25/09/2026
MCK, Katowice

Report from the 7th edition
of the Scientific Conference

SAFETY OF NEW TECHNOLOGIES

CNBOP-PIB

Report from the 7th edition of the Scientific Conference “Safety of New Technologies”

Prepared by:
Elżbieta Muszyńska-Połeć, Publishing and Promotion Department, CNBOP-PIB

Proofreading:
Katarzyna Szulejewska, Publishing and Promotion Department, CNBOP-PIB

Publisher:
Józef Tuliszkowski Scientific and Research Centre for Fire Protection
National Research Institute
05-420 Józefów near Otwock
ul. Nadwiślańska 213
tel. (22) 76 93 300
www.cnbop.pl
e-mail: cnbop@cnbop.pl

© Copyright by the Józef Tuliszkowski Scientific and Research Centre for Fire Protection
National Research Institute
Józefów 2026

No part of this report may be reprinted or reproduced in any form or by any means without the written consent of the Director of the Scientific and Research Centre for Fire Protection – National Research Institute.

Józefów 2026

Table of contents

Seventh edition of the Scientific Conference “Safety of New Technologies” 4
Figures and organisational information 5
Scientific Committee 6
BNT VII from the participants' perspective 7
Conference proceedings: the official opening 8

Thematic sessions 9
Safety of new technologies – electromobility 10
Tactical procedures of Czech firefighters in incidents involving electric and hybrid vehicles 13
CNBOP-PIB research – Development directions and additional functionalities
of the warning and alarm system: research results, experience and opportunities for integration 15
New technical and operational requirements and design guidelines for
emergency voice communication systems (SKGA) intended for fire protection and civil protection 17
CNBOP-PIB research – Development directions and additional functionalities
of voice alarm systems in the context of civil protection needs 19
Testing challenges, safety gains and future applications for improved rescue services 21
New technologies and their safety, improvement of rescue technologies
– testing and assessment of products and systems: current status and prospects 23
Artificial intelligence in fire protection for children and citizens – Płomyczek 25
Rethinking the emergency response chain – how smart homes and smart cities
can support emergency services 27
Pre-commercial procurement of innovative personal protective equipment for first responders 29

Conference summary and conclusions 31
Exhibition accompanying the seventh edition of the BNT conference 32
The seventh edition of BNT as part of the conference series 34
Future editions of the conference 35

Seventh edition of the Scientific Conference “Safety of New Technologies”

Date: 25 September 2026
Venue: International Congress Centre in Katowice
Conference organised as part of the New Mobility Congress 2026

Strategic partner Honorary patronage

New Mobility Congress
Kongres Nowej Mobilności

PAŃSTWOWA STRAŻ POŻARNA

Figures and organisational information

94 **on-site participants**

120 **online participants**

15 **co-organisers**

1. European Fire Safety Alliance
2. Institut für Feuerwehr- und Rettungstechnologie (IFR), Dortmund Fire Service
3. Fire University
4. Faculty of National Security, War Studies University
5. WSB University in Dąbrowa Górnicza
6. Provincial Headquarters of the State Fire Service in Warsaw
7. District Headquarters of the State Fire Service in Otwock
8. School of Aspirants of the State Fire Service in Poznań
9. Polish National Association of Manufacturers of Fire Protection and Rescue Equipment
10. Polish Chamber of Energy Storage (PIME)
11. Polish New Mobility Association
12. Association of Volunteer Fire Brigades of the Republic of Poland
13. Association of Fire Protection Engineers and Technicians
14. Polish Energy Storage Association
15. PZU LAB SA

Scientific Committee

Chair: st. bryg. Jacek Zboina, D.Sc. Eng. (Senior Brigadier)

Col. Ing. Ondřej Suchý, Ph.D., MBA
Prof. Anna Rabajczyk, D.Sc.
Prof. Robert Socha, D.Sc.
Prof. Bernard Wiśniewski, D.Sc.
Prof. Wojciech Żurowski, D.Sc. Eng.
Prof. Marek Sitarz, D.Sc. Eng.
nadbryg. Wojciech Kruczek (General Brigadier)
nadbryg. Grzegorz Szyszko, Ph.D. Eng. (General Brigadier)
nadbryg. Tomasz Klimczak, D.Sc. Eng. (General Brigadier), Prof. of the University (Fire University)
Col. Andrzej Soboń, D.Sc. Eng.
Marta Gębska, D.Sc., Prof. of War Studies University
Dariusz Wróblewski, D.Sc., Prof. of War Studies University
insp. Aleksander Babiński, D.Sc.
Andrzej Czupryński, D.Sc., Prof. of WSB University
Paweł Lubiewski, D.Sc., Prof. of WSB University
Stanisław Rysz, D.Sc. Eng., Prof. of the University (Jan Grodek State University in Sanok)
Tomasz Safjański, D.Sc., Prof. of WSB University
Maria Zielecka, D.Sc., Prof. of the Institute (CNBOP-PIB)
Andrzej Krzyszkowski, D.Sc. Eng., Prof. of Radom University
Jarosław Struniawski, D.Sc.
Katarzyna Chruzik, D.Sc. Eng., Prof. of WSB University
st. bryg. Paweł Janik, D.Sc. Eng. (Senior Brigadier)
Jacek Roguski, Ph.D. Eng., Prof. of the Institute (CNBOP-PIB)
bryg. Arkadiusz Kielin, Ph.D. Eng. (Brigadier)
Col. (res.) Adam Rurak, Ph.D. Eng. (Polish Air Force University)
nadbryg. (ret.) Mariusz Feltynowski, Ph.D. Eng. (General Brigadier)
Michał Chmiel, Ph.D. Eng.
Dariusz Gołębiewski, Ph.D. Eng.
Bogusław Kogut, Ph.D. Eng.
Zenon Małkowski, Ph.D. Eng.
Tomasz Popielarczyk, Ph.D. Eng.
Sylvia Pratzler-Wanczura, Ph.D. Eng.
Jarosław Tępiński, Ph.D. Eng.
Jan Ziobro, Ph.D. Eng. (Jan Grodek State University in Sanok)
nadinsp. Rafał Kochańczyk, Ph.D. (National Police Headquarters)
Artur Szela, Ph.D.
Monika Wyszomirska, Ph.D.
nadbryg. Artur Gonera (General Brigadier)
bryg. w st. sp. Krzysztof Biskup, M.Sc. Eng. (Brigadier, ret.)
bryg. Michał Gigoła, M.Sc. Eng. (Brigadier)
bryg. Daniel Małozięć, M.Sc. Eng. (Brigadier)
bryg. Andrzej Zajączkowski, M.Sc. Eng. (Brigadier)
Barbara Adamska, M.Sc.
Zbigniew Kaliszyk
Krzysztof Dąbrowski
Krzysztof Kochanowski
Maciej Mazur
Krzysztof Hałupka

BNT VII from the participants' perspective

Of all survey respondents:

89% gave BNT VII the highest possible rating.

