigue, human negligence (25.03.2010. MOL Csepel Base station, Hungary), terrorism (21.01.2016. Ras Lanauf, Libya), or an environmental impact (03.06.2008. Magellan Terminal, Kansas City, USA). In this case, the hazardous material starts leaking, depending on the extent of the damage, furthermore a container fire will develop in the presence of an ignition source. A receiving space is established around the tank in order to control the leakage or loss caused by the accident. This study aims to present the advantages and disadvantages of receivers types used in hazardous material storage tanks.

Alice Ncube - J Ndovella: *Resilience mechanisms displayed by informal settlement dwellers towards shack fires in South Africa*

Bio sketch:

Alice Ncube is a senior lecturer, trainer and researcher at the University of the Free State (UFS), Disaster Management Training and Education Center for Africa (DiMTEC, South Africa. She holds a PhD in disaster management, a masters in disaster management and postgraduate diploma in gender studies. With more ten years' experience in disaster (risk) management, her research interests are social vulnerability and climate change, international forced migration, gender issues, climate change and adaptation resilience

and sustainable livelihoods of disadvantaged communities. Alice is also the programme director responsible postgraduate, masters' and PhD programs at DiMTEC.

Abstract:
Informal settlements in South Africa are increasing rapidly as a result of rapid urbanization which is anticipated to reach 60% by 2050 in the African continent. Rapid urbanization is however not matched by service provision due to lack of resources and capacity. Many cities and towns experience rapid urbanization and therefore the mushrooming of informal settlements and one example is eThekwini Metropolitan Municipal EThekwini, commonly called Durban is one of the top 16 municipalities in South Africa with the highest number of households living in informal dwellings. With the mushrooming of informal dwellings in and around the city center and nearby industrial areas, shack fires have become a common occurrence. This prompted the metropolitan to conduct shack fire trend analysis between 2010 and 2016. The analysis indicated that some informal settlements experience fires more frequently than others do regardless of similar socioeconomic dynamics and absence of government assistance. Palmiet informal settlement is one such informal settlement that does not experience many fires. Based on this trend, the study sought to investigate the adaptation to and resilience mechanisms of the Palmiet community to shack fires. The social capital theory formed the theoretical basis of the mixed-method case study. A homogenous purposive sampling based on location, knowledge, and experiences resulted in 65 respondents from the L-Section of Palmiet and three municipal officials surveyed. Strong community social networks and active participation by the community members resulted in creating a resilient community of Palmiet. Getting back to the baseline is not enough in tackling informal settlement fires, but resilience was enhanced through the bouncing forward factor. One of the recommendations is that the municipality needs to strengthen its collaboration with the local communities to improve community fire risk reduction measures

László Teknős: *Analysis of evaluation of the relation between agriculture and Disaster Management*

Bio sketch:

Dr. László Teknős was born on 30 of March 1985 in Debrecen. He is an assistant professor at the Institute of Disaster Management of the Faculty of Law Enforcement of the University of Public Service, fire captain of the professional disaster management organization. Graduated in 2010 as a Certified Defense Administrative Manager, and in 2015 earned a PhD in Military Engineering. In 2021, received a degree in agricultural engineering from Szent István University. With his research on climate change and disaster

management, he has participated in several Hungarian projects as a researcher, as has won various positions and awards in several national and professional competitions. He was named ‘excellent lecturer’ of the Institute of Disaster Management of the National University of Public Service in the academic year of 2017/2018. In 2020, he received the János Korponay Prize from the Hungarian Military Science Society and his short monograph entitled ‘Disaster Management Tasks Due to the Effects of Climate Change and Extreme Weather’ was awarded the Publication Level Award in the category of natural and technical sciences at the National University of Public Service. His research interests include disaster management, environmental safety, social aspects of climate change, sustainable development dilemmas, current issues of European Union environmental policy, analysis and evaluation of the probabilities of natural disasters, their damaging effects, flood protection, theory and practical logic system of catastrophe science.

Abstract:
The title of this presentation is Analysis and Evaluation of the Relation between Agriculture and Disaster Management. Agriculture is an important part of the Hungarian national economy. However, every year there are fires related to agricultural and construction equipment that cause damage. Although the professional disaster management organization is not an agricultural organization itself, in this presentation the author presents the connection point between agriculture and the professional disaster management organization. Due to the scarcity of time point of the prevention (fire protection) of fires and damages related to the harvesting of agricultural crops, including the preparation and awareness-raising methods and possibilities of farmers, and the topics related to agriculture appearing on the websites of the professional disaster management organization are going to be presented.

Subsection 5

Lajos Kátai-Urbán – Zsolt Cimer - Zoltán Cséplő - Gyula Vass: ***Examination of the technical competencies required to fulfill the industrial safety responsibilities***

Bio sketch:

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military technical sciences (2005) at Zrínyi Miklós Defence University and habilitation degree (2015) at UPS, Budapest.

Zsolt Cimer is a chemical engineer, engineer-economist, fire protection engineer and associate professor. He is the vice dean of the Faculty of Water Science at the University of Public Service in Hungary. His research specialization is defence design, industrial safety, explosion protection and risk analysis.

