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The Media Platform of the Defence and Security Industry Association of the Czech Republic

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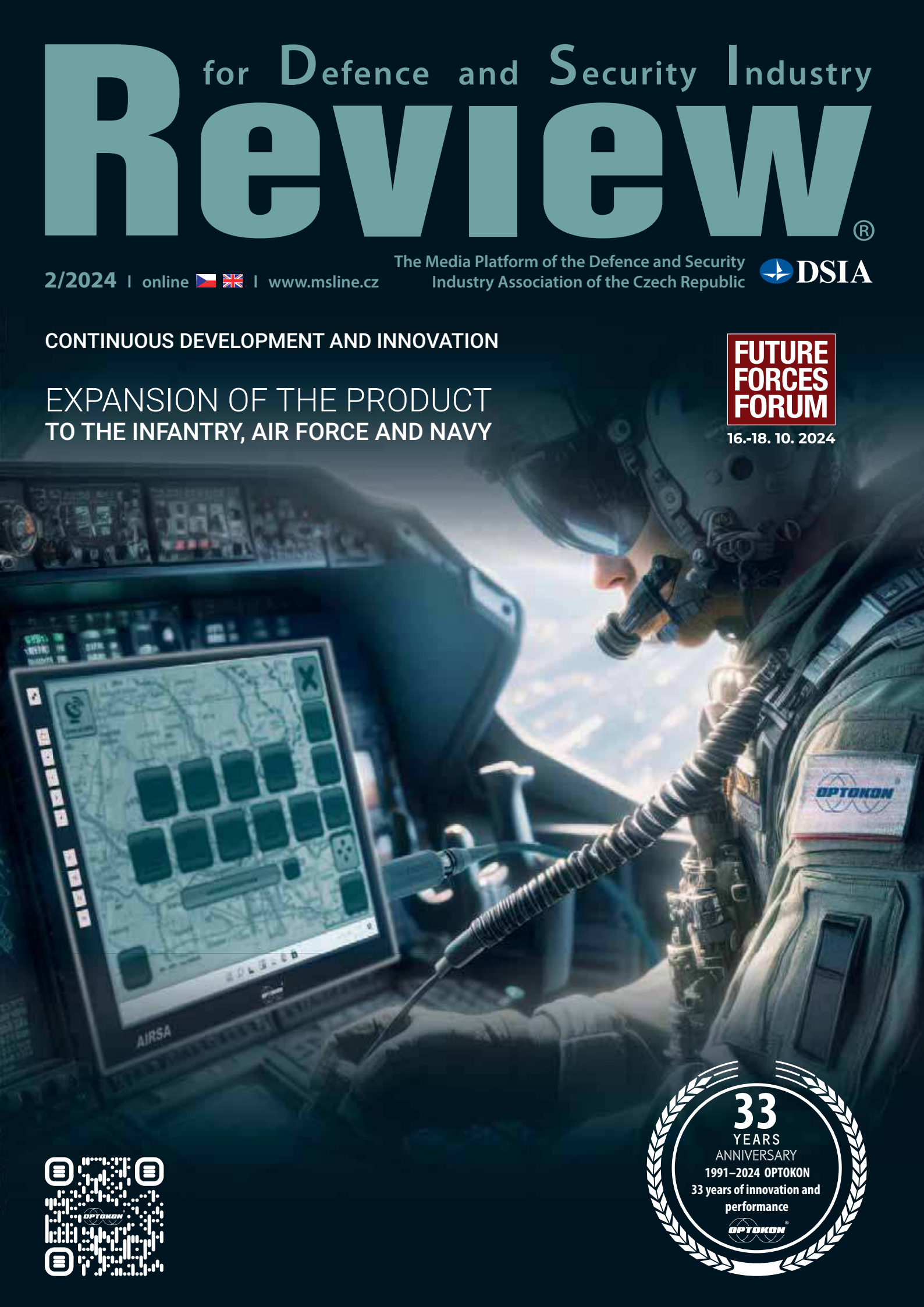

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Dear readers,

In this year´s second edition, we bring you some interesting interviews, especially with important representatives of the state administration and, as usual, a presentation of the Czech industry, thereby fulfilling the main mission of the magazine, which is to facilitate better communication between the state and industry in the field of the defence and security community.

In the last edition, we brought challenges and current information from the Department of the Ministry of Defence, i.e. the Czech Armed Forces. The focus of this edition, as announced in the publishing plan for this year, is mainly the presentation of other security forces of the Czech Republic, primarily the Police, Prison Service, Customs Administration, but also the Fire Rescue Service and the State Administration of Material Reserves. It is a community that is as important to the Defence and Security Industry as the military sphere.

It is extremely important for the MS Line Publishing House and the editors of the Reviews that a significant part of the Czech Defence and Security Industry companies use the REVIEW magazine to present their activities. In this edition, we focused mainly on the presentation of medium-sized and small companies, and we want to continue this trend throughout this year. The membership base of the DSIA CR already brings together approximately 180 companies. I believe that after the General Meeting of the DSIA CR, we will start media cooperation with thirty new members.

As a member company and media platform for DSIA CR, we are devoting a third of the magazine's content to the 28th General Meeting. In addition to an interview with the President of the Association and an activity report, we also bring information from the DSIA Board of Directors and introduce 30 new member companies. We wish them to find the necessary background and support for their activities in the Association.

Dipl. Eng. Miloš Soukup
Editor-in-Chief

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THE POLICE ARE MODERNIZING

Interview with Brig. Gen. Jaromír Bischof, the Deputy of the Police President for the Economy

With the aim of maintaining a high standard of safety and to ensure and strengthen the current level of internal security in a situation of increasing security threats, the Police of the Czech Republic have an approved "Concept of development of the PCR until 2027". Among other things, this document creates a basic framework for further steps towards their modernization and is intended for both the Police Forces and the general public. We asked the Deputy of the Police President for the Economy about the material modernization of the Czech Police.

Mr. Deputy, the "Concept for the Development of the PCR until 2027" builds on the previous "Concept for the Development of the PCR until 2020". Can you give us a brief overview of the basic principles and financial security when it comes to the material area?

The Concept for the Development of the Police of the Czech Republic until 2027 is a general development framework that defines the target state in individual areas of development for a sufficient response and readiness of the Police of the Czech Republic for current and future challenges in the framework of ensuring the internal security of the Czech Republic. Compared to the previous concept, there is no detailed plan for securing funds for individual years of implementation. The identification and provision of needs, including the material area, for the implementation of individual measures resulting from the Concept for the Development of the Police of the Czech Republic until 2027 are operationally ascertained and updated every year. Within the framework of the budget process and financial resources of the Police of the Czech Republic, individual requirements are prioritized and the management of the Police of the Czech Republic and the Ministry of the Interior ensure their financial coverage. Needs for which funds cannot be secured in a given year are moved to the following period, and at the same time, relevant procedures are updated so that the goals of the Concept for the Development of the Police of the Czech Republic until 2027 are not endangered. These principles and methods of financial provision of the concept are more operative and flexible than during the implementation of the previous concept and make it possible to react even in the situation of budgetary insufficiency.

Do you also plan to invest in vehicles for the Police of the Czech Republic? If so, what kind of vehicles will it be?

Thanks to regular investments in recent years, the vehicle fleet of the Police of the Czech Republic is currently at a very decent level. The most numerous category of service vehicles was successfully replaced and at the same

time the planned systemized numbers were also fulfilled. That is why we are now mainly focusing on the acquisition of special vehicles, such as vehicles specially modified and equipped for order service units, pyrotechnics, dog handlers or criminal investigators. An equally important category includes special vehicles for the investigation of traffic accidents or controls of cargo truck traffic. A special category consists of electric cars, which we already operate to a limited extent. Above all, we are concerned about familiarizing ourselves with operational specifics and possible risks under the conditions of the Police.

You certainly also approach Czech companies when announcing tenders. Is the modern fire engine already used in Prague a Czech product?

The fire engine is a product of the company KOBIT THZ CZ s. r. o. Slatiňany, which mainly deals with the production of fire trucks. This company developed, designed, and manufactured the superstructure of the police fire engine on the TATRA chassis, in close cooperation with the police representatives.

The prototype weighs 15.6 t in standby mode and up to 20 t when filled with all liquid fillings. It is powered by an 8-cylinder air-cooled TATRA Trucks engine with a cylinder volume of 12,667 ccm, an output of 280 kW, and a torque of 1,800 Nm. As fuel, it can be operated using the alternative army fuel F34 instead of regular diesel fuel.

The vehicle has a unique design of a two-axle chassis with air suspension bellows and permanent all-wheel drive (4×4), which, thanks to its ingenious design, can, despite its dimensions of 8 m in length and 2.5 m in width, deftly move even in narrow city streets. The chassis allows both axles to be turned, which reduces the turning radius to a respectable 7 m, or it can also move sideways when all wheels are turned in the same direction, this manoeuvre is called "crab walk".

The chassis design also allows you to lower and raise the height of the vehicle within 20 cm, even while driving. The vehicle speed can be set to just 2 km/h. The maximum speed is 100 km/h. The chassis was developed by TATRA specifically for this type of vehicle and is based on components of the T 815-7 tubular backbone structure.

Fire engine from the front

Fire engine at full speed

Self-extinguishing system in action

Brig. Gen. Jaromír Bischof

The fire engine is intended primarily for special order units of the Police of the Czech Republic to disperse crowds of violators of public order. That is why it is equipped with water jets of varying intensity via three carriages (water cannons) with a capacity of up to 2,000 l/min and with a pressure of up to 8 bars, which can spray not only water, but also tear-forming additives. The water jets can be colored to mark different groups of troublemakers and for their better subsequent identification. However, it can also discourage with distinctive sound warnings using a siren and reproduced verbal calls and the L-RAD 450 XL sound sonic system. The vehicle can be used not only for the protection of public order, but also as part of the activities of the Integrated Rescue System anywhere in the Czech Republic. The three-seater cabin is equipped with a filter ventilation unit with fully automatic air ventilation preventing the penetration of chemical substances.

I assume that modernization is also considered when it comes to equipment and armament. Who now equips and arms the Czech Police?

As for the existing equipment, we currently have several suppliers who have won tenders for the supply of various types of equipment components. These are mainly the Czech companies Koutný spol. s r. o., VESTIMENTUM s. r. o., Bartolini s. r. o. and Sintex a. s. In the medium-term perspective, we are planning a more extensive modernization of equipment components, which should reflect new and innovative materials and technologies that are already available on the market.

The types and numbers of weapons of the Police of the Czech Republic are determined by an internal document, the so-called systemization of weapons and ammunition. Service weapons are divided into personal and group weapons. 9 × 19 calibre pistols are systematized for arming policemen in basic units. CZ 75 D Compact pistols have been introduced in the largest number for two decades already. Another important item of the systematization is submachine guns, namely Heckler & Koch MP A5, calibre 9 × 19. While every police officer is armed with a pistol, the ratio of submachine guns is 1:10. Police officers of special and exposed units are armed with a wide range of firearms, which is optimized according to the nature of the tasks performed by the unit.