70% rated the presentation topics 5 on a five-point scale.

78% highlighted the high substantive quality of the presentations.

Scan to watch the event recap.

Conference proceedings: the official opening

The conference was opened by st. bryg. Paweł Janik, D.Sc. Eng. (Senior Brigadier), Director of CNBOP-PIB.

The first item on the agenda was the presentation of awards, which on this occasion were given internally to CNBOP-PIB employees in recognition of their scientific and professional activities supporting the safety of new technologies.

The awards were presented to:

- Jarosław Tępiński, Ph.D. Eng., Assistant Professor in the Department of Studies and Scientific Projects at CNBOP-PIB;
- Paweł Bujny, M.Sc. Eng., Head of the IT Department at CNBOP-PIB;
- Tomasz Popielarczyk, Ph.D. Eng., Deputy Head of the Laboratory of Fire Alarm Systems and Fire Automation at CNBOP-PIB.

Next, st. bryg. Jacek Zboina, D.Sc. Eng. (Senior Brigadier), introduced the conference themes, outlining the concept behind the “Safety of New Technologies” series and the agenda for the event. Maciej Mazur, President of the Polish New Mobility Association and host of the New Mobility Congress, also addressed the participants.

Thematic sessions

The conference was divided into two thematic sessions, in accordance with the agenda below.

SESSION 1: SOLUTIONS FOR FIRE PROTECTION AND CIVIL PROTECTION
Effective protection based on new technical and technological solutions
Moderator: st. bryg. Paweł Janik, D.Sc. Eng. (Senior Brigadier), CNBOP-PIB

1. *Safety of new technologies – electromobility*, nadbryg. Grzegorz Szyszko, Ph.D. Eng. (General Brigadier), National Headquarters of the State Fire Service
2. *Tactical procedures of Czech firefighters in incidents involving electric and hybrid vehicles*
   Col. Ing. Ondřej Suchý, Ph.D., Technical Institute of Fire Protection
3. *CNBOP-PIB research – Development directions and additional functionalities of the warning and alarm system: research results, experience and opportunities for integration*, st. bryg. Jacek Zboina, D.Sc. Eng. (Senior Brigadier), CNBOP-PIB
4. *New technical and operational requirements and design guidelines for emergency voice communication systems (SKGA) intended for fire protection and civil protection*
   Mariusz Sobecki, M.Sc. Eng.
5. *CNBOP-PIB research – Development directions and additional functionalities of voice alarm systems in the context of civil protection needs*, Tomasz Popielarczyk, Ph.D. Eng., CNBOP-PIB

SESSION 2: NEW TECHNOLOGIES AND THEIR SAFETY,
IMPROVEMENT OF RESCUE TECHNOLOGIES
Moderator: Jarosław Tępiński, Ph.D. Eng., CNBOP-PIB

6. *Emergency agencies in research: Testing challenges, safety gains and future applications for improved rescue services*, Tiina Ristmäe, Katrin Wieden, German Federal Agency for Technical Relief
7. *New technologies and their safety, improvement of rescue technologies – testing and assessment of products and systems: current status and prospects*, Michał Pietrzak, M.Sc. Eng., CNBOP-PIB
8. *Artificial intelligence in fire protection for children and citizens – Płomyczek*,
   Paweł Bujny, M.Sc. Eng., CNBOP-PIB
9. *Rethinking the emergency response chain – integrating new technologies from the smart home and smart city sectors into the emergency response chain*, Sylvia Pratzler-Wanczura, Ph.D. Eng., Institute for Fire and Rescue Technology in Dortmund
10. *ACTIVE PCP: Pre-Commercial Procurement of Innovative Personal Protective Equipment for First Responders*
    Bernhard Jäger, SYNYO GmbH; Joanna Sadowska, M.Sc. Eng., Prof. Anna Rabajczyk, D.Sc., CNBOP-PIB

Safety of new technologies – electromobility

nadbryg. Grzegorz Szyszko, Ph.D. Eng. (General Brigadier), Deputy Commander-in-Chief of the State Fire Service

The speaker discussed the transformation associated with the development of electromobility in two principal dimensions. The first concerns changes within the service itself, including the use of renewable energy sources and the gradual introduction of electric vehicles into the State Fire Service fleet. The second encompasses challenges arising from the development of new technologies in the environment in which the State Fire Service operates, particularly new types of hazards.

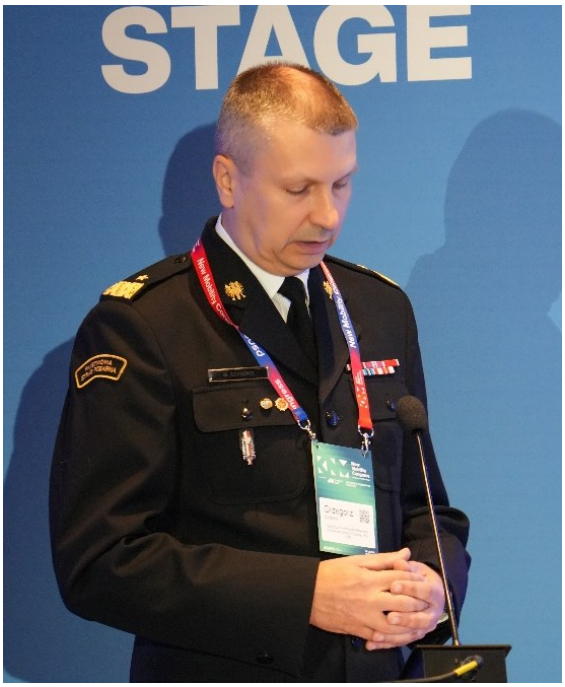
With regard to photovoltaic installations, Commander Szyszko addressed both their economic benefits and safety issues. PV installations help reduce the running costs of State Fire Service facilities, but their development should go hand in hand with compliance with appropriate technical standards. The importance of using authorised installers and electricians, carrying out verification measurements, correctly applying fire safety power switches and using equipment of appropriate quality was emphasised.

According to the data presented, collected from State Fire Service organisational units, the number of incidents involving photovoltaic installations was 331 in 2024 and 318 in 2025. In 2026, 341 such incidents had been recorded by the end of August.

As of 30 June 2026, 305 photovoltaic installations were operating at State Fire Service facilities. Their number is steadily increasing, primarily because they offer opportunities to reduce facility running costs. The average installed capacity is approximately 30 kWp, and around 23% of these installations are equipped with energy storage systems.