Zoltán Cséplő is a Lt. Col. of fire protection, chief of Industrial Safety General Inspectorate of the Capital Disaster Management Directorate, and has about twenty years of industrial safety's authority experience. He worked as a vocational instructor and military technical development engineer in the Hungarian Armed Forces. He took part in the introduction of international and European Union regulations on the prevention of major industrial accidents and supervision of dangerous goods in Hungary. He holds a MSc. degree in mechanical engineering. He has an education of disaster and fire protection manager, a security organizers and a dangerous goods safety adviser. He is currently a doctoral student at the Military Technical Doctoral School of the University of Public Service in Budapest.

Colonel Dr. habil. Gyula Vass was born in 1957. He has been leading the Institute of Disaster Management since 2017. He has master's degrees in civil engineer (1991) and fire engineering (1986). He defended his PhD thesis in the field of military sciences, disaster management in 2006 at the Zrínyi Miklós National Defence University. In 2016 he habilitated at Ludovika-UPS and from 2017, he is full-time associate professor. He has positions at Fire and Disaster Management organisations as a firefighter, fire prevention officer, industrial safety expert and different fire chiefs. He is a member of the Scientific Council for Disaster Management, the Technical Scientific Section for Nuclear Accident Prevention and the Nuclear Energy Certification Commission.

Abstract:
The development of Hungarian system for industrial safety has more than a 20 years history. In addition to the supervision of dangerous establishment and the transport of dangerous goods, disaster management tasks related to critical infrastructure and nuclear emergency response have also emerged. In this article, the authors examine the technical competencies associated with industrial safety responsibilities.

Chris Hetkämper: *How to locate central service points for emergency services?*

Bio sketch:

Chris Hetkämper is Research Assistant in the Team Risk and Crisis Management at the Institute of Rescue Engineering and Civil Protection (TH Köln – University of Applied Sciences) in Germany. His main areas of expertise and interest are critical infrastructures, risk and crisis management as well as the potential of applying geographic information systems as a planning tool in disaster risk management. Currently, he is working in the project "NOWATER: Emergency preparedness planning for water supply and sanitation in health care facilities – organisational and technical solution strategies to increase resilience". Beyond his studies and work at the Institute of Rescue Engineering and Civil Protection he is a volunteer firefighter since 2014.

Abstract:
A methodology is presented for determining optimal positions for central service points to secure the fuel supply of spatial distributed properties in the event of a long-term power outage. This approach is based on a multi-stage network analysis, which considers the accessibility, optimal positions via location-allocation analysis, and performance via vehicle routing analysis. The methodology could be used as a planning tool for fuel supply systems. However, weaknesses are revealed by the level of detail in the network dataset and the lack of speed parameters during a power outage for routing analysis. Thus further research or in situ adaption is needed for more practical results.

Tamás Parrag - Lajos Kátai-Urbán - Cimer Zsolt: *Environmental safety effects of micropollutants and microplastic*

Bio sketch:
Tamás Parrag is a research assistant at the Faculty of Water Sciences of the University of Public Service. He graduated at the University of Veszprém as a chemist. He worked for Hungarian water utility service providers as a laboratory manager and quality management manager for 8 years. He is a student and subject of the University of Public Service, Doctoral School of Military Engineering in the Prevention of Pollution by Industrial Wastewater, with a special focus on reducing the effects of micro-pollutants.

Bio sketch:

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military technical sciences (2005) at Zrínyi Miklós Defence University and habilitation degree (2015) at UPS, Budapest.

Zsolt Cimer is a chemical engineer, engineer-economist, fire protection engineer and associate professor. He is the vice dean of the Faculty of Water Science at the University of Public Service in Hungary. His research specialization is defence design, industrial safety, explosion protection and risk analysis.

Abstract:
With the development of technology and the growing population, our world needs to develop new materials. Due to the technical shortcomings of wastewater treatment and waste management, pollutants can be released into the environment. Assessing the health and environmental risks of these substances is necessary to sustain human civilization. Micro pollutants have emerged in the last half century due to the development of a major industry, man has created the new pollutant micro plastics using more and more artificial plastics. By optimizing industrial safety, emissions of micro-contaminants and micro-plastics can be minimized.

Zsófia Kugler: *Activity of the Knowledge Centre for Water Sciences and Disaster Prevention*

Bio sketch:

Dr. Zsófia Kugler is the director of Knowledge Centre for Water Sciences and Disaster Prevention at the Budapest University of Technology and Economics (BME). Her main responsibilities are carrying out the 3 years Institutional Excellence Program of the Ministry for Innovation and Technology (ITM) at the Faculty of Civil Engineering. Promote collaboration between stakeholder and industrial partners in the field of water science and disaster prevention. Enhance R&D activities at the University. Organise and carry out state funded large-scale project collaboration. She obtained her PhD in 2008 at BME in Civil Engineering. Her specialisation is in photogrammetry, remote sensing and GIS with a special focus on disaster management and hydrology. She was a post-graduate research fellow at Cambridge University during her PhD studies. Besides worked at the European Commission- Joint Research Centre (EC-JRC) on the development of a global, near-real time flood detection tool based on weather independent microwave remote sensing.