As far as I know, the Police have a long-term shortage of shooting ranges. Recently, an offer of modular shooting ranges by the Czech company LEDIC MSR s. r. o appeared on the market. You are probably aware of this and I was wondering if you are considering this option as part of the upgrade.

I can confirm the long-term lack of shooting ranges, not only those owned and operated by the Police of the Czech Republic, but the problem is also with the insufficient capacity of shooting ranges operated by private entities. A new concept of shooting training is currently being prepared, which aims to make training more efficient and also to intensify it for certain groups of police officers. The lack of shooting ranges complicates and makes more expensive not only regular training but also the training of new police officers. The way out of this situation can be the completion and expansion of own capacities, but this cannot be done without ensuring an adequate volume of budgetary resources. In this context, we are preparing material in cooperation with the Ministry of the Interior of the Czech Republic, which could already be discussed at the level of the Government of the Czech Republic in the near future.

The "concept" also considers the field of police training. What is the situation in this very important area? Is the management of the Czech Police satisfied with the current situation? Do you use any training areas and are you modernizing them? Do you cooperate with Czech companies?

Police education and training is one of the priority areas that have undergone major organizational changes in recent years. Of course, this was also reflected in the development of a number of training areas, which of course would not have been possible without the use of extra-budgetary resources, specifically EU funds and other financial mechanisms. Within the completed program period 2014–2020, 9 projects were implemented for more than 800 million CZK. Newly built or modernized training and education campuses are in West, South and Central Bohemia, as well as in North and South Moravia or perhaps also in the Highlands region. Special simulators and polygons have been built here, which will enable the preparation and training of police officers in modern and sometimes unique conditions. Unfortunately,

these extra-budgetary resources could not be used for the already mentioned construction of shooting ranges, which would be contrary to the rules of subsidy programs.

And what about investing in new protective equipment, modern forensic techniques, ... Are you counting on it? Will there be enough funds for everything?

Planning the change and addition of the material and technical base of the Police of the Czech Republic is a never-ending process, the implementation of which depends, among other things, mainly on the budgetary possibilities in the given period. Concerning the development of the security situation, we have reviewed the status of selected key commodities and, in cooperation with the Ministry of the Interior of the Czech Republic, a document is being prepared for the Government of the Czech Republic to secure extraordinary budgetary resources to replace and supplement the missing material, such as ballistic protective equipment, weapons, vehicles for first-line patrols, technical means for entering buildings, medical equipment, but also key areas such as the development of IT tools and systems for SKPV or operational management. Last but not least, building capacities to provide shooting training is also on the list. These are items that will be very difficult to provide without an extraordinary increase in the budget.

Crab course

Mr. Deputy, I wish the Czech Police success, and thank you for the interview.

Jaroslav Jonák

popis

EQUIPMENT, ARMAMENT AND ACCESSORIES OF THE PRISON SERVICE IN 2024

Compared to other Armed Corps or the Czech Armed Forces, and especially compared to the Police of the Czech Republic, the Prison Service of the Czech Republic has a certain handicap in terms of the public's general awareness of the form and quality of the equipment, since the members of the corps, for the most part, do not perform official duties in public places. The only exceptions are members of the Judicial Guard who serve in courts, the Ministry of Justice, the offices of public prosecutors, and the like, where they are usually in direct contact with the general public. They are therefore a kind of "showcase" of the current appearance of the Prison Service uniforms.

Just a reminder, the Judicial Guard is one of the units of the Prison Service; its members wear light blue shirts with a dark blue tie and grey trousers with a dark stripe. Another unit of the Prison Service is the Prison Guard which differs from the Judicial Guard by wearing dark blue shirts. Many changes have been made in the equipment of the Prison Service in recent years. There were newly introduced equipment components, which the corps lacked until this time. The materials were modernized in order to increase the comfort of the members while performing the service. An example is the introduction of functional underwear, i.e. different types of undershirts and pants. This equipment, which is quite common today, was previously missing from the Prison Service of the Czech Republic. The range of footwear has also expanded. The Prison Service of the Czech Republic also tries to focus on ensuring the quality of materials. Natural fabrics are preferred for regular service and, where needed, textiles with functional properties and different types of membranes are introduced. Ensuring adequate equipment components for members of the Prison Service of the Czech Republic is one of the main priorities for the Prison Service. The Equipment Service monitors the evolving needs of members and is constantly working to introduce new equipment components and materials.

Also, special equipment has recently been modernized and expanded, which is directly related to the needs of the Prison Service of the Czech Republic and its comparison with other armed units. Last year, it was possible to provide the required number of ballistic helmets and special fireproof coveralls for emergency units. Equipping emergency units with a new modular protective set was a great success in the past years. This ensures the protection of the members against the effects of bullets from small arms in two levels (Level IIIA and IV), against cold weapons (knives), and against blows with blunt and thrown objects. At the same time, the set allows maximum mobility and does not restrict the wearer when performing official activities and interventions. As a modular system, it enables adaptation to a specific task and the conditions of its performance. It is a complete piece of equipment, which can be used for all possible interventions with the modular addition of inserts. Concerning the specifics of the Prison Service, when members are forced to use these sets for a longer time as part of their official duties (for example, when guarding in the meeting hall, during interventions under unified command, etc.), it is necessary that, in addition to the mentioned protective properties, they provide maximum corresponding user comfort. The modular set must be designed in such a way that it can be adapted to specific tasks and situations during the intervention in a short time. It replaces the sets of anti-shock, tactical vests, ballistic protection vests, and other similar protective and tactical service equipment components used up to now.

Armament

The fundamental rearmament of the Prison Service was started in 2016. In the first stage, long firearms – Scorpion EVO submachine guns – were purchased. In 2016, the Prison Service of the Czech Republic managed to conclude a framework agreement with the company Česká zbrojovka a. s. for the supply of these weapons. This was a very significant contract for the Prison Service, as up to that time the Corps had been using weapons discarded from other armed units. With the delivery of these submachine guns, the Prison Service of the Czech Republic achieved the use of uniform ammunition with other weapons, which it still uses. In the next stages, the Prison Service of the Czech Republic would need to change short firearms - pistols. These weapons are decades old and show significant wear and frequent malfunctions. As part of the complete re-armament, it was also necessary to change and supplement the number of assault rifles, which would better meet the corps' needs. Like other weapons, assault rifles have been acquired from other armed units in the past. The re-armament of the Prison Service is governed by the Agreement on Mutual Cooperation between the Prison Service of the Czech Republic and the Czech Armed Forces, which obliges the Prison Service to cooperate in the area of exchanging experience with the use of special work methods, including the use of military weapons. Based on this agreement, which follows the Defence Strategy of the Czech Republic, the Prison Service tries to acquire weapons that meet not only their own needs but also the needs of the Czech Armed Forces. The goal is to strengthen the defence capability of the Czech Republic through cooperative exercises.

Vehicle fleet

The modernization and purchase of middle-sized escort vehicles and buses is a current necessity for the Prison Service. The acquisition of these vehicles is necessary to ensure the basic activities of the corps, such as the escorts of imprisoned persons. The Prison Service of the Czech Republic is also bound by the Agreement on Cooperation and Mutual Assistance between the Prison Service of the Czech Republic and the Police of the Czech Republic, which results in close cooperation between these two armed units, which includes, among other things, cooperation in the area of special tasks, provision and accompaniment of escorts and training of official drivers. This year, the Prison Service would like to purchase armoured vehicles, as the current armoured vehicles are reaching the end of their service life. Armoured vehicles are essential for the Prison Service to escort dangerous persons.

Security and communication systems

Other necessary accessories for the Prison Service are various detection and security systems. In the area of these systems, the Prison Service of the Czech Republic managed to start the modernization of detection elements. This is mainly about equipping prisons with magnetostatic rod detectors, which are mainly used to control prisoners when they move around the prison premises. Heart rate detectors should also be modernized this year. This system can detect people hidden in vehicles and shipping containers by detecting a human heartbeat. The advantage is the elimination of the risk of damage to the vehicle as well as the exclusion of the negative consequences of dangerous radiation on potentially hidden persons. A full vehicle inspection takes a few minutes, without the need to make the vehicle or cargo accessible. In the following years, the corps plans to gradually change and modernize the detection frames, as well as ensure the supply of new luggage X-rays. Of course, even these plans are limited by budget constraints.

Author and photo: Prison Service of the Czech Republic


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ABOUT THE ROLE OF LIAISON POLICE OFFICERS WITH MILAN MAJER

He joined the Police of the Czech Republic in May 1990 immediately after completing his compulsory military service, which he performed in "Red Star Pardubice", where he played in the 1st basketball league. He was also a sports instructor with the rank of sergeant at the Federal Ministry of the Interior of the Czech Republic in Prague - he worked there until 1992. In the same year, he joined the alien police and passport service in Hradec Králové. He subsequently worked in Chrudim, Pardubice and Hradec Králové. He went through his alien police service, so-called "started from scratch", and worked there successively in various leadership positions.

In general, not much is known about the activities of liaison police officers, and their role, even concerning the deteriorating international situation, is irreplaceable in many ways. In a short interview, we asked Brig. Gen. Milan Majer what it entails and what tasks he fulfils.

Mr. General, could you briefly mention your professional resume?

Yes, I could. I'll start by saying that I worked as the Director of the Regional Directorate of the Alien Police for 5 years. Since 2011, for 12 years I held the position of the Director of the Directorate of the Alien Police Service in Prague at the Police Presidium of the Czech Republic, and there were really plenty of tasks. At that time, a huge piece of honest work was done, especially in the fight against illegal migration, for which we owe a big thanks to everyone who cooperated with us. Since 2015, international cooperation with colleagues from neighbouring countries has also improved significantly, especially in the fight against people smugglers. The position of liaison officer is a big change for me both in my personal and professional life. Until June 30th, 2023, I managed and organized the work of the Alien Police Service (approx. 3,500 employees), since July 1st, 2023 I have been working as a liaison officer of the Police of the Czech Republic in Slovakia and Hungary, and I am already "on my own"... , I organize my work, I complete the necessary tasks... I live in Bratislava, where I have an office at the Embassy of the Czech Republic. I also have a detached office at the Embassy of the Czech Republic in Budapest. My wife is with me in Bratislava and she mainly takes care of my background. My daughter is already an adult and also works for the Police of the Czech Republic. I am currently preparing for the role of a grandfather and I am really looking forward to it.

You worked at the Police Presidium for 12 years in a leadership position, gaining a lot of invaluable experience, and certainly not only when it comes to the Alien Police. What are the main tasks of a police liaison officer in Slovakia? Can you please tell our readers about your work?