Another element of the transformation is the gradual introduction of electrically powered vehicles into the State Fire Service. At present, they are used mainly as special operational vehicles for administrative support and supply tasks. The State Fire Service's initial experience with electromobility involved pilot applications during the early stages of the technology's development. Vehicles used since 2018, including the Volkswagen Golf and Nissan Leaf, received mixed assessments, mainly because of the limited range characteristic of the models available at that time. At the end of 2025, the State Fire Service had 28 battery-powered vehicles, with a further dozen or so planned for purchase in the coming years.

A considerably greater challenge remains the use of electric propulsion in purpose-built rescue and firefighting vehicles. Such designs are already available and in use in some countries. As an example, Commander Grzegorz Szyszko referred to a vehicle operating in Belgium that attends approximately 90% of incidents in urban areas using electric propulsion alone. The vehicle has four-wheel drive, two motors with a combined output of approximately 490 metric horsepower and a battery pack with a total capacity of 132 kWh. In an emergency, the system can be supported by a diesel-powered generator. The vehicle has a water tank with a capacity of approximately 1,200 l and a cab accommodating 7–9 firefighters. It also features a monocoque structure and a steering rear axle.



Among the limitations of such vehicles, particular attention was drawn to their very high price—approximately PLN 7 million, several times the cost of conventional rescue and firefighting vehicles. Technical problems were also noted, including issues involving radios and signalling equipment, alongside the specific requirements placed on vehicles used by emergency services. They must remain fully reliable during prolonged operations and incidents in difficult terrain. Insufficiently developed charging infrastructure, including an inadequate number of fast chargers, remains another limitation. The need to supply power to numerous items of equipment, winches, chargers and other devices also presents a challenge.

However, electric propulsion can also offer significant operational benefits. One is the vehicle's quiet operation at the incident scene. Conventional engines and generators produce considerable noise, which can hinder communication between responders. Electric vehicle design also provides greater flexibility in equipment layout, weight distribution and the positioning of the centre of gravity.

The speaker highlighted the possibility of using electric vehicles as mobile energy sources. Technologies enabling bidirectional energy flow, such as Vehicle-to-Load, Vehicle-to-Home and Vehicle-to-Building, allow equipment or buildings to be powered from a vehicle's battery. This capability may be particularly important in crisis situations and civil protection operations.

Referring to practical experience with the electric vehicles currently used by the State Fire Service, the speaker noted that concerns expressed by some about their unreliability at low temperatures had not been borne out. These vehicles had not presented significant operational problems during winter. This observation concerned the electric operational vehicles currently in the State Fire Service fleet, not rescue and firefighting vehicles.

Concluding his presentation, nadbryg. Grzegorz Szyszko, Ph.D. Eng. (General Brigadier), emphasised that electromobility is no longer merely a future prospect but a technological change already present in both the State Fire Service and Volunteer Fire Brigades. The development of photovoltaic installations

and electric vehicles also requires further development of procedures, adaptation of infrastructure and gradual fleet modernisation. For emergency services, however, the fundamental criterion remains equipment reliability, which cannot be compromised. At the same time, new solutions, particularly bidirectional energy flow, mean that an electric vehicle can serve not only as a means of transport but also as a mobile power source in a crisis.

Conclusions:

1. Electromobility is becoming an established part of State Fire Service operations, encompassing both energy infrastructure and the vehicle fleet. This requires further development of procedures, infrastructure and competencies associated with the safe use of new technologies.
2. The introduction of new solutions into emergency services must be governed by reliability requirements. The benefits of electric propulsion must not obscure limitations associated with charging infrastructure, costs or operational requirements during prolonged and demanding incidents.
3. The development of electromobility creates not only new hazards for emergency services but also new opportunities. Bidirectional energy flow may be particularly important, enabling electric vehicles to serve as mobile power sources in crisis situations and civil protection operations.
4. Experience gained from electric vehicle use demonstrates the need to assess technologies on the basis of practice rather than earlier concerns alone. An example is the absence of significant problems with the State Fire Service's current electric fleet in winter conditions, although this conclusion cannot currently be extended to rescue and firefighting vehicles.

Tactical procedures of Czech firefighters in incidents involving electric and hybrid vehicles

Col. Ing. Ondřej Suchý, Ph.D., MBA – Director of the Technical Institute of Fire Protection

The speaker presented the experience of the Czech fire service in emergency response to incidents involving electric and hybrid vehicles. The Technical Institute of Fire Protection, which he represented, operates within the headquarters of the Fire Rescue Service of the Czech Republic. Since 2019, it has conducted research into traction battery safety and developed materials and procedures for firefighters.

In subsequent years, this research covered, among other issues, the behaviour of lithium-ion batteries under fire conditions, the effectiveness of different extinguishing methods, and the quality and degree of contamination of water following the immersion of an electric vehicle. This was followed by the development of a standard operating procedure and a training programme for electrically powered vehicles. Relevant training materials were also prepared in 2024–2025, and tests concerning incidents in parking garages were conducted in 2025.

One of the significant hazards associated with battery damage is the release of toxic and explosive gases, including hydrogen and hydrogen fluoride, as well as oxygen generated by the decomposition of cathode materials, which increases the risk of reignition. Contaminated runoff water also presents a hazard: it may contain metals and be strongly alkaline, reaching approximately pH 12. It can adversely affect equipment and firefighters' personal protective equipment. Additional risks include electric shock and gas explosions, particularly in enclosed spaces such as garages, where effective gas removal may be difficult.

Correct identification of the vehicle type is essential during emergency response. Information may be obtained from the incident notification, vehicle markings, licence plates, structural features or specialist identification applications. Useful indicators include markings compliant with ISO 17840, the presence of a charging connector, the absence of an exhaust system, orange high-voltage cables, and labels in the engine compartment and vehicle interior.

The speaker explained that, under the Czech procedure presented, the vehicle should be approached as though its high-voltage system remained energised. It is necessary to secure the vehicle and incident scene, establish the location of the traction battery and assess its condition. Attention should be paid to damage, leaks, rising temperature, smoke generation and unusual sounds such as hissing or cracking. Where possible, the high-voltage part should also be disconnected in accordance with the vehicle manufacturer's instructions.

If a rise in battery temperature or smoke generation is observed, or if the temperature exceeds 80°C, cooling with water for approximately 10 minutes is recommended, followed by five minutes of observation. The procedure should be repeated if the battery heats up again. Following successful cooling, the battery should be monitored for at least 45 minutes. Water without a wetting agent is recommended for cooling, as such agents may reduce cooling efficiency and increase water conductivity.

When a vehicle connected to a charger catches fire, it is treated as energised equipment until it has been disconnected from the charging station. If the traction battery is not involved in the fire, the procedure is essentially the same as for a conventional vehicle fire. However, if the battery is involved, intensive cooling is required and, where possible, the extinguishing agent should be applied directly inside it. A water-jet cutting and extinguishing device may be used for this purpose. After extinguishment, the battery must continue to be monitored because of the possibility of reignition.