Abstract:
Our Knowledge Centre was founded in 2018 with the aim to bridge cutting-edge engineering methods in disaster prevention. With a close cooperation of stakeholders and industrial partners we set to goal to coordination and enhancing competitiveness in R&D&I. Our research groups work on mitigation of risk from natural or man-made disasters, early warning, emergency management and post-disaster reconstruction and damage assessment. Highlights of our expertise are extreme flood and ecological status assessment on rivers. We carry out research in large-scale water management and water quality. We have a large team working on safe drinking water supply and efficient wastewater treatment. Monitoring and risk assessment of flood defences and critical facilities is in our scope. Prevention and management of industrial disasters from a mechanical engineering perspective in our research area. Special focus is set on earthquake vulnerably assessment. We design of nuclear facilities to protect against extreme impacts. Our major area of innovation is in impact of fire and explosion on engineering facilities together with flame retardancy.

Section E –Safety and security

Subsection 1

Kiss Alida – József Ambrusz: *Scientific research difficulties of post-earthquake rehabilitations*

Bio sketch:

Alida Kiss (Ph.D.) - Her main research field is analysing assessment methods for post-disaster-recoveries. She earned her Ph.D. in 2020. As an assistant research fellow at University of Debrecen, Remote Sensing Centre, her main tasks are participating in Research and Development projects in remote sensing topics, implementing management tasks connected to research activities in remote sensing topics, tendering at national and international levels and writing scientific papers at national and international levels.

József Ambrusz (PhD) - COL (Fire Service) József Ambrusz, Assistant Professor of the Institute of Disaster Management, University of Public Service, Acting Head of the Department of Disaster Management Operations. His studies are diverse, in 1993, he graduated from the Lajos Kossuth Military Academy with a degree in border guarding and boarding school pedagogy. In 1997, he obtained a certified degree in human resource management at the Budapest University of Economics. In 2014, he received a certified MSc degree in Defence Administration Manager at the University of Public Service. In 2019, he obtained a PhD degree at the Doctoral School of Military Engineering, University of Public Service with his thesis titled "Elimination of the Consequences of Disasters and the Possible Solutions of the Management, Command and Control of Engineering Tasks of Rehabilitation and Reconstruction".

Abstract:

The elimination of the consequences of earthquakes fundamentally differentiates the research of the rehabilitation process depending on the damage that has occurred and the actual value of the rehabilitation. The estimated damage values of the recent earthquakes in Croatia, as well as the built environmental aspects of the actual rehabilitation and reconstruction, also influence the process of performance comparisons and best practice analyses. The authors of the study, in relation to their research areas, are looking for optimized procedures in relation to development opportunities.

Juliusz Piwowarski: *Security environment – theoretical model in Polish security sciences*

Bio sketch:

Juliusz Piwowarski, founder and rector of the College of Public and Individual Security "Apeiron" in Krakow, founder of the Cracow Research Institute for Security and Defense Skills Apeiron. In the years 1974–1978 he was a student of the Faculty of Electrical Engineering at the AGH University of Science and Technology. He interrupted his studies to pursue professional martial arts training and studies in sports theory and philosophy at Medicina Alternativa University in Sri Lanka, by the cooperation resulted in a doctorate in philosophy (2004). He graduated in 2004 in political science at the Pedagogical University in Krakow. He obtained a master's degree, and the title of his master's thesis was "Political, social and historical contexts of terrorism". In 2009, at the Faculty of Philosophy of the Jagiellonian University, he obtained a doctorate in humanities in religious studies. His doctoral thesis concerned the issues of the philosophy of security contained in the religious and social tradition of the Bushidō samurai code. Research in this area is still continued by him and now concerns the culture of security as a social phenomenon. In 2017, the Council of the Faculty of Humanities of the University of Natural Sciences and Humanities in Siedlce adopted a resolution to grant him the academic degree of habilitated doctor. The book "Transdyscyplinary essence of the culture of national security" and other scientific and research achievements were indicated as the basis for awarding the degree. In 2005, together with his wife - Barbara Piwowarska – founded the College of Public and Individual Security "Apeiron" in Krakow.

Abstract:

Security sciences in not exactly the same as security studies. The author deals with the social phenomenon of the security culture and with theory of security sciences. The goal of the security is to be more appreciated value in the area of the so-called risk societies. Researchers should have deal with threats in connection with the pressure of time and stress

Júlia Hornyacsek - Gergely Kovács: *Application possibilities of Augmented Reality and Virtual Reality in the training of defence professionals*

Bio sketch:

Lt. Col. Julia Hornyacsek, an associate professor in the Department of Military Leadership and Public Knowledge at the University of Public Service. She gained her professional experience in the field of civil protection in population preparation and disaster eradication coordination. For her teaching activities, she conducted scientific research on the protection of the population and increasing the resilience of the population. In particular, it analyses the tasks of carrying out rescue tasks, supporting them and preparing the personnel of defence organisations.