There are really a lot of tasks and activities. The police liaison officer abroad mainly represents the Police of the Czech Republic in the international field of the given country, builds trust and ensures cooperation and interoperability, especially with individual units of the Police. He ensures the necessary exchange of information across the entire police spectrum. He also acts as a kind of door opener for fellow police officers when it is necessary to establish personal contacts. And very often cooperates with diplomatic protocol. Personal participation in official visits of the highest government representatives of the Czech Republic. Monitoring the security situation, crime trends, collecting selected analytical and statistical data, etc. The collective of co-workers at the Embassy in Slovakia and Hungary is great, they are all experts and professionals. The Ambassador in Slovakia is currently Mr. Rudolf Jindrák and the Ambassador in Hungary is Mrs. Eva Dvořáková. Representatives of the Czech Armed Forces and the Fire Rescue Service of the Czech Republic also work at the Embassy in Bratislava. My mission as a liaison officer is for 4 years with the possibility of an extension of one year. Now I don't know what will happen in 4 maybe 5 years, but for sure, if it is necessary to use my acquired experience, I am ready to apply it further.

What are your priorities in this important position?

Flexibility, speed in solving and resolving problems, service for departments, being

successful in international police cooperation, exemplary representation of the Police of the Czech Republic and being a successful "liaison" are my priorities at the moment. The mentioned priorities are necessary to ensure conditions for our police officers on missions. Since 2015, the Czech Police has been very active in helping to protect the external borders of the countries of the South Balkans, regularly sending contingents of police officers to the borders in North Macedonia (where the FRONTEX agency has already taken over this activity) and to Hungary on the Hungarian-Serbian border, where the crucial task is the interceptions of illegal migrants and also people smugglers. In addition to Czech police officers, there are also colleagues from Austria, Slovakia and Turkey. The activity of our police officers has been evaluated very positively for a long time. In addition, of course, they also work within many other missions in the world.

I assume that you work closely with police liaison officers from other countries and also with the European institutions EUROPOL*, CEPOL and FRONTEX***. To what extent, in what areas?**

I also often meet police liaison officers from abroad accredited to the given country. We inform each other mainly about the security situation of the given state, but also of the home country, the exchange of important information works as well as cooperation. Due to the fact that Slovakia does not have its own liaison officer in the Czech Republic, I also fulfil the tasks of the liaison officer in the Czech Republic for Slovakia based on the agreement of the Ministers of the Interior of the Czech Republic and the Slovak Republic. I would like to say that cooperation with both Slovak and Hungarian colleagues has been at an excellent level for a long time. I wish the Police of the Czech Republic to be stabilized, to have enough police officers, money for operations, wages, technical equipment, and for cooperation between the Czech, Slovak and Hungarian Police to develop and be better and better.

As far as I know, the Police of the Czech Republic and the Slovak Police have similar technical equipment in many ways. As a representative of the Police of the Czech Republic, do you monitor the development of new technologies in the security industry in Slovakia?

For several years, the Czech Police has significantly improved the technical and material equipment for police officers, especially for the direct performance of their duties. During the few months of working in Slovakia, I discovered that my Slovak colleagues are not nearly as well equipped with modern equipment as the police officers in the Czech Republic. However, the new leadership of the Ministry of the Interior and the Slovak Police have clear priorities for improving this situation and are preparing major decisions to improve equipment for the Police. Mutual expert consultations are taking place and, if necessary, maximum cooperation on the part of Czech colleagues is obvious. A conference to present Czech Defence and Security Industry companies is regularly held in Slovakia, where the latest technologies are presented to Slovak partners. The material equipment of Slovak police officers is gradually improving.

Brig. gen. Milan Majer with the Minister of the Interior of the SR Matúš Šutaj Eštok (center) and director of the Office of the Border and Foreign Police (ÚHCP) col. Jozef Masnica.

Mr. General, thank you for the interview.

Jaroslav Jonák

Photo: Police of the Czech Republic and Ministry of Interior of the Slovak Republic

** **EUROPOL** is an agency whose main goal is to make Europe safer. It supports Member States in their fight against terrorism, cybercrime and other serious and organized crime. It also cooperates with a number of partner countries outside the EU and international organizations. Europol serves as a support centre for law enforcement operations and a central office for criminal information.*

*** **CEPOL** is an agency whose mission is to develop, provide and coordinate the education and training of law enforcement officers. CEPOL contributes to enhancing security in Europe by facilitating cooperation and knowledge sharing between law enforcement officers from Member States, and to some extent from outside the EU, on matters arising from EU security priorities, in particular the EU Policy Cycle for Combating against organized and serious international crime. The CEPOL Regulation established the Agency for Law Enforcement Education and Training, which is based in Budapest, Hungary.*

**** **FRONTEX** jis the European agency for the management of operational cooperation at the external borders of the member states of the European Union. Member States and Schengen States participate in the protection of the EU's external borders through activities coordinated by the Frontex agency, regardless of their geographical location and regardless of whether they themselves have an external Schengen border. This fulfils the requirement and the principle of solidarity of member states in border protection, which is anchored in Council Regulation (EC) No. 2007/2004, by which the Frontex agency was established. The border services of individual member states are involved in operational cooperation with the Frontex agency.*

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UNIQUE MODULAR SHOOTING RANGES FOR PROFESSIONAL SHOOTING TRAINING

Modular Shooting Ranges meet the high demands for training members of military, police, and other armed forces. The flexible layout, equipment, and safety of the shooting range are crucial for adequate shooting training in the 21st century. The company LEDIC MSR s. r. o., an exclusively Czech manufacturer, enters the market with its own unique solution of Modular Shooting Ranges (MSR). These sophisticated and open systems are based on connecting modules, allowing for the customization of shooting range variants to meet specific training needs and creating the ideal background for shooters. Over a year ago, this shooting range received the **PRODUCT OF THE YEAR 2022 award in the training systems category**. We asked a few questions to Mr. Valdemar Meca, the operator and managing director of Citadel Tech s. r. o., which is the exclusive distributor of LEDIC MSR for the POLICE division in the Czech Republic.

Mr. Meca, could you briefly introduce this shooting range?

First and foremost, it is a unique system designed for training with both short and long firearms in a wide range of configurations according to the needs of tactical shooting training, the type of weapons and ammunition, and the real possibilities of installing the shooting range itself. The product allows for quick commissioning (approximately 3 months) and offers universal versatility in usage. From an operational safety perspective, the system is fully certified for use in the Czech Republic and the European Union.

What makes it so unique?

Its uniqueness lies in maximum safety, ballistic resistance, hygiene, and unmatched anti-noise measures, which are undeniable advantages over regular outdoor shooting ranges. Additionally, it offers continuous year-round self-service operation. Air conditioning, ventilation, temperature control, remote management, and operational oversight ensure the highest possible comfort. A functional training base is essential for the police and military to fulfill their tasks, as they have specific requirements for shooting training and shooting range operation. The modular shooting range systems are designed specifically for them. These systems can be assembled or relocated according to specific needs and parameters. Due to their modularity, shooting range assemblies can also be further expanded or modernized. They will always meet the current and specific demands of military, police, and other

armed forces. Therefore, it is a true investment—the longevity and the ability to relocate with the user are truly unique.

You mentioned that they meet high demands. Can you make it more specific?

The concept of modular shooting ranges as enclosed structures allows you to select an appropriate model and its required ballistic resistance, shooting distance, and level of equipment. The individual module assemblies can be customized to ensure that the range meets specific requirements, particularly in terms of the type of training and associated functions, the type and power of weapons and ammunition used, the number of individuals training simultaneously, shooting distance, range capacity, choice of target system, and other equipment features.The shooting range can be delivered with an effective shooting distance of 10 to 300+ meters, for 2 to 16+ simultaneous shooters, with an adjustable shooting area for firing from a fixed or dynamic firing line, and a combined lamellar bullet trap with shot blocks or a rubber granulate bullet trap. It can also be equipped with manual or motorized target carriers with remote control, and additional equipment can be added. For example, variable target lighting intensity, Dark Mode, variable target equipment, a simulation video system for shooting with laser weapons or live fire with an additional thermal or optical hit detection system, etc. A camera system for real-time hit evaluation, including comparisons with past results, is used for training assessment.The key lies in the construction itself. These are sophisticated and open systems based on connecting modules, allowing for the customization of shooting range variants to meet specific training needs and create the most suitable background for shooters.

Mr. Meca, what about the facilities?

We offer a range of options. Shooting ranges can include non-shooting modules as well, such as administrative, training, presentation, sales, and service modules, as well as technological, secure spaces, or facilities for shooters, staff, dining, accommodation, or social events.

And what message would you like to convey to our readers or potential interested parties in a shooting range?

That it applies here more than elsewhere, "Seeing once is better than hearing three times," so we would be delighted to meet with potential interested parties at our factory test center at the Křeč Shooting Range right next to the manufacturing plant. You can book your appointment for an individual presentation and test shooting at **www.lscenter.cz**.
I would also like to add that in the field of police, military, and other armed forces, shooting ranges are supplied through exclusive distributors who are ready to provide full support to potential investors, both technically and operationally, when specifying such a major investment.
Dear sir, we also noticed the presentation of modular shooting ranges at this year's EnforceTac trade fair in Nuremberg, so I wish you and LEDIC MSR success not only domestically but also on an international scale.

Miloš Soukup thanked for the interview.
Photo: LEDIC MSR

You can find more information about LEDIC MSR modular shooting ranges at **www.ledicmsr.cz** and **www.ledictraining.cz**.

PROCOGNITIVE LIGHTING IN THE DEFENSE AND SECURITY SECTOR? ABSOLUTELY! ALL USERS AGREE.

Do your eyes sometimes hurt at work, do you feel that there is not enough light, do you feel tired, and do you need coffee often? Sure, it could be a long shift, stress or lack of rest ...or "just" bad lighting. The ability to focus, react quickly and maintain attention for long periods of time is crucial, especially in the security and defense sector. This is the reason so many organizations in this sector have already chosen Spectrasol's procognitive LED lighting.

For example, impaired vigilance really can cost a lot in a monitoring center, control room, or offices where people are engaged in demanding activities. And so more and more institutions and companies are beginning to use procognitive full-spectrum lighting in their interiors, whose properties are very close to natural light and which has an irreplaceable positive effect on users' bodies. We asked organizations from the security and defense industry which already use this solution for their practical experience. They observe not only greater visual comfort, but also a positive effect on co-ordination, fatigue and the atmosphere in the workplace.

The light-dependent brain

Perhaps you are one of those lucky individuals who are in as good a mood on a dark November day as they are on a sunny spring day. But believe me when I say that such people are rare. Light plays a key role in physical and mental health and vitality. Even though modern man spends 90 % of his time indoors and under artificial light, our body is still set to the prehistoric rhythm of sunrise and sunset, and it regulates its internal clock accordingly.