The speaker added that, if earlier measures prove ineffective, the procedure involves placing the vehicle in a container and flooding the battery with water. The vehicle remains in the water until self-heating and gas evolution cease. The resulting contaminated water must be sent for specialist disposal.

Conclusions:

1. In the Czech Republic, procedures for incidents involving electric and hybrid vehicles are set out in standard operating procedure 7D, “Road vehicle with an electric engine”. This field is developing rapidly, alongside the increasing number of electric vehicles and changes in battery design and protective measures.
2. The experience of the Czech fire service indicates that immersing a vehicle or battery in water is slow, inefficient and environmentally unfavourable, primarily because large quantities of contaminated water must be disposed of. A considerably more effective solution is the use of water-jet cutting and extinguishing devices, which allow the extinguishing agent to reach the inside of the battery. The effectiveness of this method has been confirmed in practice, including during an electric vehicle fire in a garage in Prague in 2023. Similar solutions are also used by emergency services in the Netherlands and Sweden.
3. Experience gained from research and actual emergency response was used to prepare the training manual “Road vehicle with an electric engine”, an updated version of which was developed in 2026.

The session moderator, Director Paweł Janik, emphasised that Poland had not adopted the procedure of piercing batteries because of the risk of electric shock.

CNBOP-PIB research – Development directions and additional functionalities of the warning and alarm system: research results, experience and opportunities for integration

st. bryg. Jacek Zboina, D.Sc. Eng. (Senior Brigadier), Deputy Director of CNBOP-PIB for Certification and Admittance

The speaker presented development directions for the warning and alarm system (WAS) in the context of the intensive development of civil protection solutions in Poland. He discussed research and other work conducted by CNBOP-PIB, including a project concerning an integrated system for collecting and processing rescue knowledge, funded by NCBR under the GOSPOSTRATEG programme; the Institute's own research into LoRa technology; work on technical and operational requirements for WAS and emergency voice communication systems (SKGA); and guidelines under development for emergency voice communication systems. CNBOP-PIB also cooperates with manufacturers of manufacturers of Voice Alarm Systems (VAS), Emergency Voice Communication Systems (SKGA) and Warning and Alarm Systems (WAS), and with fire monitoring operators, on opportunities to integrate these systems and use them for civil protection.

The means currently used to warn the public include alarm sirens, megaphones, radio, television and the internet, the Regional Warning System, the RCB Alert – an SMS-based public warning system operated by the Government Centre for Security – and direct forms of communication. Research and test results, the availability of new technologies and opportunities to integrate existing solutions indicate further potential for WAS development, particularly through the use of technical infrastructure already in operation. One proposed direction is to integrate WAS with existing voice alarm systems (VAS). This would allow installations currently used for fire protection to also deliver dedicated civil protection messages.

Voice messages could be broadcast inside buildings and, following the addition of external loudspeaker circuits or loudspeakers using radio communication, in their immediate surroundings, for example along adjacent streets. Such a solution could also support evacuation.

Another direction involves using existing fire monitoring (MP) radio networks, together with other available communication links, to integrate WAS with systems operating in buildings and to transmit civil protection messages. MP networks can enable the integration of WAS with VAS, as well as with other equipment used to broadcast information in buildings without VAS.

The speaker also highlighted the potential of SKGA. These solutions can provide resilient wired or wireless infrastructure for crisis communication, support evacuation, the identification and location of people, and communication between emergency services, and serve as information or SOS points. In buildings without VAS, SKGA can independently provide crisis communication and hazard information functions.

Integration may use, among other solutions, fire monitoring networks, LoRa technology and dedicated SKGA integration links. An important advantage of this approach is the ability to use equipment and installations already operating in buildings and extend their functionality for civil protection purposes.

Work is underway on the first integrations of WAS with VAS and SKGA and on testing the intended functionalities. The speaker indicated that an integrated solution enabling alarm messages to be broadcast through VAS both inside and outside buildings is to be tested at CNBOP-PIB. Research conducted by the Institute and cooperation with manufacturers confirm the feasibility of integrating WAS with existing VAS through fire monitoring networks. In parallel, the National Headquarters of the State Fire Service is preparing a dedicated solution and rules for transmitting hazard signals from WAS.

Conclusions:

1. Integrating the warning and alarm system with existing VAS installations can significantly improve the effectiveness of public warning by enabling dedicated voice messages to be broadcast in buildings and their immediate surroundings. This solution can complement existing channels such as alarm sirens, the RCB Alert and the Regional Warning System.
2. The use of existing VAS and fire monitoring infrastructure, together with SKGA solutions under development, allows the system to be extended beyond warning and alarm functions to include crisis communication and evacuation support inside and around buildings.
3. SKGA have considerable potential to extend the functionality of existing VAS and, in buildings without such installations, independently provide crisis communication and hazard information functions.
4. Research conducted by CNBOP-PIB and cooperation with manufacturers indicate practical opportunities to integrate WAS, VAS, MP and SKGA. The next stage will involve testing a solution at the Institute that enables alarm messages to be broadcast through VAS inside and outside buildings. An advantage of the proposed approach is the relatively rapid introduction of new functionalities at reduced cost by also using existing fire protection infrastructure for civil protection.
5. Further activities include testing integrated installations across the full range of their intended functionalities, developing rules for transmitting hazard signals from WAS, and implementing proven solutions that use existing VAS and MP infrastructure, supplemented by SKGA where required.

New technical and operational requirements and design guidelines for emergency voice communication systems (SKGA) intended for fire protection and civil protection

Mariusz Sobecki, M.Sc. Eng., Fire Protection Expert

The speaker presented the current status and development directions of emergency voice communication systems (SKGA). He noted that these systems are already used in many buildings, but detailed national rules governing their design, installation and scope of application are still lacking. This may lead to discretionary solutions and inconsistent assessment at the acceptance stage. The quality of these devices also needs to be standardised.

Regarding the legal framework, the speaker emphasised that a draft regulation already provides for the use of SKGA in evacuation waiting areas for people with special needs.

One direction of change is to equip evacuation waiting areas with a voice communication system providing two-way contact between a person awaiting evacuation and staff or responders. This is a fundamental difference from VAS, which are used primarily for one-way message broadcasting. SKGA, by contrast, enable direct information exchange and, optionally, video communication.

SKGA can primarily support the evacuation of people with special needs. They can also be used by staff and emergency services and interface with civil protection systems. They may be installed in buildings such as offices, as well as in special facilities such as transport tunnels, metro systems and protective structures. The current legal framework indirectly requires their use in the latter group.