Gergely Kovács is a doctoral student at the University of Public Service, Doctoral School of Military Engineering. Over the past year, he has gained professional experience with several development companies, in the areas of digital transformation, virtual reality and augmented reality solutions and developments. He currently coordinates AR/VR developments as a consultant for several public investments. The University explores the possibilities of using Augmented Reality and Virtual Reality in the defence sphere, and within its research it specifically looks at the advantages and disadvantages of devices used in the AR/VR field.

Abstract:

Today, we are hearing more and more about the challenges that await us in the next decade. Natural disasters, migration, the Fourth Industrial Revolution, the accelerated world, and everyday life, which are being digitised at a tremendous rate, create a changing environment in which resilience to dangers is a prerequisite for survival. The effectiveness of the defence activity depends to a large extent on the preparedness of the executive staff, the techniques and tools used. Recent technical developments, in particular the rise of digital tools, are also creating new opportunities in the defence sphere. The authors examined the traditional and digital types of defence tools used, examined the education and training and preparation systems that mediate defence knowledge. Research into new methods and forms of education that meet new challenges and target groups to be prepared. Within the digital devices group, the use of AR/VR devices offers new possibilities. In this presentation, the authors examine how AR/VR devices can be used in the defence sphere to support modern AR/VR digital devices, as well as modern training methods and decision support mechanisms. And the advantages and disadvantages of using these AR/VR devices.

Kálmán Serfőző - György Pátzay - József Dobor: *Disaster management representation and summary of the most important elements, controllers, systems and devices required for the operational safety of a fictitious hazardous plant*

Bio sketch:

Kálmán Serfőző is a second-year PhD. student at the National University of Public Service, Doctoral School of Military Sciences. His research field is Disaster Management, the main research topic is Research on methods and tools for reducing the environmental impact of industrially hazardous plants and facilities. He got his bachelor's degree at the University of Public Service (Budapest, Hungary), specialization in Defence Administration, and Master of Science degree at the University of Miskolc (Miskolc, Hungary) as a Mining and Geotechnical Engineer. At the Budapest University of Technology and Economics (Budapest, Hungary) he has been awarded the professional qualification of Occupational Safety and Health Specialist. He has several years of experience in the Oil and Gas industry as a safety expert.

József Dobor is an associate professorat the University of Public Service, Institute of Disaster Management, Department of Industrial Safety. Education: 2006 Eötvös Loránd University, Faculty of Science, MA in Chemistry; 2011 Eötvös Loránd University, Doctoral School of Environmental Sciences, Environmental Chemistry, PhD; 2018 University of Public Service, Diploma in Disaster Management, MA. Degrees: 2012, PhD, Eötvös Loránd University, Faculty of Science; 2018, habil. doc., University of Public Service. Assistant lecturer (2012-2013), senior lecturer (2013-2018), associate professor (2018-). Research areas: chemistry, chemical-biological-radiological damage detection, radiation protection, detection of industrial damage events, industrial safety. Address: Hungary, 1101 Budapest, Hungária krt. 9-11. Nationality: Hungarian, Email: dobor.jozsef@uni-nke.hu

György Pátzay is a professor at the Budapest University of Technology and Economics (BUTE) Department of Chemical Technology and National University of Public Administration, Institute of Disaster Management, Department of Industrial Safety. Studies, degrees: 1995 chemical engineering, PhD, 2014 military engineering, habilitation. University Professor till 2015, Emeritus Professor till 2020. Research areas: chemical technology, chemistry, industrial safety, environmental protection, radiation protection, radiological waste. Address: Hungary, 1101 Budapest, Hungária krt. 9-11. Nationality: Hungarian, Email: patzay.gyorgy@uni-nke.hu

Abstract:
Due to their activities (transportation, manufacturing, warehousing) and the substances they use (raw materials, indirect materials, finished products), plants handling dangerous substances pose constant risk to the constructed and natural environment, and particularly to air, soil and the surrounding population. During the operation of the plants, such risks need to be analyzed on an ongoing basis, as environmental hazard may increase as a result of substance releases, equipment malfunctions or incorrectly performed maintenance activities. Environmental impacts of hazardous facilities can be effectively reduced by using the various elements of the Safety Management System.

Subsection 2

Balázs Barina - József Dobor: *Characterization, use and hazards of chemicals with dangerous properties that may occur in nuclear power plants*

Bio sketch:

József Balázs Barina was born on 3 of November 1983. He lives in Tolna. He has been working as a firefighter since 2010 in the nuclear power plant in Hungary. During his service, he completed mandatory power plant courses and apart of them he acquired the Bsc degree in Fire Protection and Rescue Operations Management at the University of Public Service. He also completed the University's Master's Degree in Disaster Management. Thanks to his studies, he has been in the position of officer for the third year. As a unit leader, he considers the effective protection of the lives and health of the first responders to be his primary objective. In order to expand his knowledge, he would like to apply for a PhD at the University of Public Service.