During the day, we should receive sunlight with a balanced spectrum containing all wavelengths. During the day, our alertness, performance and mood are supported by the azure spectral component of light, which, among other things, promotes the production of the hormone serotonin. Evening light without the blue component and the subsequent darkness conditions the production of melatonin, which helps us fall asleep and activates regeneration in all tissues and organs, thus also contributing to the quality of cognitive functions, acting as an antioxidant, ridding the body of dangerous free radicals, and having anti-inflammatory and anti-cancer effects and other functions.

If we came out of the cave at dawn every morning, hunted mammoths and spent our evenings around the fire chewing skins, it would work fine. But most of us spend most of the day indoors under unnatural, poor-quality lighting. We don't regenerate enough, we are notoriously sleep-deprived and tired, maintaining our concentration and thought process is increasingly difficult…

"Conventional artificial light does not respect natural biorhythms, the so-called circadian rhythms, and negatively affects our ability to regenerate, contributing to persistent fatigue," explains **Daniel Jesenský, CEO of Spectrasol**, adding: "The solution can be high-quality procognitive lighting that is as close to natural light as possible. People who work, learn, or perform any mental or physical activity in daylight or under procognitive lighting achieve better results and are more resilient to stress, among other things."

For forces and organizations that need high-performing, resilient and balanced staff and teams, the quality and characteristics of lighting offer enormous potential.

All contacted customers who use Spectrasol light agreed that they would recommend the use of a similar solution to all organizations

in the defense, security and emergency services sector, and not only to them.

The evaluation of **Jiří Hynek, President of the Defense and Security Industry Association**, speaks for all: "Procognitive lighting in our offices has an effect on the ability to concentrate, I personally feel less fatigue at work. Since I use Spectrasol at home too, I can also evaluate evening and night light: while the evening light helps you fall asleep, the night light is so dim that even if you wake up, it doesn't stimulate your brain enough to prevent you from falling asleep."

Positive experiences are also shared by **Pavel Čuda, Director of the Military Research Institute:**

"We have had opportunities to test Spectrasol solutions on a smaller scale for several years. Our experience has been so good that this year we have decided to install cognitive lighting in all areas of the Institute." According to Čuda, cognitive lighting has an impact not only on visual comfort, but also on workplace relationships. "We haven't measured it, but I myself feel that after the installation of the new type of lighting, the previously tense relations in one workplace have calmed down."

Procognitive/biodynamic lighting

Procognitive

lighting is close to natural light and stimulates the users' brain and body in a desirable, natural way. It differs from conventional artificial lighting:

- It is full-spectrum: as in daylight, all colors and wavelengths are equally represented.
- It contains a natural proportion of stimulating azure components: it contributes to the production of serotonin, which helps us to stay alert and focused during the day, speeds up reactions, and increases efficiency, speed, and quality of thought. It also significantly affects mood, motivation, and resilience in stressful situations. A lack of serotonin during the day also affects the production of melatonin, the "sleep hormone", which is produced exclusively in the dark.
- It is distributed completely evenly and thus provides the highest visual comfort
- It has almost the same biological effectiveness as the sun.
- When used over a long period of time, procognitive lighting improves sleep quality, cognitive abilities and overall physical and mental health, and relationships in teams.
- Compared to traditional light sources, procognitive LED lighting is 30-60 % more energy efficient.

Challenging work requires the right conditions

No matter how well-trained a person is, they cannot escape the long-term effects of bad light. It is even harder for people working on night shifts, which poses an enormous and unnatural burden and, according to the World Health Organization, is also a potential carcinogen. Poor sleep quality and chronic sleep debt are often responsible for a higher frequency of errors, lower concentration, and poorer ability to cope with emotional strain and stress.

"The procognitive light from Spectrasol is far more visually pleasing than previous fluorescent lights, I also feel less eye fatigue," says **Col. Jiří Pelikán, Director of the Fire and Rescue Corps of the South Moravian Region**, and adds:

"You really look forward to the office." The benefits of the Spectrasol lighting are clearly appreciated by the **Chief Executive, Col. Jiří Princ, Director of the Court Protection Department of the Prison service**: "At first, the new lighting was wholly appreciated by some of our colleagues in the surveillance workplace, as it was customary to work in an environment without lighting, especially at night. The only light source was the computer screen. Gradually, however, their opinion changed, in part with regard to the wide possibilities of changing the lighting intensity, which can be set individually. Colleagues working a twelve-hour shift, alternating between night and day, unanimously agreed that lighting has a positive effect on eye fatigue and concentration when dealing with day-to-day activities. So today the lighting is used during the day and at night, when it was previously customary to dim all lighting completely." **Col. Miroslav Kubík, Head of the Operations Centre of the General Directorate of the Customs Administration also** confirms the benefits of the procognitive solution: "Compared to fluorescent lamps, it is a bright light without flicker effect, which brings better visual comfort. Most of the year we use the lighting almost continuously."

What to prepare for

If you decide to "switch" to procognitive, full-spectrum, in short healthy light, there are several things to consider.

- **Purchase price**

  Cognitive lighting requires a higher investment than conventional lighting. However, in the long run, not only will the customer save on energy consumption, but the effects will be returned in labor costs and better worker performance. In addition, it should be mentioned that now new types of light fittings are available at up to half the price.

  "The purchase cost is higher, but the price-performance ratio is absolutely right", says **Ivo Uchytil, Sales Director of Agados,** adding: "If you feel the lighting is insufficient, I recommend it. We also appreciated the ease of replacing the existing lighting fixtures. You get used to the intensity of the light – for us it took about two weeks, but then you don't want anything else."

  In the words of Filip Engelsmann, owner of Aura, the benefit is undeniable:

  "Every time I come to the office, I turn on the lights automatically: my vision is sharper, I'm in a better mood, and it takes a lot longer before I get tired. To sum up, I look forward to the office."

- **Higher light intensity**

  Following the pattern of nature, procognitive light is more intense, and some users initially describe it as "sharper".

  "Most of the time it is because people have been working for a long time in a poorly lit environment which often does not even meet the light hygiene standards," explains **Hynek Medřický, technical director of Spectrasol**, and adds: "After a few days, most users get used to it. Alternatively, we can adjust the lights according to the specific requirements of the space and users. Another solution is a simple intensity controller that allows flexible adjustment according to individual needs and time of day. The optimum light distribution is then also

with regard to brightness caused by indirect reflection from the ceiling." A greater lighting intensity was also perceived by the employees of **the firm Kříž**, which supplies embroidery for uniforms or promotional clothing. However, after some time of use they got used to it and today they perceive the set illumination positively. "People can see better on the job, and we also appreciate the significantly higher quality color fidelity of the lighting, which is crucial for production given the nature of our products." says **Libor Kříž, owner of the firm.**

Know your supplier well

All of the respondents took the time to select the technology and the supplier. For example, **Filip Engelsmann (Aura**) was inspired by a podcast with Hynek Medřický, a promoter of procognitive lighting, and took the opportunity to test the lighting.

According to Col. Radek Horáček, head of the Operations Department, the South Moravia Regional Police Headquarters was even more thorough: "We made the decision based on the information we found on social media, references from organizations that already had the lighting installed, and last but not least, a lecture by Spectrasol."

The test results are convincing

Experiments at CTU and the National Institute of Mental Health have repeatedly demonstrated the positive effects of procognitive lighting on physical and mental function and health in a variety of environments.

- A comparison of procognitive and conventional lighting in Prague grammar schools showed that under procognitive lighting students achieve significantly better grades and results in tests of attention and memory. Moreover, late arrivals in the early morning hours and the overall sickness level decreased.
- Improvements in cognitive abilities, daytime activity and sleep quality also occurred during an experimental installation in a senior home in Beroun…

Still hesitating?

If you're still not sure whether you need cognitive lighting, perhaps a short test would help.

1. Do you spend more than 50 % of your time indoors?
2. Do you need to concentrate better at work and stay awake longer?
3. Are you sleeping badly?
4. Are you suffering from chronic fatigue and often drink coffee?
5. Do you often have tired eyes?

If you answer yes to at least two questions, the answer is obvious: YES.

Martina Kemrová

MORE THAN THIRTY YEARS OF FAMILY TRADITION

The family company DASTA has been successfully developing and producing for more than 30 years. It has been in our viewfinder for many years and we meet its representatives regularly at the IWA Trade Fair and this year also at the EnforceTac Exhibition in Nuremberg. It is mainly focused on the production of holsters for weapons and other related accessories. We went to the company and asked its Owner and Director Mr. Karel Staněk in person for a short interview.

Mr. Staněk, can you briefly describe your company's history?

DASTA was founded by Dana and Karel Staněk in 1991.
Currently, the third generation family members work in the company.
The company is engaged in the production of textile holsters for weapons, their accessories, hunting arms accessories, and sports arms accessories. The company's offer includes approximately 450 items that the company manufactures itself and that are normally in stock. This number is constantly being increased by new products, which are either requested by their business partners themselves or are included in the offer based on the decision of the company's management.

Can you briefly introduce us to your development, production and material capacities? Your portfolio is really interesting.

Materials for production are being purchased in the Czech Republic from Czech producers, and also from EU producers.
The quality of the products and their processing are the advert for the company. Due to the use of quality materials from Czech manufacturers, we have very positive feedback on our products and their quality.
The materials we use have their own technical certificates or test reports, which state, for example, strength, ductility, colourfastness, etc.
There is a large proportion of manual work in production; each product goes through the hands of several employees.
All our products are in stock and therefore immediate distribution to the customer is possible. Thanks to the large storage capacity, we can respond immediately to the demands and orders that arise.

Can you reveal your customers at home and abroad?

The most important partners undoubtedly include the Police of the Czech Republic, the Prison Service, the Customs Administration, the Municipal Police, and the City of Prague Emergency Medical Service.
You can find our products in almost every store with guns and ammunition or airsoft equipment.
DASTA trades with partners from more than 40 countries of the world, either directly or through arms manufacturers or traders who deal with this trade area in the Czech Republic.

What did you present at the EnforceTac Trade Fair and how do you evaluate this Trade Fair?

Just like every year, this year we have prepared some novelties for the Exhibition in Nuremberg, across the whole assortment of our company. This year it included, for example, pistol holsters with a flashlight, pistol holsters with a collimator, Molle plate carrier, Molle carrying belt and other equipment components. In the past, we regularly participated in the IWA Trade Fair, but due to the transfer of the product range to the EnforceTac Exhibition, we decided to exhibit here this year.

Thank you for the interview

Miloš Soukup
Photo: Author

HOW MODULAR FIELD HOSPITALS PRESERVE TROOP SURVIVABILITY

When it comes to the health of your troops, only the best is good enough. The future lies in modular all-inclusive systems for mobile medical care. Flexible and adaptable to support technology renewal, these systems ensure the best possible chance of survival without wasting valuable resources in the wrong places.