The speaker also identified limitations of standard means of communication in emergencies, including possible power loss, radio communication problems and insufficient resistance of installations to fire conditions. SKGA are intended to provide independent and reliable communication, linked to fire safety systems and adapted to the needs of the particular facility.

In the absence of national design standards, work is underway on CNBOP-PIB and SITP guidelines for the design, installation, commissioning, operation and maintenance of SKGA. The draft provides for three categories of systems: systems used during fires; systems intended for public warning and alarm purposes and crisis communication; and systems used for everyday communication.

Mr Mariusz Sobecki noted that, because of their intended use, SKGA should be treated as fire protection devices. They should therefore be subject to agreement with a fire protection expert, brought into use following appropriate acceptance tests and inspected periodically.

The speaker explained the functions of the master station and intercoms, particularly those intended for people with special needs.

He added that risk analysis is to be an important element of SKGA design, taking into account users, hazards, system coverage, equipment locations, the required operating time, interfaces with other systems and cybersecurity issues. The reliability of power supplies and transmission, as well as communication quality, are also of considerable importance.

SKGA can interface with VAS, fire alarm systems, warning and alarm systems, and solutions using LoRa and LoRaWAN. This enables their broader use for both fire protection and civil protection.

Conclusions:

1. The lack of detailed national rules for the design and installation of SKGA currently creates a risk of inconsistent solutions. The guidelines being developed by CNBOP-PIB and SITP are intended to provide a coherent framework and a common basis for the design, installation and acceptance of these systems.
2. The most important function of SKGA is to provide reliable two-way communication in emergencies. These systems do not replace VAS but complement them by enabling direct information exchange between building occupants, staff and emergency services.
3. SKGA may be particularly important in supporting the evacuation of people with special needs and providing crisis communication. Appropriate risk analysis, operational reliability and the ability to interface with other safety systems are essential to their effectiveness.
4. Integrating SKGA with VAS, FAS and warning and alarm systems creates opportunities for their wider use not only in fire protection but also for civil protection purposes.

CNBOP-PIB research – Development directions and additional functionalities of voice alarm systems in the context of civil protection needs

Tomasz Popielarczyk, Ph.D. Eng., Deputy Head of BA Laboratory, CNBOP-PIB

The presentation by Tomasz Popielarczyk, Ph.D., concerned opportunities for the wider use of voice alarm systems (VAS) within the civil protection system, particularly as an additional means of providing notification, warnings and alarms about hazards.

In the first part of the presentation, the speaker outlined the current system for transmitting alarms and warning messages. This includes alarm sirens and public address equipment, the Regional Warning System (RSO), the RCB Alert, radio and television channels, telecommunications networks and official websites. He emphasised the importance of using available communication channels in parallel to inform the public about hazards as quickly as possible.

He also discussed the basic functions of VAS. These systems primarily enable the broadcasting of warning signals, such as modulated or continuous tones, and voice messages concerning the safety of people in a building. Messages can be broadcast automatically upon receipt of a signal from the fire alarm system or directly by an operator. VAS may be used in large retail and exhibition facilities, performance and sports venues, cinemas and theatres, hospitals, public buildings and collective accommodation buildings, as well as metro stations, railway stations and ports—in other words, places where large numbers of people may be present at the same time.

The speaker paid particular attention to the possibility of VAS interfacing with other systems used in civil protection and fire protection. The concepts presented envisage linking VAS with the warning and alarm system, external sirens, emergency voice communication systems (SKGA) and fire monitoring. Such an approach would allow existing infrastructure to be used not only to warn people inside buildings but also, following appropriate expansion, to broadcast messages in the surrounding area.

Tomasz Popielarczyk, Ph.D., discussed several possible configurations for VAS integration with other systems. The simplest option involves using a VAS control panel and an emergency microphone to operate internal and external loudspeakers. Further configurations provide for the integration of VAS with the warning and alarm system (WAS) control panel, linked to the competent territorial civil protection authority and alarm sirens.

A more extensive configuration also includes an interface with the emergency voice communication system (SKGA), including its master station and intercoms intended for the fire service and people with special needs. This arrangement allows a common architecture to be established in which devices

responsible for alarms, message broadcasting and emergency communication complement one another.

One of the configurations presented also included fire monitoring as an additional element of this architecture. It can interface with solutions used by the territorial civil protection authority and with VAS and SKGA, creating a more extensive arrangement for information exchange and alarm communication. At the same time, integrating these solutions and ensuring that they work together effectively remains a significant technical and organisational challenge. This requires, among other measures, the standardisation of requirements, design and operating rules, and methods for verifying individual system components. The speaker indicated that VAS can perform functions similar to alarm sirens, enabling both modulated audible signals and spoken announcements to be broadcast. An important advantage is the existing installed base, estimated at approximately 15,000–20,000 systems. Moreover, VAS installations are checked for the audibility and intelligibility of voice messages before acceptance, and their components have been subject to testing and certification by research institutions, including CNBOP-PIB, for more than 20 years.

Conclusions:

1. Existing VAS installations have the potential for wider use in civil protection, primarily as an additional channel for transmitting alarms and precise voice messages explaining the type of hazard and the action to be taken. Their advantage over sirens is the ability to deliver spoken messages.
2. VAS should complement, not replace, alarm sirens. Integrating the two solutions can increase the coverage and effectiveness of the warning system, particularly in buildings accommodating large numbers of people and in their immediate surroundings.
3. The use of infrastructure already in operation can reduce the cost of introducing new functionalities. In many cases, system development may involve integrating existing devices or extending installations, for example by adding external loudspeakers. In addition, VAS are proven systems subject to testing and certification.
4. Further development of the integrated system requires standardised technical requirements and operating principles. This includes developing technical and operational requirements, test methods, design and operating guidelines, and rules for the certification and acceptance of components and installations within the notification, warning and alarm system. Work in this area is one of CNBOP-PIB's tasks under project GOSPOSTRATEG.IX-001G/22.

Testing challenges, safety gains and future applications for improved rescue services

Tiina Ristmäe, Katrin Wieden, German Federal Agency for Technical Relief

In a presentation prepared jointly with Katrin Wieden, Tiina Ristmäe discussed the involvement of emergency services in research and development projects and the importance of practical testing of new technologies before their operational deployment. Using THW, Germany's federal agency for technical relief and civil protection, as an example, she presented a model of cooperation between emergency services and the research sector. THW has participated in research and development projects since 2007, acting as both a partner and a coordinator. The organisation is currently involved in approximately 25 national and international projects, and some earlier project outcomes have found practical applications in logistics software, standard operating procedures and training curricula.

Tiina Ristmäe presented ForeSight and SYNERGISE as examples. ForeSight focuses on challenges including constrained sight during operations, the complexity of logistics and movement at the incident scene, and fragmented information needed for decision-making and coordination. Solutions under development include situational awareness drones and drones for transporting equipment, various LiDAR technologies that improve perception in limited visibility, responder localisation systems, augmented reality displays, and tools supporting incident management and logistics. The aim is to improve situational awareness, navigation safety, logistical efficiency and the quality of decisions at command level.