József Dobor is an associate professorat the University of Public Service, Institute of Disaster Management, Department of Industrial Safety. Education: 2006 Eötvös Loránd University, Faculty of Science, MA in Chemistry; 2011 Eötvös Loránd University, Doctoral School of Environmental Sciences, Environmental Chemistry, PhD; 2018 University of Public Service, Diploma in Disaster Management, MA. Degrees: 2012, PhD, Eötvös Loránd University, Faculty of Science; 2018, habil. doc., University of Public Service. Assistant lecturer (2012-2013), senior lecturer (2013-2018), associate professor (2018-). Research areas: chemistry, chemical-biological-radiological damage detection, radiation protection, detection of industrial damage events, industrial safety. Address: Hungary, 1101 Budapest, Hungária krt. 9-11. Nationality: Hungarian, Email: dobor.jozsef@uni-nke.hu

Abstract:
The most significant part of the chemical use of a nuclear power plant is required for the preparation of additional feed water, which is required for the water-steam cycle, this technology requires hydrochloric acid, sodium hydroxide, ferrous sulphate, sulphuric acid, calcium hydroxide, and brine. The amount of chemicals used is influenced by the amount of make-up water required by the power units and the salinity of the Danube water.

Additional chemicals are used for adjusting the chemical parameters of primary and secondary circuit water (ammonium hydroxide, hydrazine), for preservation during unit downtimes (acetic acid, rofamine), and for the regeneration of primary and secondary circuit ion exchange resins (nitric acid, sodium hydroxide, potassium hydroxide). There are specific reasons for the day-to-day use of chemicals with hazardous properties in a nuclear power plant, they are essential. Working with these materials requires serious preparation and attention. There are Mobile Laboratories for Disaster Management in every county of Hungary, which provide effective support at salving complex damage event's. The continuous development of the primary intervention team's is a serious challenge. The aim of the authors is to further research this topic and report on its results in publications.

Noémi Kiss - József Dobor: *Summary, characterization, potential hazards of radioactive isotopes, which are most often used in industry and healthcare*

Bio sketch:

Noémi Kiss is 22 years old, studying at the University of Public Service majoring at disaster management. Currently she is in her third year, specializing in industrial safety. She will get her university degree in this year. She applied for Master's degree, as she wants to continue her studies there in the future.

József Dobor is an associate professorat the University of Public Service, Institute of Disaster Management, Department of Industrial Safety. Education: 2006 Eötvös Loránd University, Faculty of Science, MA in Chemistry; 2011 Eötvös Loránd University, Doctoral School of Environmental Sciences, Environmental Chemistry, PhD; 2018 University of Public Service, Diploma in Disaster Management, MA. Degrees: 2012, PhD, Eötvös Loránd University, Faculty of Science; 2018, habil. doc., University of Public Service. Assistant lecturer (2012-2013), senior lecturer (2013-2018), associate professor (2018-). Research areas: chemistry, chemical-biological-radiological damage detection, radiation protection, detection of industrial damage events, industrial safety. Address: Hungary, 1101 Budapest, Hungária krt. 9-11. Nationality: Hungarian, Email: dobor.jozsef@uni-nke.hu

Abstract:
The purpose of the poster was to give a short professional presentation of the most commonly used radioactive isotopes. Its two largest users are healthcare and industry. It can be somewhat contradictory that these radioactive isotopes can cause extremely severe damage to the human body without control. However, they are practically indispensable for various processes nowadays. In Hungary, due to strict regulations, damage events related to radioactive isotopes are relatively rare. The use of radioactive isotopes has been ongoing in most countries on earth since the early decades of the 1900s. The number of radioactive isotopes is approximately above 2,000, a significant part of which can be characterized for practical use. An additional aim of the authors is to research this topic. Case study of disaster management in some case studies of some typical European damage events in order to learn lessons. In Hungary, the Seven Disaster Management Radiation Detection Units carry out the detection and assistance in response, thus reducing the escalation of the event and its negative impact on the population.

Alida Kiss - Orsolya Varga - László Bekő: *Detection of post-earthquake building damages in Zagreb based on Sentinel-1 radar data*

Bio sketch:

Alida Kiss (Ph.D.) - Her main research field is analysing assessment methods for post-disaster-recoveries. She earned her Ph.D. in 2020. As an assistant research fellow at University of Debrecen, Remote Sensing Centre, her main tasks are participating in Research and Development projects in remote sensing topics, implementing management tasks connected to research activities in remote sensing topics, tendering at national and international levels and writing scientific papers at national and international levels.

Orsolya Varga (Ph.D.) has been a Lead Researcher of Envirosense Hungary Ltd. since 2017, participating the daily work of the satellite division of the company. She has graduated at the University of Debrecen, Hungary in 2014 with a Master Degree in Geoinformatics, then earned a PhD certificate in 2020. Her PhD research focused on land change analysis based on remotely sensed data and the validation practices of land change models. During her daily work, her research field is the processing and application of multispectral satellite images. She also deals with the analysis of further opportunities in satellite imagery in various fields, with a special interest a wide range of change analysis methods.