The conflict in Ukraine and for instance the earthquake in Turkey in the end of February 2023 have demonstrated the importance of functioning and mobile medical care. After all, providing medical treatment in crisis and war zones ultimately determines life and death. Today more than ever, armed forces depend on flexible and well-equipped systems that can be deployed within minutes to ensure the best possible chances of survival for their troops and to get soldiers ready to return to the battlefield. Field hospitals must meet many requirements: They must be light and small enough to be brought close to the front line, or stable enough to be dropped from a helicopter or aircraft if necessary. Modern field hospitals must be able to be transported to different locations within a very short time and have sufficient medical material in their packs. In the best-case scenario, they are also protected from possible attacks by means of attached camouflage technology or special materials that can even withstand ballistic attacks. This task requires expertise and resources that often cannot be organised by defence forces on their own.

Whereas in the past medical equipment or even tents and containers were usually ordered individually and then managed by the armed forces themselves, today more than ever there is a need for integrated solutions that are, in the best case, interoperable. Erik Jonker, Deployable Healthcare expert at Saab in the Netherlands, has been observing the changes for many years and knows: "Mobile medical care has to provide more and more, while becoming increasingly flexible and mobile. This can only succeed if you don't think in terms of individual products, but in terms of holistic systems and take all eventualities into account already in the design process." Similar to IT, the innovation cycles for medical equipment are also becoming shorter, so equipment and devices have to be renewed

and updated more frequently. The trend is therefore clearly moving in the direction of outsourcing. In recent years, the Swedish defence company Saab has specialized particularly in modular all-inclusive solutions that offer the entire spectrum of medical care from a single source: From planning and construction to the provision of all medical equipment to the entire logistics, storage and maintenance, armed forces can draw on a complete package to efficiently allocate resources.

The modular hospital

Considering civilian hospitals, the number of beds is the most important factor in planning. In military hospitals, capacity is less important than performance. Short distances ensure that patients can be cared for quickly and effectively, because the primary concern is stabilisation rather than long-term treatment. Saab offers different modules, each of which serves a different purpose. From them, mobile hospitals of any size can be installed according to need. Each station or module functions autonomously but can be combined with all other elements and is interoperable – a factor that is particularly important in Europe. "If we look at Germany, the Netherlands, France or Norway, the troops usually work exclusively in a network. Ideally, a French hospital should also be compatible with the German model. Currently, however, there are no corresponding standards." Saab has always been strongly committed to interoperability in product development and is doing the same in Deployable Healthcare (DHC). "We hope that NSPA (NATO Support and Procurement Agency) will take this factor into account even more in the future," says Erik Jonker.

The first 10 minutes are critical

Numerous military doctors are currently criticising the high mortality rate of Russian soldiers in the war in Ukraine. One of the main reasons they cite is poor first aid in the combat zone, due to inadequate first aid training of troops and delays in transporting the wounded. Time is one of the most fundamental factors for the effectiveness of medical care. There is a good reason why NATO has established the 10-1-2 timetable in a doctrine for medical treatment and evacuation. Here, extended first aid within 10 minutes of injury or the onset of acute symptoms is particularly critical. Immediate life-saving measures, such as stopping bleeding, must be available at the scene of the injury – even by non-medical military personnel. Within the first hour, the focus is then on pre-hospital emergency care by trained medical personnel. This requires field hospitals that contain appropriate medical equipment and yet are easily transportable. "NATO defines different roles for the individual field hospitals and their requirements. For emergency care, we talk about Role 1 hospitals, which are usually tent based and can be taken directly to the wounded along with the necessary medical equipment wrapped in a few backpacks with vehicles and the medical staff," says Erik Jonker. This smallest solution from Saab (FRC, Forward Resuscitation Capacity) fits into only three backpacks, each weighing 30 kilograms. One backpack contains the tent, another the medical equipment, the third medicines and bandages. Everything is packed so precisely that

it can be taken out on the spot by the paramedics in the right order. "Depending on the wound, it is then a question of whether the soldier can return to the battlefield or whether further care such as damage control surgery are necessary. These, according to NATO doctrine, should be carried out within one hour, but no later than two hours after injury." Saab also offers Role 2 and 3 field hospitals to enable advanced medical care in the area of operations, as well that Strategic Evacuation (STRATEVAC) solutions to support the transfer of critically wounded patients to Role 4 medical facilities, typically a military hospital in the home country.

For armed forces, the entire field of deployable medical care means an enormous logistical effort on top of the already huge complexity of the military mission itself. Especially when, using Ukraine for example, there is more than one front line which requires mobile hospitals to be ready for action at different locations. More than ever, it is a question of how many medical care facilities can be as mobile as possible, in order to be available at different locations within 24 to 48 hours. In addition to technical equipment, the supply of medicines, hygiene products or blood must also be considered. New concepts such as walking blood banks, where soldiers can donate blood for their fellow soldiers directly on site if needed, support medical care in the combat zone.

One-Stop-Shop

Australia currently offers a glimpse of the future. Saab is delivering one of the largest field hospital projects in the world for use by the Australian Defence Force. Under project "JP2060", 550 modules – ranging from pharmacy and intensive care units, surgical units, X-ray machines and CT scanners to hospital wards, psychiatric departments and hygiene facilities – have been ordered, providing solutions for the entire medical area, including infrastructure, water supply, showers and toilets as well as staff and recreation rooms. Saab's DHC team also handles logistics, partnering with more than 300 local defence supply chain companies and more than 70 Australian small and medium enterprises. Regardless of the mission and area of operation, this ensures the safe, effective and immediate treatment of Australian troops.

With the 550 modules, almost 30 military hospitals of various sizes can be installed. Among them are hospitals that correspond to NATO Role 3 and in which complex examinations and advanced surgical procedures are possible. The modules are stored and maintained at the purpose-built Deployable Health Capability Support Centre in Queensland, so that they can be deployed at any time from the nearby Royal Australian Air Force Base in Amberley. Saab experts there make sure that the equipment is in working order, cleaned after a mission, appropriate repairs and updates take place or equipment is replaced if necessary. "Armies today don't have the personnel or expertise to organise these logistics on their own. To deliver the Australian project, in addition to numerous engineers, we employ ten to fifteen people who deal exclusively with supply chain management," explains Amany Wahba, Sales Director Medical Solutions at Saab. For armed forces, this results in an end-to-end solution that ensures optimal medical performance.

Form follows function

Out in the field, every move has to be perfect and the set-up has to be quick. Therefore, the cooperation of medical staff and engineers is of particular importance in the design of mobile hospitals. The more mobile supply facilities have to become, the more relevant the weight of the individual elements is. "For example, we work with an American company that produces operating tables that are not only extremely light, but can also be set up in just one minute. Every minute that can be saved here potentially saves lives," explains Erik Jonker, Deployable Healthcare expert at Saab.

After all, medical care in a combat zone is also enormously important for the morale of the troops. Soldiers expect to receive the best possible medical care if they are wounded and, of course, the latest technology will be used – just as in other areas of the military. Innovation will therefore inevitably continue to increase in healthcare, as will sophisticated products and services that support medical personnel. Be it in the form of video and telephone support or intelligent bandages that continuously track soldiers' vital signs and provide important data in the event of treatment. Experts agree that the need for fully equipped field hospitals will increase. Holistic solutions provided by external suppliers contribute to the armed forces being able to focus again on their actual task – the safety of people and society.

Author: Eva Soukupová
Photo: Saab

AGADOS AND ITS INNOVATIONS

AGADOS, a traditional Czech brand that has been producing trailers since 1992, has 120 years of rich tradition in engineering production. It is one of the largest domestic trailer manufacturers and one of the largest European trailer manufacturers in the categories up to 750 kg and 3,500 kg. It stands out not only for its progressive design and construction solutions, but also for its in-house development department, which enables constant technological progress and innovation.

In line with its commitment to quality and reliability, AGADOS is proud to hold ISO 9001 and ČOS 051672 (AQAP 2110) certifications, enabling it to maintain the highest quality standards. Each product undergoes a thorough inspection process to ensure the highest standards are met. During production, the company places great emphasis on the use of quality components, ensuring high performance, durability and long product life. Perfect craftsmanship is a matter of course for AGADOS, which is reflected in customer satisfaction and trust in the brand. As a result, the company sells around 25,000 trailers a year, more than half of which are sold outside the Czech Republic.

AGADOS actively participates in important trade fairs not only in the Czech Republic, but also abroad. In 2024, the company plans to participate in several prestigious events where it will present its innovations and products. One of these events is the TechAgro fair in Brno, which is one of the most important domestic agricultural fairs. This event is an opportunity to present the latest trends in agriculture, including digital technologies, precision farming, smart farming and the use of navigation systems. The company also plans to participate in the International Defence Engineering Fair IDEB in Bratislava, where it will present its special trailers. This fair is a good opportunity to present innovations in the field of defence technology. The company is also expected to participate in other Czech events.

Military segment

Since 2014, AGADOS has been focusing on the production of special trailers designed not only for the Integrated Rescue System and the Armed Forces. These highly specialised products are an important part of the armament not only of the Czech Army, but also of several NATO member countries.

The offer includes an amphibious all-terrain trailer, which is one of the flagships of the company's military portfolio. This unique trailer is capable of traversing any surface with ease and can even cross water by floating behind a towing vehicle. Its uniqueness was confirmed by an award at the IDET International Security Technology Fair in Brno, where it was named Exhibit of the Year 2019. The company also offers a mobile field kitchen, ideal for preparing a full menu for up to 350 people. These kitchens are available in several types and their flexibility allows for efficient catering in different conditions. The AGADOS portfolio also includes mobile equipment for lighting the handling area in field conditions, a water treatment plant and a drinking water tanker, which can be used not only during natural disasters. Since 2023, AGADOS has been producing chassis for mobile diesel generators. The chassis can be fitted with any diesel generator according to the user's power requirements. It is also possible to adapt the chassis to different sizes and weights of diesel generators. The mobile diesel generator is ideal for providing power in locations where the availability of electricity is limited or non-existent. This innovation offers a wide range of applications, especially during power outages or blackouts in key operations such as airports, festivals, manufacturing plants or halls. The mobile diesel generator is easy to service, making it a suitable solution for a wide range of vehicles, whether they are SUVs, vans or trucks.

The latest special project

In the field of special projects, AGADOS offers an innovative new product: a refrigerated and freezer trailer for the transport of food, equipped with its own power generator. This innovative technology not only highlights the high quality, but also offers a low cost of ownership. In this way, the company guarantees its customers reliability and safety in the transport of food in a wide range of conditions.

PREVENTION OF FOREST FIRES, ONE OF THE PRIORITIES OF THE FIRE RESCUE SERVICE OF THE CZECH REPUBLIC (FRS CR)

Record numbers of fires in the natural environment, drought, and climate change, the Fire Rescue Service of the Czech Republic (FRS CR) reacts very intensively to this. It is necessary to emphasize that this pan-European and, without exaggeration, a global problem of the present, has become one of the priorities of the Fire Rescue Service of the Czech Republic. The Czech defence and security industry is in many areas of equipment the closest partner of the components of the integrated rescue system. In addition, summer is approaching and with it probably again extreme temperatures and drought. From this point of view, we asked several questions to maj. gen. Eng. Petr Ošlejšek, Deputy Director General of the FRS CR for IRS.