The **SYNERGISE** project primarily aims to improve first responder safety and efficiency through innovative technologies. It includes wearable sensors and devices, localisation solutions, the use of robots and augmented reality for remote operations, field communications, artificial intelligence, and integrated command and control systems. Other important elements of the project include human–machine teaming, ethical issues associated with wearables and robots, and extensive technology field testing carried out by first responders themselves.

The speaker highlighted the process of moving from an identified operational capability gap to a validated solution. This involves defining needs and requirements, research and development, laboratory testing, field testing, evaluation and validation. She emphasised the crucial role of testing under conditions as close as possible to real operations, with the participation of practitioners who can challenge the technology against actual emergency response requirements. The principal challenges she identified included the transition from laboratory to field conditions, selecting evaluation methods appropriate to the product, choosing the right parameters to measure, accounting for human factors, intuitiveness and ease of use, and conducting cross-agency and international testing.

Conclusions:

1. The development of new technologies should be driven by the actual operational needs of emergency services, rather than the mere availability of attractive technical solutions. The starting point should be the identification of operational capability gaps that the technology is intended to reduce or eliminate.
2. End-user involvement from the beginning of the research and development process is essential. First responders should participate in defining requirements, testing and validating solutions, as operational usefulness can only be assessed by testing technology under conditions close to those encountered in practice.
3. The current challenge is not only to develop innovations but, above all, to achieve their effective adoption. Solutions must be capable of being fielded, maintained, secured and accepted by users. Modularity, upgradability, interoperability and system resilience are also important.
4. Research and development projects should aim to deliver a genuine operational advantage, measured through improvements in safety, operational effectiveness, situational awareness, logistics and decision-making, rather than merely producing a demonstrator of a new technology.

New technologies and their safety, improvement of rescue technologies – testing and assessment of products and systems: current status and prospects

Michał Pietrzak, M.Sc. Eng., Certification Department, CNBOP-PIB

The speaker discussed the development of new technologies used in fire protection and rescue operations and the importance of testing and assessing them before practical implementation. He noted that contemporary rescue solutions encompass both improvements to existing equipment and entirely new technologies. Examples include integrated telemetry devices that monitor responders' vital signs and environmental conditions, passive exoskeletons, tactical ground robots and robotic firefighting platforms, unmanned aerial vehicles, augmented reality systems, smart suits with biometric functions, localisation solutions, AI-based systems and technologies for extinguishing battery fires.

A substantial part of the presentation focused on the innovative product testing procedure introduced by CNBOP-PIB. Its purpose is to assess the suitability of products for rescue and firefighting operations. Testing is practical in nature and may be conducted by testing units and responders from State Fire Service rescue and firefighting units during exercises or dedicated trials. The process includes registering the application, preparing a testing programme, conducting the tests and, if the outcome is positive, issuing a recommendation or an opinion on suitability.

The speaker emphasised the importance of testing a product under conditions corresponding to its intended use. This makes it possible not only to verify its performance but also to obtain feedback from responders and testers and confirm the solution's suitability, functionality and ergonomics. Successful completion of the process may result in the issue of appropriate documentation—a recommendation or an opinion.

He also presented a wide range of products that had undergone such assessments. These included fire blankets, protective shields for firefighters, mobile command centres, firefighting platforms for electric vehicle batteries, flood barriers and flood protection systems, unmanned aerial vehicles, hazardous gas measurement heads, lances and water mist nozzles, and other equipment used in rescue operations.

A separate topic was the safety of software used in fire protection devices. CNBOP-PIB has launched a voluntary software certification programme covering, among other equipment, fire alarm control panels, VAS control panels, control units, systems integrating fire protection devices and other devices of this type. The certification process comprises testing of properties, verification of test and

assessment reports, the certification decision, the issue of a certificate of conformity and certification surveillance.

Conclusions:

1. The development of new technologies for rescue operations should be closely linked to their practical assessment, as the innovativeness of a solution alone does not determine its suitability for real operations.

2. Testing with the participation of responders is crucial to assessing a product's functionality, ergonomics and suitability. It allows the solution to be tested under conditions as close as possible to its intended use and takes account of the experience of its future users.

3. As fire protection devices become more complex, the safety of their software also becomes increasingly important. It is therefore necessary to assess not only hardware components but also the software layer responsible for the operation of devices and systems.

4. Testing, assessment and certification are important elements of the safe introduction of innovations into rescue practice, as they enable the properties of new solutions to be confirmed before wider operational use.

5. Innovative product testing is a free programme aimed at manufacturers of products that are not subject to a mandatory certificate of admittance, or products whose properties differ significantly from the requirements applicable to their product group. It supports both manufacturers and emergency services by enabling the practical assessment of suitability, functionality and ergonomics under the conditions of intended use.

can for more information about testing.

Artificial intelligence in fire protection for children and citizens – Płomyczek

Paweł Bujny, M.Sc. Eng., Head of the IT Department, CNBOP-PIB

Paweł Bujny delivered a presentation on the use of artificial intelligence in fire protection and civil protection education, as well as in solutions supporting situation analysis and the planning of rescue operations.

The main example was Płomyczek—an application that uses AI to convey knowledge in a manner tailored to different audiences. The system provides distinct approaches to communication with children and adult users. For children, the emphasis is on simple explanations, safety and learning through play, while the section for citizens focuses on home safety, family preparedness and civil protection issues.

The speaker emphasised that a key principle behind Płomyczek is interactive conversation in which answers are based on verified source materials. Users can ask questions in their own words, and the system retrieves relevant passages from documents, prepares an answer in language appropriate to the audience and identifies the sources and page numbers that users can consult. The knowledge base may include official materials on safety and civil protection. It was also emphasised that the quality of responses depends on both the quality of the materials and the accuracy of the retrieval process.

The solution also has an educational and interactive dimension. The application provides for games, quizzes and scenario-based exercises covering topics such as the correct placement of detectors, the information to provide when calling the emergency number 112 and responses to fire situations. In this way, learning can be combined with decision-making and feedback. The system draws on the Safety Guide and other educational materials from the Ministry of the Interior and Administration and the State Fire Service. The application maintains the conversation by suggesting further safety-related questions.

In his presentation, the programme's author also addressed the limitations and principles of safe AI use. The assistant is intended to operate within a clearly defined subject area and should explicitly state when the available materials do not provide a basis for an answer. Control over the document collection, management of user permissions and the ability to adapt the system's deployment method are also important. The speaker made clear that the tool serves an educational purpose and does not replace appropriate action in an emergency.