László Bekő's main research field is developing methodologies for hyperspectral and LiDAR data process. As an assistant research fellow at University of Debrecen, Remote Sensing Centre, his main tasks are developing GIS data processing methods, planning and implementing ground-based measurement campaigns connected to remote sensing projects, participating in Research and Development projects in remote sensing topics, writing scientific papers at national and international levels.

Abstract:
On this poster we summarize our GIS analysis results in connection with the earthquake in Zagreb in 2020. According to Markusic – Herak (1999) the Zagreb epicenter area is the most active one in the continental part of Croatia. The return period of a magnitude 6 earthquake is expected to be 150 years (Lokmer et al, 2002). Most of the earthquake damage in Zagreb was suffered by the housing sector (64%), followed by the culture and cultural heritage sector, including historical government buildings (13%), education (10%), health (8%), and business (5%). As a response, the Croatian Government activated a Copernicus task to support the damage assessment process and the monitoring process of building recovery. By this analogy, we tried to detect the building damages in the area of Zagreb's city centre, using free satellite radar (Sentinel-1) data to testing its applicability.

Gábor Patai - Sándor Rácz: *Accidents in case of prison transport at penal institutions from the perspective of firefighters*

Bio sketch:

Gábor Patai was born on 31 of May 1976 in Kiskunhalas. In 2009 he became a professional firefighter in Kiskunhalas. He has continuously extended his knowledge in the last 12 years. In 2013 he qualified as a crew manager. Now he is a student at the University of Public Service, Faculty of Law Enforcement, Institute of Disaster Management, specialization for Fire Protection and Rescue Operations Management. In his opinion, firefighting is a profession whereby we have to constantly learn, as we are always in situations where the best decision has to be made at moment.

Sándor Rácz was born on 11 of April 1973 in Nyírbátor. He began his studies in 2010 at the University of Public Service and obtained the BSc degree in defence administration as a Defence Administration Organizer and after that the MSc degree in defence administration as a Defence Administration Manager. He began his PhD studies in 2015 at the Doctoral School of Military Engineering at the University of Public Service. He received his scientific degree in 2019. He is currently an assistant professor at the National Directorate General for Disaster Management, who works at the Institute of Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also worked at the Municipal Fire Department of Budapest and at the Professional Fire Department of Budapest District IX as a Deputy Commander.

Abstract:
The increase in the number of vehicles in Hungary also attracts the increase of the related accidents. Fire departments are responsible for the elimination of these accidents. Firefighters need to be prepared for more effective and safer intervention, which must be constantly extended in line with technical progress. In addition to the technical progress, special situations can also be a problem. Accidents involving prison transport have a higher safety risk to the firefighters that the other road accidents. The quick, efficient and safe elimination of accidents requires proper preparation of the interveners, so the expansion of their theoretical and practical knowledge, and the development of their methodology is also important.

Subsection 3

Katalin Berta: *Involvement of animal rescue organizations in disasters*

Bio sketch:

Katalin Berta is a PhD student at the University of Public Service. She has graduate the BsC and also MsC degree as civilian student. Her research topic is the relationship between volunteer animal rescue and Disaster Management, she examines this topic in a different approach. She has several animal rescues behind her, including floods, red sludge, but also she rescued animal from metro lines, and from buildings. In recent years, she has been specifically working on rescue wild animals, especially wild birds. During her rescue work, she became increasingly convinced, the animal rescue should take place within an organized framework. That was confirmed by her studies, as animal rescue is a part of technical rescue, and this is the duty of Disaster Management. In her research, she examines the network of contacts and propose to improve the cooperation – for the benefit of all of us.

Abstract:

It is a social need to protect animals in the XXI. Century. In my research, I examine the relationship between civil animal rescuers and Disaster Management. Animal rescue is a technical rescue, so it is a duty of Disaster Management. Act No. CXXVIII. of 2011 allow the Rescue Manager to involve voluntary organizations in disasters, and to consider rescuing animals, when the absence of intervention causes the death of the animals. My experience in this direction shows, the animal rescue organizations have such a specialized knowledge and tools, that the integration of these organizations in to the education would be timely, all so in the rescue and alarm order. I present and prove through my own experiences in such cases.

Izabela Gabrielawicz –Patryk Krupa –Péter Pántya: *Safety management in terms of the level of safety culture in uniformed services*

Bio sketch:

Izabela Gabryelewicz is a graduate of the Zielona Góra University of Technology, Faculty of Mechanical Engineering. She obtained PhD degree in machine construction and operation at the University of Zielona Góra, Faculty of Mechanical Engineering. She also graduated from the Pedagogical Study and postgraduate studies – Occupational Safety and Health. Twice she was an assistant promoter in the PhD courses completed in 2015 (Poznan University of Technology) and 2018 (University of Zielona Góra). In 2016 and 2017 she received the Team Award of the First Degree of the Rector of the University of Zielona Góra for her scientific achievements. Currently she is employed at the University of Zielona Góra at the Faculty of Mechanical Engineering of the Institute of Material and Biomedical Engineering.