Mr. Deputy Director General, let's recall, for example, the fire in Hřensko or Greece. How do past events influence the perception of forest fires among firefighters and which areas are most focused on forest fire prevention?

One of the worst forest fires seasons was in 2022. After the devastating fire in the Bohemia Switzerland, firefighters began to change their approach to the issue of extinguishing forest fires.

Changes are reflected in the legislative area, aerial firefighting, and the introduction of new procedures in ground forest firefighting. An important part of the whole system of changes is also the area of prevention, FRS CR strives to change the legislation and regulations that will lead to the setting of fire safety rules in forests. Events since 2022 have brought clear messages that without aerial technology we are not able to cope with fires of such a scale. It clearly emerged that it is necessary to increase the volume of water delivered to the fire site in one drop, the deployment of more aerial means at the same time, to cover the same place with a larger amount of water, and last but not least, to speed up the time between individual drops. The most

tangible change occurred in the aerial firefighting service, which is key in extinguishing extensive forest fires, in the modernization of intervention technology and in firefighting tactics.

What specific changes have occurred in the aerial firefighting service? How are capacities for aerial firefighting being built? Last year, helicopters of the Police of the Czech Republic were supplemented by Black Hawk helicopters from a private operator with bambi buckets with a volume of 3,000 liters of firefighting water. Will this cooperation continue?

The basis of the aerial firefighting service are the existing capacities of Air Service of the Police of the Czech Republic. These are two Bell 412 helicopters with bambi buckets with a volume of 900 liters. The Czech Republic is striving for its own helicopters, which would provide aerial firefighting within the framework of mutual European cooperation. This interest is supported by the European Commission. Therefore, the Czech Republic, through the Ministry of the Interior-General Directorate of the FRS CR, applied for a grant to purchase helicopters. The helicopters will be included as so-called European capacity for aerial firefighting of forest fires in the territory of the Czech Republic and abroad. In December 2023, we received funding from the Union to purchase the first helicopter. The obtained grant worth more than 36 million Euros, i.e., in conversion, just under 900 million Czech crowns, is to concern the acquisition of a medium-heavy category helicopter with a water tank capacity of at least 3,000 liters. The grant would cover 100 % of the costs. The acquisition is being handled by firefighters with the Air Service of the Police of the Czech Republic and the Ministry of the Interior. Financing from European Commission grants already covered last year's rental of two Black Hawk helicopters, both of which were 75 %. Their provider was a private Slovak company that emerged from a tender. The contract was divided into two parts, one helicopter was provided by the Ministry of Agriculture, the other by the Ministry of the Environment. Both ministries have forests within their jurisdiction, for whose potential firefighting the Black Hawk helicopters were primarily intended. This year, we will continue to build aerial firefighting.

The intention of the Czech Republic is to build an aerial firefighting base on our territory. The helicopters will also be used abroad. In the Czech Republic, 6 helicopters with a capacity of at least 3,000 liters should be deployed. Of these, 3 would be paid for from Union funds – from the European Commission's rescEU program funds and the remaining 3 from the state budget. Helicopters paid from the state budget can be used for internal security needs, defense of the state or as support within NATO operations, e.g. humanitarian and rescue operations carried out by the Euro-Atlantic Disaster Response Coordination Centre. We strive to include the expenses for these helicopters as expenses incurred by the Czech Republic for defence and support of NATO forces. Helicopters purchased from European Commission funds will also be used for other rescue operations, e.g. during floods or when searching for people or during fires of industrial objects.

At present, a decision has been made to allocate a grant for 1 helicopter from European Commission funds and we are also in the process of applying for another 2 helicopters from the rescEU program. When operating helicopters, cooperation with the Air Service of the Police of the Czech Republic will continue, this intention has already been incorporated into the Concept of Development of the Air Service of the Police of the Czech Republic until 2032, which was approved by the Security Council of the State on April 12, 2023. Until new helicopters are purchased, the Czech Republic can use an annual grant from the European Commission for the rental of aerial firefighting service helicopters (so-called Transition rescEU grant). The European Commission provides 75 % of the funds spent on this service over a period of two calendar months.

What changes are planned for ground firefighting of forest fires? What are the main problems associated with extinguishing forest fires? Will ground techniques or firefighting procedures change?

Concurrently with the purchase of helicopters, there is a change in the firefighting technology and tactics used to extinguish forest fires. The use of specially developed technical means for extinguishing forest fires has proven successful. Units are gradually being equipped with special engineering tools, Backpack Fire Pumps, hoses with a narrower diameter. It is also necessary to ensure suitable personnel protective equipment. One of the biggest problems in extinguishing forest fires is the lack of water for extinguishing. Firefighters are gradually learning to use water efficiently in forest during fires in Greece and other fires. But it is also necessary to accumulate water in the landscape and in waterworks, in such a form that it can be used for extinguishing fires. The FRS CR is also equipped with flexitanks, freestanding water tanks with a volume of 54,000 liters or 36,000 liters. From the tanks, it is possible to supply fire engines or use them to fill bambi buckets. For interventions in areas that are difficult to access for firefighting equipment, hoses with a smaller diameter are used. Their advantage is better manageability in inaccessible terrain and last but not least the possibility of effectively using small volumes of water for extinguishing. The goal is also to purchase special fire engines for intervention in forest fires as well as quads with firefighting equipment. A significant problem is also the insufficient parameters and network of forest roads, especially in forests of special use, such as national parks or protected landscape areas. It is important to keep the fire in a limited area, which means building sufficiently effective fire dividing strips.

After the experiences in the Bohemian Switzerland National Park, an interdepartmental group was created, which is preparing legislative measures to increase the prevention of fires in the natural environment. What legislative changes are planned in the near future?

A so-called "small amendment" to the Fire Protection Act in relation to forest fires has been prepared and is currently going through the legislative process, as well as other conceptual materials and implementing regulations. The Fire Protection Act should newly contain an extension of the obligation of forest owners, especially about evaluating the danger of fire, measures against the spread of fire, measures for effective intervention, and the obligation to prepare documentation for fire intervention. Details should be regulated by a separate implementing regulation. The vision is that fire prevention would be approached similarly as it is for buildings or activities. That means, risks would be evaluated (character of the forest, stand, slope), based on which preventive measures would be adopted. Of course, we realize that in the case of a forest, it is a specific ecosystem that changes over time.

The basic approach is to define forest fire sections, in which fire danger would be determined. Based on the level of fire danger, the owner (administrator) would have to take individual measures that would lead to a reduction in the risk of fire. These could be, for example, making access roads accessible, creating fire dividing strips, creating water sources, etc. Distances and yields of fire water sources in forests would also be defined.

It is also necessary to implement a system of early fire detection in high-risk forests using modern means (detection systems or drones). In case of risk in the forest fire section and an increased index of fire danger (determined by the Czech Hydrometeorological Institute with regard to the specific meteorological situation), further measures would be taken, e.g. restricting entry into forest stands, informing the population, and more frequent monitoring. It is also proposed to require the preparation of forest fire documentation, which would contain risk areas from the point of view of fire occurrence and specific requirements for firefighter intervention.

The Czech Republic needs to establish fire safety in forests together with other EU countries. For example, a project funded by DG REFORM, the result of which should be a proposal for standards for fire risk assessment and the definition of appropriate preventive measures.

It is known that forest fires today are not only concentrated in southern Europe, but occur throughout Europe, from east to west. What changes and new approaches in forest fire prevention are being prepared at the international level? How is cooperation set up within the Union or in border areas?

The basic approach to improve the handling of potential forest fires in border areas is important cooperation with neighboring coun-

tries. The Czech Republic wants to find common solutions, build capacities and jointly share forces and resources and to this end, implement projects within the INTERREG program. Projects have been proposed with Slovakia and Poland. Projects are being prepared with Saxony, Bavaria and we have confirmed interest in the border area of the South Moravian Region with Austria. The aim is to build a system of measures and supplement the missing technique. The Czech Republic wants to use experience from abroad and create connectivity with other countries. Therefore, it joined with Croatia, Germany, Slovenia in the project "*Wildfire Prevention and Capacity Building in Croatia, Czech Republic, Germany and Slovenia*", which is financed by the European Commission. We are also working on building a certified module for extinguishing forest fires within the EU Civil Protection (GFFF-V).

Thank you, Mr. Deputy Director General, for this interview.

Author: Růžena Hníková,
Ministry of the Interior – Directorate General of the Fire Rescue Service of the Czech Republic
Photos: archives of DG FRS of Czech Republic

Chairman of the Administration
of State Material Reserves Dipl. Eng. Pavel Švagr, CSc.

TOWARDS MODERNIZATION

News from the Administration of State Material Reserves

The Chairman of the Administration of State Material Reserves Dipl. Eng. Pavel Švagr, CSc. recently defended his post for another five-year term and brings an up-to-date perspective on the modernization, security, and personnel challenges facing ASMR. In the interview, he focuses on innovations in food packages and strategic reservation systems, and presents his latest visions. We will look at the news from the Administration of State Material Reserves, where the Chairman will tell us how the office is preparing for future plans and challenges.

Food packages for the Armed Forces are a novelty in the State Material Reserves. Who exactly are these intended for and what do they include?

Yes, it's right. Packages are meant to be used where needed. So they are not intended only for the Armed Forces, but can also be used, for example, by IRS units if necessary. When the units of the Integrated Rescue System are deployed, for example, in actions such as extinguishing large forest fires or liquidations of the consequences after a tornado, then these packages can be taken from the warehouse and given to them immediately. The key is that this increases the food security of the Czech Republic.

We tendered food packages within our dynamic purchasing system, where 3 companies were registered, and only one of them submitted the final offer.

In total, we bought 20,000 daily doses for just less than 24 million CZK. The company should deliver them by the end of May and they will be stored in our warehouse. The Armed Forces will be consuming them during their exercises and then we will buy new ones to keep the reserves fresh. This means that no stock goes to waste.

As for the content of the packages, each daily dose consists of three packages – breakfast, lunch, and dinner. The contents of the packages also include, for example, a flameless heater, various types of canned meat and tea, sugar, chocolate, or an instant drink. They should give consumers energy for the whole day. Deliveries are being approved by GQA (Government Quality Assurance Authority).

In addition to the basic packages, there will also be additional ones in stock – for Air Force Units and paratroopers. There are also energy gels, protein bars, dried meat or grape sugar.

Food seems to be a major topic for ASMR right now. Among other things, the so-called reservation system has been approved. How will it work?

It would work in such a way that the company that offers the lowest reservation fee for precisely defined goods, for example – food of a precisely given quality, wins the contract. We will then pay this company a price for the reservation, which will be lower than if we bought the reserves directly into our ownership. The savings here are clear.