Paweł Bujny subsequently presented other projects using artificial intelligence and data analysis. The LISTEK programme is used to monitor forest fire risk, analyse sensor data, detect anomalies and simulate potential fire development. The PSR project—Rescue System Planning—covers, among other

areas, the analysis of incidents, access routes, the availability of personnel and equipment, options for rescue coverage, and the effects of adopted assumptions on the results.

The speaker emphasised that, in the PSR project, AI is intended to support situation analysis and assessment, not act as an autonomous decision-maker. It can assist with data interpretation, analysis of personnel availability, development of alternative scenarios and explanation of results. However, decisions remain with humans, and the generated scenarios require verification by a responder.

Conclusions:

1. Artificial intelligence can effectively support fire protection and civil protection education, particularly when the way information is communicated is adapted to the recipient's age, knowledge and needs.

2. The reliability of AI-based systems should be built primarily on controlled and verified sources. It is important to identify the basis for answers and clearly communicate when the available materials do not support a reliable response.

3. AI can support not only education but also data analysis, situation assessment and rescue coverage planning.

4. Solutions such as LISTEK and PSR demonstrate the potential to use data from different sources to monitor hazards, develop scenarios and compare courses of action.

5. One of the challenges is maintaining user engagement and presenting knowledge in an engaging form. To this end, the application uses automatically generated question suggestions, educational games, quizzes and scenario-based exercises.

Explore the Płomyczek programme.

Rethinking the emergency response chain – how smart homes and smart cities can support emergency services

Sylvia Pratzler-Wanczura, Ph.D. Eng., Scientific Director and Deputy Head of the Institute for Fire and Rescue Technology in Dortmund

In her presentation, Sylvia Pratzler-Wanczura, Ph.D. Eng., discussed opportunities to use Smart Home, Smart Building and Smart City solutions to shorten the time between an incident occurring and effective emergency response. Her starting point was demographic change—Europe's ageing society and the increasing number of older people living alone. In such cases, the problem may be not only the incident itself, such as a fall or a sudden deterioration in health, but also the time that elapses before it is noticed and help is called. At the same time, demand for emergency services is increasing while personnel and equipment resources remain limited.

The speaker drew attention to the “hidden time” before the emergency response chain—the period between an incident occurring and its detection, recognition and reporting. This period can be difficult to determine and, for people living alone, may significantly delay the start of the response. The presentation identified three areas in which time could be gained: earlier detection and notification, the involvement of nearby first aiders, and shorter travel and initial assessment time for emergency services.

A practical example of this concept is the ADLeR project, which aims to make the digital environment part of the emergency response chain. Smart Home solutions can use presence and fall sensors, smoke and heat detectors, indoor climate monitoring devices, window contacts, smartwatches and smart door access systems. Their purpose is to recognise situations requiring assistance earlier and pass on the information before the person affected is able to make an emergency call themselves.

Another element is the possibility of involving appropriately prepared people near the incident, who can begin providing assistance before professional emergency services arrive. Smart systems can also transmit information enabling access to the building, such as smart lock details, thereby reducing further delays. More broadly, data from smart buildings, neighbourhoods and urban infrastructure can support dispatchers and responders during travel, on-scene orientation and initial incident assessment.

The speaker thus demonstrated a change in the approach to the digital environment: from a passive source of data to an active part of the response process. Ultimately, the system should support the entire sequence of actions—from incident detection, through automatic notification and the dispatch of assistance, to facilitating access to the scene and the conduct of rescue operations.

Conclusions:

1. Earlier incident detection is an important element in reducing response time. Optimising emergency service travel time alone offers limited benefits if, for an extended period, nobody knows that a situation requiring assistance has occurred.

2. Smart Home solutions can improve the safety of older people, people living alone and those with limited independence by automatically recognising certain emergencies and initiating notification without requiring the user to take action.

3. There is potential to reduce response time at several stages of the emergency response chain: from incident detection and notification, through the involvement of people nearby, to faster arrival of emergency services and more efficient initial assessment.

4. Smart buildings and smart cities can provide operational data for emergency services. However, making use of this potential requires large volumes of data from different systems to be transformed into information that is genuinely useful to dispatchers and responders.

5. A key technical challenge is integrating Smart Home, Smart Building and Smart City solutions with the existing emergency response system. This requires reliable data exchange, interoperability and information processing that makes the resulting information genuinely useful to dispatchers and responders.

6. At the same time, issues concerning privacy, user trust, cybersecurity, public acceptance of the technology and the legal framework for its use must be addressed. These are essential conditions for the safe and widespread practical deployment of such solutions.

Pre-commercial procurement of innovative personal protective equipment for first responders

Bernhard Jäger, Research Manager & Department Lead, SYNYO (Austria)

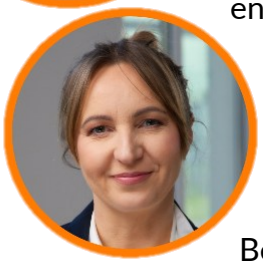
Prof. Anna Rabajczyk, D.Sc., Director's Plenipotentiary for Scientific Activities, CNBOP-PIB

Joanna Sadowska, M.Sc. Eng., Head of the Drone Centre, CNBOP-PIB

The presentation delivered by Bernhard Jäger concerned the ACTIVE PCP project. Its aim is to develop a new generation of personal protective equipment (PPE) for first responders, better suited to contemporary and evolving threats. At the outset, the speaker emphasised that new technologies increase the operational capabilities of emergency services but may also create new risks to responders' health, lives and privacy. He highlighted the importance of the cybersecurity of personal devices, equipment resilience, personal data and privacy protection, and protection against CBRN threats.

The speaker presented the broad spectrum of hazards to which responders may be exposed during operations. These include high temperatures and thermal stress, toxic gases, fumes and dust, organic and inorganic substances, bacteria and viruses, asbestos, chemicals, nanomaterials, electromagnetic radiation and explosion hazards. He also drew attention to the possibility of hazardous substances penetrating personal protective equipment and to increased transdermal penetration of carcinogenic substances, particularly when skin temperature is elevated.

ACTIVE PCP is being implemented under Horizon Europe using the Pre-Commercial Procurement (PCP) approach. The project is scheduled to run from November 2025 to January 2029. It involves seven partners and three affiliated entities from seven European countries. CNBOP-PIB is one of the procurers. The aim is to use pre-commercial procurement to stimulate the development of innovative protective equipment that addresses the actual needs of emergency services, particularly in multi-hazard environments, including CBRN incidents.



Bernhard Jäger emphasised that existing personal protective equipment is generally designed for a specific type of hazard—for example, thermal and mechanical protection during firefighting or chemical protection during hazardous substance incidents. The protective capabilities of these solutions overlap only to a limited extent, and the available equipment is not always sufficiently versatile, ergonomic, easy to carry and fit, or economically viable for everyday use. Its correct use may also require highly specialised training.