Patryk Krupa is a graduate of the Zielona Góra University of Technology, Faculty of Mechanical Engineering. He obtained his PhD degree in Production Engineering at the University of Zielona Góra. Currently, he is employed at the University of Zielona Góra at the Faculty of Mechanical Engineering of the Institute of Material and Biomedical Engineering. Main areas of scientific interest: work safety, work safety culture, ergonomics in shaping working conditions, analysis of threats in the work environment, safety of work in the technology of works under voltage. Interests: safety culture, Internet technologies, ergonomic design.

Péter Pántya began his studies in 2003 at the Tessedik Sámuel College (BSc degree in human affairs) later continue at the Miklós Zrínyi National Defence University (MSc an BSc) for Defence Administration Organizer (Disaster Management, Fire Protection and Firefighter) He began his PhD studies in 2008 at the Doctoral School of Military Engineering at the Miklós Zrínyi National Defence University. He is currently an associate professor at the Institute for Disaster Management of the Faculty of Law Enforcement at the University of Public Service. He also has a habilitation. His research topics are: fire and disaster management activities, technical equipment, and the raising of the efficiency of the fire organisations at the incidents.

Abstract:
The presentation describes the results of a research on safety climate level in an Army Unit located on the territory of Poland. The research has been carried out with the use of author's questionnaire to measure safety climate level. The results are presented by the means of Safety Culture Grid and there have been determined safety level indicators in various companies. The questions in the questionnaire are characterized by firm connection to designate of high safety culture. The results of the survey can be used to diagnose safety state in the context of human behaviour. Detailed analysis of the results allows to pinpoint weak and strong aspects of work safety. This enables one to undertake preventive and (or) repair actions adjusted to specific areas and worker groups.

Roman Tandlich: *A Brief Introduction to TIEMS International Certification – TQC*

Bio sketch:

Roman Tandlich is TIEMS Regional Director for Africa. Roman Tandlich, has been working in the field of emergency and disaster management since 2011. With background in biotechnology, Dr. Tandlich got involved in the development of low-cost and decentralised sanitation technologies. During the rollout of one such technology, policy and technical skills shortages at local government level. This resulted in the shift of focus of Dr. Tandlich's research towards disaster management approaches towards shift action to address water, sanitation and hygiene challenges in developing countries. This has led to the development of new teaching and research tools to deal with public health, disaster risk reduction and Development. Roman is originally from Slovakia where he completed his education up to Masters level. This occurred in 1998 and his background was originally in Biotechnology. He then continued on to complete his PhD in Pharmaceutical Sciences at North Dakota State University in Fargo, USA. After two postdoctoral fellowships, Roman joined the Faculty of Pharmacy at Rhodes University in South Africa in 2008. He has been with the same department since then and has recently been promoted there to the rank of Associate Professor. He has expertise in public health, water and sanitation and Disaster ethics.

Abstract:
With an increasing number of disasters worldwide, resulting in more international collaboration and support to disaster stricken areas, the need for the more education and training in the international emergency and disaster management seems evident. TIEMS believes that it is important to raise the awareness of the competencies needed in emergency and disaster management, and to support those participating in these activities and operations in acquiring those competencies. This is TIEMS motivation for launching.

Dávid Petretei: *Victim identification after the Hableány disaster*

Bio sketch:

Police major David Petretei is an assistant professor of the University of Public Service, Faculty of Law Enforcement, Department of Investigation Theory. Formerly he had been working as a crime scene investigator, between 2006 and 2018. He is an expert on latent prints, a founding member of the Ridgeology Sub-Working Group of the Interpol Disaster Victim Identification Working Group. Trained in DVI and DVI Management as well. Played important role in the establishment of the Hungarian DVI team. Held presentations in front of the Interpol and international conferences.

Abstract:

In 05. 29. 2019., Budapest, Hungary, the Hableany, a Moskvich-class sightseeing cruise was collided from behind by a twenty-five-times bigger long ship, MV Viking Sigyn. The Hableany (a Hungarian word for Mermaid) capsized and sank in seven seconds. The sightseeing cruise had 35 South Korean citizen tourists as passengers and 2 Hungarian crew members. Seven people were rescued some minutes after the accident and eight dead bodies were found till the morning. In the next weeks, all but one body were found, one South Korean female passenger is still missing

Subsection 4

Mirjana Laban - Vudakin Milanko – Vlastimir Radonjanin– Suzana Draganić: *Knowledge FOr Resilent SoCiety*

Bio sketch:

Dr. Sc. Mirjana Laban, Associate professor at the University of Novi Sad, Faculty if Technical Sciences, Novi Sad, Serbia. Assistant Director for Science at Department of Civil Engineering and Geodesy, Head of Disaster Risk Management and Fire Safety Studies. Mirjana Laban has interdisciplinary approach in identifying and solving the problems and management skills origin from diversity in education and practice. She was involved in science and research during the first part of the carrier parallel with responsible working positions outside academia. Additionally, she has obtained the Certificate on professional training in the field of fire protection. Since defended the doctoral thesis, she is employed and engaged in research and education at Faculty of Technical Sciences, University of Novi Sad. Also, she was one of the founders and creators of Disaster Risk Management and Fire Safety studies at all three Bologna levels (started in 2011) and the first one to be elected in that new scientific area at UNS. This background gave her the experience in gathering multidisciplinary teams for common goal. Building and environment may be considered as the subject of her constant interest in research and education with over 150 research papers published showing the development in this area – from Civil Engineering, Architecture, through Environmental Protection, Fire Protection to Risk Analysis and Disaster Risk Management and Fire Safety.