At the moment we have food for 1.5 days, which is roughly 15 million doses. Thanks to the reservation system, we would clearly strengthen food security. And while in a crisis we would get part of the food from warehouses, at the same time other supplies would be produced by food companies. (Specifically, we have pasta, meat, cheese,

grain, powdered milk, pasties, sugar, salt – simply basic food).
The reservation system will also be available for other commodities. We are currently negotiating with the Ministry of Health of the Czech Republic about the fact that the reservation system could be used for certain groups of medicines for which there are frequent supply shortages on the market.

What is your vision for the future? What challenges await you?

For example, it will be necessary to resolve the replacement of Russian oil, which we have in emergency supplies, with another type of oil - one that can be stored for a long time, but also processed in our refineries. At the same time, given the security situation, I also expect that we will change, supplement, expand and fundamentally modernize the ASMR portfolio. I would also like to come up with a new law on ASMR, in connection with the crisis legislation currently being prepared. Changes will also take place directly in the office, as digitization will continue, we need to look at process management with the aim of reducing administration, and also significantly increasing our flexibility. ASMR also deserves modern warehousing capacities that match the demands and logistics of the 21st century. All of this also requires a high-quality and passionate team of coworkers. We are currently in a situation where many good clerks, workers from our warehouses are retiring or looking for new job opportunities with a higher salary. So this area will also need to be solved. There are indeed many challenges ahead of me.

Mr. Chairman, congratulations on your re-election and thank you for the interview.

Adriana Jesenská

Photo: Archive of ASMR

Nexter qualifies the new SHARD 120mm APFSDS tank ammunition

- Nexter, company of KNDS achieved late 2023 the qualification of its new generation 120mm APFSDS ammunition SHARD.
- SHARD is the solution for all NATO 120mm tanks to defeat modern MBT and future threats thanks to increased firepower (+15 % penetration).
- This unprecedented performance is the result of an innovative design that offers excellent accuracy and reduces barrel wear by 25 % at the same time.

A leap-ahead in performance

SHARD was designed by KNDS to bring 120mm APFSDS tungsten alloy ammunition to the next level of performance against all modern MBT and armoured threats in the present and future battlefields. Its capacities are unprecedented for this kind of ammunition:

- Penetration is increased by 15 % while ensuring a low level of dispersion.
- Barrel wear is reduced by 25 % reducing maintenance cycles and costs.
- A muzzle velocity of 1720 m/s with the Leclerc L52 gun and 1734 m/s with the Leopard 2 L55 gun

Our historical know-how in the design of state-of-the-art tank ammunition was gathered to make SHARD with:

- A numerically optimized design and a lighter aluminum sabot.
- An elongated penetrator in a new high-performance tungsten alloy has been designed with Plansee to defeat protection of latest generation MBTs.
- A proven and REACH compliant propulsion system that ensures the excellent velocity of the ammunition.

An ammunition already available for all NATO tanks

SHARD is a fully ITAR-free solution compatible with all NATO smoothbore 120mm tanks including Leclerc, Leopard 2, M1 Abrams, Ariete and Centauro 2. It has been designed according to the Stanag 4583 and Interface Control Document 120 (ICD120) standards.
Thus, it offers significant operational, logistic and economic advantages to users: only one APFSDS ammunition for all gun systems.
A demonstration for Leclerc and Leopard 2 users was organized late 2023 in Alcochete, Portugal. Its 15 % performance increase was demonstrated with successful firing tests performed on semi-infinite RHA targets. Demonstrations and contract negotiations for various countries in Europe, Middle-East and Asia are ongoing.

155mm ammunition by STV Group (Photo by STV Group)

Celospalitelné hnací náplně EXPLOSIA a.s. (foto EXPLOSIA)

THE ACHILLES HEEL OF THE WESTERN DEFENCE DURING A GREAT WAR

Russian aggression against Ukraine has become a big security wake-up call for the North Atlantic Alliance and the European Union. The last illusions about eternal peace and the end of history after the end of the Cold War fell, and the harsh reality of great power rivalry in a changing world was exposed. According to the Supreme Commander of the NATO Forces in Europe, General Christopher Cavoli, the extent of the War in Ukraine is unimaginable and has completely exceeded the alliance's imagination. It is not just about the extent and course of the largest conventional conflict in Europe since the end of World War II. but also about the volume of the Western aid to Ukraine. Data from the Institute of the World Economy in Kiel also speak for it.

From the beginning of Russian aggression in February 2022 to January 2024, the total amount reached 380 billion USD, including 118 billion USD in direct military aid from individual countries. Now, almost 61 billion USD will be added to this, finally approved after months of delays by the House of Representatives of the US Congress.

Ukraine received a large number of tanks, infantry fighting vehicles, cannons, and sophisticated weapon systems. Mainly in Eastern Europe, arsenals with older equipment of Soviet provenance were cleaned; unnecessary weapons worth 6.2 billion CZK went from the Czech Republic to Ukraine.

At the same time, however, it cannot be overlooked that the War also exposed many military deficits and bottlenecks in the defence of the West.

After two years of the War, many European countries are facing a shortage of weapons and ammunition. The Defence Industry across Europe has not yet recovered from the era of "Afghanization" of armies when the production of conventional heavy weapons was deemed inefficient. Replenishment of weapon arsenals is so complicated.

France has less than 90 heavy guns, and Denmark has neither heavy artillery nor air defence systems. The German Armed Forces has ammunition for two days of fighting. And Great Britain has only 150 tanks able to fight, Germany disposes of two hundred tanks, half of which are combat-ready. And the industry produces three tanks a month.

The situation with the production of artillery ammunition is particularly alarming, which was clearly shown in the confrontation with the real situation on the Ukrainian battlefield. Ukrainian President Volodymyr Zelensky admitted at the beginning of April that Russian artillery outgunned Ukrainian artillery by a ratio of 10:1. At the same time, Ukrainian officials said that even if Ukraine will now receive additional US military aid and the gap with the Russians will be significantly reduced, it will not disappear completely. In this context, it is appropriate to mention the words of the former commander of the Ukrainian Armed Forces, General Valery Zaluzhny: for Kyiv to think about restoring the country's territorial integrity, it needs 17 million artillery shells.

So what´s at stake? This year, Russia increased its military budget by 68 %, and defence spending is expected to reach nearly seven percent of GDP. According to data from the Estonian Ministry of Defence, Russian produc-

tion of artillery shells will reach 4.5 million pieces this year. Hundreds of thousands more may arrive from North Korea.

And how is the West doing? The European arms industry still produces only 50,000 pieces of ammunition per month, the entire production does not go only to Ukraine, it is also necessary to create minimal stocks for the Armed Forces of NATO countries. The EU's promise to supply Ukraine with one million units by March 2024 has only been fulfilled in one third; the rest should arrive by the end of the year.

The Czech initiative to procure ammunition from non-EU countries, in which 20 allied countries have joined and financially support it, could also help to bridge the deficit. But it turns out that achieving the declared goal of one million pieces of ammunition may not be easy at all. There are many problems with negotiation, financing and transportation.

West, respectively Ukraine, mainly needs a systemic solution to the problem. In October last year, the European Union launched a program to support the increase in ammunition production, covered by 500 million EUR. Europe should then produce 1.25 million pieces of ammunition per year, but it will not happen immediately. Production of 155 mm artillery shells in the US is also increasing rapidly, however, 1.2 million pieces will not be produced until 2025. It is therefore a race against time, and the (in)sufficiency of ammunition can greatly affect the result of the War.

The problem with ammunition thus mainly requires a systemic solution. The EU wants to increase the production of ammunition up to 1.25 million pieces in the coming years. The Czech Republic and Slovakia can contribute significantly to this. STV Group, as its only producer in the Czech Republic, has increased its production tenfold over the past two years. The Slovak MSM Group, which is part of the multinational holding Czechoslovak Group, will also increase production by one hundred percent. In the volume of production of artillery shells and other ammunition, it ranks with Rheinmetall, the French conglomerate Nexter, or the Swedish factory of Nammo.

120 mm tank ammunition by the Slovak company MSM Group (Photo by Mr. Soukup)


New 120mm SHARD ammunition for Leopard 2 tanks (Photo by Mr. Soukup)

In addition, CSG is also building its own production facilities for the components needed to manufacture ammunition.

However, it is impossible not to see one paradox: increasing production and investment not only in the case of ammunition is hampered by the restrictive policy of banks in the Czech Republic on financing the Defence Industry. Many banks and investment companies consider it "non-green" and unpromising, which limits its credit possibilities. It is a completely unacceptable and at the same time absurd situation - as if the banking sector does not take into account the depth and consequences of a significant deterioration of the security situation, which, after all, can also affect the banking business and its prosperity. It is completely contrary to the policy of the European Commission, which now declares ensuring the defence and security of the Union as one of its key priorities. But on the other hand, the European Investment Bank, whose members and shareholders are EU member states, still adheres to the approach that the defence industry is difficult to finance, which of course sets a bad example for commercial banks.

The Czech government must also intensively attend to the problem. The Czech Minister of Defence Mrs. Jana Černochová is already engaged in solving this problem at the all-European level in cooperation with the Czech Minister of Finance Mr. Zbyňek Stanjura, even though enforcing the necessary changes is and will clearly not be easy.

Miloš Balabán
Chairman of the Prague Security Conference

SHIELD EUROPE PARTNERSHIP

The security situation in Europe has changed in 2022. After Russia invaded Ukraine, we witnessed a large-scale conventional conflict on the EU borders. In response to Russia's aggression, the EU expanded sanctions against the Russian Federation and Belarus, which became the largest sanctions regimes in terms of the range of sectors and entities that have been affected.

A prominent place in the sanction packages are bans on the export of goods and technology of a strategic nature, i.e., dual-use goods and military equipment that can be misused for military purposes, possible production of weapons as well as intimidation. Customs authorities, as the main authority for the control of goods at the EU's external borders, play a key role in enforcing sanctions related to such trade.

Although the impact of sanctions can be analysed from different aspects, sanctions remain one of the most important EU responses to Russian aggression and are a real complication to the Kremlin war effort. Any missile or drone that cannot be produced because of sanctions, every aircraft that can't be repaired and every tank that cannot be upgraded as a result of sanctions, means a real weakening of the Russian aggression and saves the lives of Ukrainian soldiers and civilians.

Czech Customs Administration deals with the issue of sanctions and control of trade in sensitive goods for a long time. Since the invasion of Crimea in 2014, illegal exports of goods to the Russian Federation have been checked and the preparation of a system has been under way at national and EU level to allow better coordination and cooperation between all parties involved. Since 2022, efforts have been made to circumvent sanctions imposed in connection with the Russian-Ukrainian conflict are continuously on the rise as well as efforts to find other countries as channels for the distribution of goods. There have also been made seizures of goods going directly to the Russian Federation.