ACTIVE PCP aims to address these limitations by developing equipment that provides multi-hazard protection, greater adaptability and interoperability, while improving responder safety and situational awareness. Modern PPE is intended to enable physiological monitoring and incorporate environmental sensing and location tracking. It should provide improved ergonomics, comfort and mobility while reducing heat stress and fatigue. It should also be durable and reusable.

Requirements for future solutions are to be verified against complex operational scenarios. These include drone-based chemical dispersal during a mass gathering, a road accident with delayed CBRN identification, an explosion in an illicit fentanyl laboratory and a chemical leak in a public facility. The scenarios combine conventional emergency response hazards with chemical, biological, terrorist and crime-related threats.

Conclusions:

1. Modern personal protective equipment should be designed for multi-hazard environments. Rescue operations increasingly require simultaneous protection against thermal, chemical, biological, mechanical and other hazards. Specialist equipment intended exclusively for one type of hazard may therefore be insufficient.

2. Improved protection must not come at the expense of ergonomics or responders' operational capability. New PPE should reduce heat stress and fatigue, provide freedom of movement and enable sustained operations in difficult conditions.

3. An important development direction is the integration of PPE with solutions that monitor responders and their surroundings, including sensors for physiological parameters, environmental exposure and location. This can improve situational awareness and enable earlier hazard recognition.

4. Interoperability is one of the key requirements for future equipment. PPE should be compatible with other equipment and devices used by responders and enable coordinated operations involving different agencies, including in international settings.

5. The development of smart protective equipment also creates data protection and privacy requirements. Responders' biometric, exposure and location data must be processed in accordance with security and personal data protection principles.

6. The PCP approach makes it possible to link research and development to the actual needs of end users. Successive stages — from defining requirements, through design and prototyping, to testing solutions — allow different concepts to be compared before decisions on wider deployment are made. For suppliers, this provides opportunities to test solutions under real-world conditions and shorten time to market. For procurers, it provides an opportunity to influence the development of technologies that meet emergency service needs.

7. Practitioner involvement in equipment development is crucial to its subsequent usefulness. The Observer Board envisaged in the project enables emergency service representatives to provide feedback on operational requirements and participate in testing new solutions under realistic conditions.

Conference summary and conclusions

The 7th International Scientific Conference “Safety of New Technologies” was officially closed by st. bryg. Paweł Janik, D.Sc. Eng. (Senior Brigadier), Director of CNBOP-PIB.

He emphasised that the event had demonstrated both research and implementation achievements to date and the principal directions for further technological development in fire protection, rescue operations and civil protection. The conference provided an opportunity for representatives of academia, emergency services, public administration and organisations developing new technologies to exchange experience.

A recurring theme in many presentations was the need to closely link research and the development of new solutions with the actual needs of end users—primarily responders and services responsible for safety.

The Director emphasised that new technologies should not only be innovative but, above all, safe, reliable, ergonomic and suitable for practical use under operational conditions. Important factors include testing solutions under conditions close to those encountered in practice, involving practitioners in their development and ensuring that new technologies can be integrated with existing systems and infrastructure.

The Director of CNBOP-PIB thanked all speakers, partners and participants for their attendance, substantive presentations and engagement in the discussion on the further development of solutions supporting safety.

Exhibition accompanying the seventh edition of the BNT conference

As in previous editions, the conference was accompanied by an exhibition at which CNBOP-PIB presented its training offer and the capabilities of the Drone Centre, aimed primarily at organisational units of the State Fire Service, Volunteer Fire Brigades and other uniformed services.
As part of its educational and preventive work, the Service Certification Unit conducted activities concerning safety associated with the use of standalone smoke and carbon monoxide alarms. Visitors to the stand could test their knowledge by completing a quiz and obtain practical information from the Institute's representatives on the installation and maintenance of these devices.
Ei Electronics also had a stand at the conference. An important area of the company's activities in Poland is training associated with the certification of installers and maintenance personnel for standalone alarms.

Scan to watch the exhibition coverage.

PAŃSTW
STRAŻ PO

CNBOP-PIB

CNBOP-PIB
GDZIE MONTOWAĆ CZUJKI?
Czujkę tlenku węgla montuj zawsze na ścianie, na wysokości głowy osoby stojącej (od 150 cm do 200 cm od podłogi), w odległości co najmniej 100 cm od urządzeń, które mogą być potencjalnym źródłem emisji tlenku węgla.

The seventh edition of BNT as part of the conference series

The BNT conference series provides a forum for presenting and disseminating research results and reviewing current knowledge on rapidly developing new technologies. To date, its principal themes have been **the safety of new technologies, the improvement of rescue technologies and civil protection.**

The safe deployment of new technologies requires, above all, knowledge derived from research in these areas. The BNT conference series provides a forum for presenting scientific achievements, research results and expert knowledge, as well as new solutions and products offered by manufacturers and suppliers for fire protection and the rapidly developing field of civil protection in Poland.

Topics addressed at BNT scientific conferences include:

- the safety and functionality of photovoltaic installations;
- the safety of batteries and energy storage systems in terms of their design, applications, operation and technical safeguards;
- fire protection measures for batteries and electrical energy storage systems;
- new fire detection technologies;
- the safety of electric vehicles and charging points and stations;
- the safety of new Smart Home solutions;
- the use of artificial intelligence in fire protection;
- testing and certification of software for fire protection devices;
- presentations of projects concerning social prevention and the improvement of rescue operations, such as “Pierwszy Ratownik” and “Czujka dymu pod każdą strzechą”;
- dedicated solutions and systems for the early detection and suppression of fires involving electric vehicles and energy storage systems;
- rescue products, solutions and technologies used in operations;
- rescue technologies used by the fire service during operations;
- communication and notification systems for fire protection and civil protection;
- prospects for the development and improvement of notification and warning systems;
- protective structures, their equipment and applicable requirements;
- infrastructure and operational systems, such as those for evacuation, communication and sheltering;
- scientific research projects concerning modern technologies for rescue operations.

BNT conferences also serve to present research results, disseminate knowledge and facilitate the exchange of views and experience among different communities interested in the fire safety of new technical solutions and technologies. Particular attention is given to responder protection and the improvement of rescue technologies. In addition, the scope of BNT conferences has gradually been extended to include safety engineering and civil protection.

Future editions of the conference

Information about future editions, together with reports and photo coverage, is published in the Science section of the CNBOP-PIB website.
Updates are also shared on the Institute's official Facebook and LinkedIn pages.
We welcome proposals for topics and presentations for future BNT conferences.
See you at the next BNT!

www.cnbop.pl

Publishing and Promotion Department

dwip@cnbop.pl

tel. 22 769 33 20