Abstract:

In recent years the number and severity of natural and man-made disasters, as well as fires, has significantly increased. Education in Disaster Risk Management and Fire Safety field in Western Balkan countries should provide national highly skilled professional resources and regional capacity for resilient society. The aim was to build regional-based disaster preparedness and a culture of safety and resilience at all levels according to EU Integration Strategies and National relevant strategies in Albania, Bosnia and Herzegovina and Serbia.

Project Knowledge FOr Resilient society – K-FORCE was selected for funding under ERASMUS+ programme Capacity Building in Higher Education – EAC/A04/2015. The paper presents the project results.

Syrym Shariphanov – Shahuov Talgat - Assan Zhaulybayev: *The composition of the human capacity flow and Mosque for safety assessment of escape*

Bio sketch:
Shariphanov Syrym – head of the Kokshetau Technical Institute MES of the Republic of Kazakhstan.

Shahuov Talgat – head of the scientific department of the Kokshetau Technical Institute MES of the Republic of Kazakhstan.

Assan Zhaulybayev – Dean of the Faculty of Postgraduate Education of the Kokshetau Technical Institute MES of the Republic of Kazakhstan.

Abstract:
Problems safe evacuation of people from religious buildings poorly reflected in the rate-setting instruments. Solution of the first block of the task required for the analysis of the safety evacuation process – defined gender and age composition of the people attending the mosque. The relationship between the area of the prayer hall and the number of people for the definition – of the estimated capacity of the mosque.

László Manga– Lajos Kátai-Urbán– József Solymosi: *Radiation protection devices for nuclear emergency preparedness*

Bio sketch:

László Manga graduated as an environmental engineer from the University of Veszprém. He works as a head organizer at the Department of Emergency Preparedness and Response of the Paks Nuclear Power Plant. Before that, he worked in a radiation protection area. For 15 years he was the head of the environmental monitoring laboratory of the Paks Nuclear Power Plant. He is a doctoral candidate at the National Civil Service University. His field of research: Development of research methods for assessing the environmental radiation situation after a serious nuclear accident.

Ing. dr. jur. Lajos Kátai-Urbán PhD (1969): Colonel of fire protection, associate professor, head of Department for Industrial Safety for the Institute of Disaster Management, at the University of Public Service (UPS), Budapest, Hungary. He is responsible for the establishment and development of the industrial safety's higher education system within the institution. He has been working for 14 years in the field of the prevention of industrial and transport accidents at the National Disaster Management Authority in Hungary. He was elected as a deputy chair of the UN ECE Industrial Accident Convention between 2004-2008. He obtained a Ph.D degree in military technical sciences (2005) at Zrínyi Miklós Defence University and habilitation degree (2015) at UPS, Budapest.

Jozsef Solymosi is in a position of Professor Emeritus, Colonel (Ret.) at the National University of Public Service, Institute for Disaster Management and owner of the Somos Environmental Protection Ltd. Currently he is the Co-Director of PhD Institute for Military Technology University of Public Service since 2013 and Chairman, Certification Committee of the Independent Technological Experts of Atomic Energy Authority in Hungary since 2020. Graduated M.Sc. Chemistry at University of Chemistry, Department of Automation, Moscow (1966), M.Sc. Radiochemistry at Budapest University of Technology (1973), Ph.D. Hungarian Academy of Sciences, Budapest (1983), D.Sc. at Hungarian Academy of Sciences, Budapest (1992). He is the Professor and Supervisor of 15 PhD students, research in nuclear security thesis. Jozsef Solymosi has contributed to a number of publications on nuclear safety and security, preparedness and response for a nuclear or radiological emergencies, nuclear environmental protection, nuclear and radioactive waste management, security assessment of nuclear and isotope-application facilities, radiation protection, disaster management.

Abstract:
In the event of a nuclear accident, the availability of radiation protection data is crucial. These data influence interventions, thus protecting the environment and the population. There are several methods available today. There may be different considerations when choosing these methods. Consideration is speed, accuracy, safety or a combination of these. The importance of these is supported by previous accidents such as Chernobyl or Fukushima. Had these methods been available at a given place and time, the damage to the environment and the population could presumably have been reduced. These methods are described below. With a rational combination of these methods, a possible accident situation can be successfully mitigated or eliminated.

Fire Engineering & Disaster Management Prerecorded International Scientific Conference Védelem online cooperated with the University of Public Service 23rd of February, 2021. Budapest, Hungary

Védelem Tudomány

Budapest

2021.