Strengthening customs capacity and cooperation and other competent authorities in the fight against illegal trade in goods of strategic nature was also one of the main priorities of the Czech Presidency in the EU Council in the customs area. One of the concrete outcomes of this initiative is the creation of an EU network of enforcement experts dealing with strategic trade controls and investigations in strategic commodities. Czechia was the first one taking the lead at the end of 2023.

The main purpose of this expert network is to facilitate the exchange of experience and information between competent EU authorities in order to improve the effectiveness of sanctions in the EU and to detect organised groups involved in illegal transport of sensitive goods into unauthorised hands. Members of these groups encourage legitimate traders and manufacturers in the EU to violate export rules or turning a blind eye to the real user of the goods in exchange for profit. They conduct these activities and operations from abroad, disguised as middlemen to reduce the risk of being caught. Common manufacturers and retailers expose themselves to possible reputation damage, termi-

nation of contracts or even sanctions and penalties from state authorities.

Therefore, the Czech Customs Administration launched during the Czech Presidency an awareness-raising initiative called "Protect Europe Together" (Shield Europe Partnership), which was created thanks to the experience of the of the US Homeland Security Investigations based on similar project called Project Shield America.

The Czech Initiative offers cooperation with business public and academic institutions that are dealing with the development and export of dual use goods.

The goal is to help them to protect European goods and technologies of a strategic nature from possible misuse by foreign powers for military purposes.

The Czech Customs Administration is a partner helping companies to better identify, detect and address attempts to send their goods into countries, where they will be used against the interests of Czechia and to threaten our security and geopolitical EU strength.

What is the initiative Protect Europe Together all about? Trained customs officers meet with representatives of manufacturers and traders, inform them about the applicable national and European export control standards and sanctions, and at the same time advise their staff on how they can identify, when their technology is of interest suspicious persons who could be misusing the goods. Recommendations are made to the companies, what measures to introduce into their process and assistance is offered in case of identified suspected illegal activity.

The whole initiative is aimed at greater cooperation between traders, who needs to be dealing with the sanctions, bans and restrictions and the customs officials who enforce them.

Our goal is the same which is to prevent harmful consequences for society and to protect our companies and products from being abused. Both parties can thus benefit from the partnership. Companies have a partner whom they can contact in case of any doubts and customs officers can more easily see the market situation, challenges the companies are facing and loopholes in the system.

The Shield Europe Partnership project was designed as a wide European initiative.

The Shield Europe Partnership project was designed as a wide European initiative. In order to achieve its objective of helping to secure European security, the Customs Administration will use the recently established expert network and invite other EU Member States to join in and also to get involved other relevant state institutions. More information about the project can be found at the Customs pages under the Protect Europe Together (celnisprava.cz).

CONTINUOUS DEVELOPMENT AND INNOVATION

Since its founding decades ago, OPTOKON has aimed to be a pioneer in the field of optical communications. A commitment to continuous innovation and development is the foundation of our success and motivates us to reach new heights.

In our company, continuous development is an integral part of our daily work. In this way, we respond to dynamic market needs and deliver innovative solutions that truly bring value to our customers. A key element of our success is our ability to monitor and to anticipate trends in optical communications, which is why we continually invest in research and development. We work with leading experts and institutions to gather the latest knowledge and use it to create innovative products.

But our development doesn't end with the launch of a new product. We are committed to continuously improving our existing products and services based on feedback from our customers. We actively seek ways to better tailor our products to their needs and expectations. Sustainability is another important aspect of our continuous development. We strive to minimize negative environmental impacts at every step of new product development by introducing environmentally friendly materials and manufacturing processes.

In addition to the above-mentioned measures aimed at continuous development and innovation, we have decided to take a further step to strengthen our ability to develop and manufacture independently, which includes investing in a 3D printer dedicated to printing metallic materials, which will allow us to gain greater control over our production processes and reduce our dependence on external suppliers. This move will make us more flexible and responsive to market needs and our own innovative requirements. By investing in this metal 3D printing technology, we will gain the ability to develop and manufacture new products more quickly and improve existing manufacturing processes.

OPTOKON Elektronik State-of-the-Art Intercom System

OPTOKON Elektronik intercom system is tailored specifically for military ground vehicles. The system sets the standard for reliable and secure voice communication in operational environments, ensuring seamless coordination among onboard personnel and external units. At the heart of the system lies a robust electronic infrastructure built to military standards. Designed to withstand the rigors of combat situations, the system provides a lifeline of communication for military personnel operating in ground vehicles. Whether navigating through hostile territories or executing strategic manoeuvres, it ensures clear and uninterrupted communication under the most demanding conditions.

One of the key features of the system is its ability to facilitate communication within the vehicle through wired connections using microphone-equipped wearable headsets. This allows for efficient and discreet communication among crew members, enhancing situational awareness and coordination. Additionally, the system enables seamless

In addition to meeting military standards, the intercom offers a range of advanced functionalities to meet the diverse needs of military operations.
These include:

- Enables seamless voice communication with digital clarity, ensuring effective communication even in noisy environments.
- The ability to converse with all users simultaneously enhances operational efficiency and situational awareness.
- With support for up to 12 independent units, the system accommodates the communication needs of diverse military operations.
- Features noise-cancelling microphones, reducing ambient noise to ensure clear communication during critical missions.
- Designed to integrate seamlessly with military gear, including steel helmets, vests, and CBRN masks, ensuring compatibility with standard-issue equipment.

communication with external units via two vehicle radios, extending the reach of communication beyond the confines of the vehicle.

It is meticulously engineered to meet the stringent requirements of military standards, including MIL-STD-461, MIL-STD-1275, and MIL-STD-810F. These standards ensure that the system is equipped with robust electrical protections, including reverse polarity protection, high voltage protection, and static load protection. By adhering to these standards, we guarantee the reliability and durability of the Intercom system in the most challenging operational environments.

Furthermore, the system incorporates cutting-edge Bone Conduction Communication technology, revolutionizing communication in noisy environments such as inside vehicles. Unlike conventional headphones, the system utilizes bone conduction to transmit sounds, providing clear and reliable communication even in the midst of conflicts.

LMSP

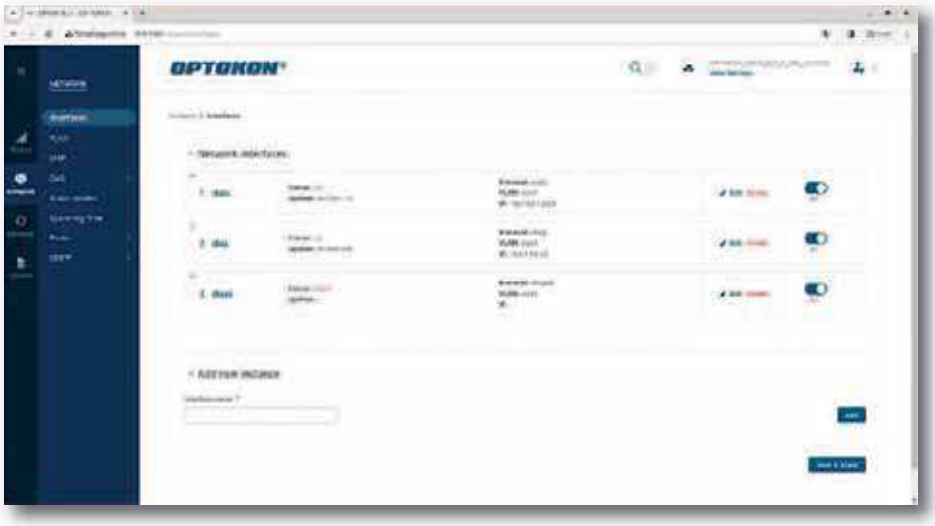
The Lightweight Portable and Intelligent Rugged MIL-STD-461E Computer, also known as the LMSP. This cutting-edge system is designed with a robust display, tailored specifically for diverse military environments such as naval ships and infantry applications.

With seamless integration onto various platforms, the LMSP boasts specifications that cater to the unique needs of each branch of the armed forces. Versatility is key with the LMSP, as it can be easily mounted, enabling portable operations in any scenario. Equipped with a daylong battery, the tablet meets the demands of multiple mission profiles in different Military vehicle platforms or NAVY applications. Its ability to run on Windows and Linux platforms offers flexibility, ensuring compatibility with a range of military software controls and providing a long service life. Designed for use in embedded machine vision battery-powered appliances, the LMSP tablet computer delivers all-day battery life, making it an indispensable tool for military operations.

LMSW-82T

The OPTOKON® LMSW-82T ruggedized switch extends switching capabilities to mobile and embedded networks that operate in extreme environments. The flexible, compact form factor of the switch, provides highly secure data, voice, and video communications to stationary and mobile network nodes, making it ideal for use in harsh environmental conditions. 1G fibre optic ports are terminated with HMA "Expanded Beam" connectors, which allows interconnection of the nodes of tactical network by the help of cables with optical fibres. The used "Expanded Beam" technology preservers all advantages of signals transmission through the optical lines in field harsh environmental conditions.

The switch supports a variety of management functions, including Web UI, MIB, SmartPort, SNMP, syslog, DHCP server, SPAN session The switch is able to fit all the common 24 V DC power systems. The switch operates in wide operating temperature range -40 to +70°C. The switch can operate as standalone device or in addition the 19" brackets allow switch installation into 19" rack. Two switches can be connected on the side and mounted in a 19" rack.



The switch not only extends switching capabilities to mobile and embedded networks in extreme environments but also incorporates L2/L3 functionality, surpassing the standard L2 capabilities. Additionally, the switch features our proprietary software, showcased in the screenshots below, enhancing its performance and management capabilities for seamless data, voice, and video communications in harsh environmental conditions.

Protect Parts

protective solutions

Company Profile

Protect Parts, s.r.o., is a purely Czech company with the ambition to become a leader in the trade in steel products (plates or semi-finished products) intended for the military and special production, ensuring the required level of ballistic protection of the final products.

To fulfill these ambitions and goals, the Protect Parts closely cooperates with the key armour European manufacturers, as well as with the authorized research & testing institutes focused on research and testing of armor materials. Due to the nature of our activities, the company possesses authorization for military goods and dual-use material trading.

Company Product Portfolio

– Plates intended for production of military equipment, facilities and infrastructure
– Plates intended for production of special parts and parts of infrastructure for other security forces (i.e. shooting ranges, special training facilities), but also for the civil sector (banks, etc.)
– Semi-finished products and complete assemblies (cut, edged, twisted parts & workpieces) for the above-mentioned projects, made according to the obtained customers drawings

Type Of Activity

– Purchase & sale of plates with a focus on various types of armor from the world's major manufacturers
– Fabrication of semi-finished products (cut, edged and twisted parts & workpieces) according to the obtained drawings
– Cooperation with authorized research & testing institutes
– Expert consulting in the phase of prototyping as well as in the phase of serial production

Territorial Focus

In addition to the Czech Republic, also customers from Central & Eastern European countries (both, EU and Non-EU members).

Armored metal plates

The ballistic-resistant plates are the strong items of our product portfolio. They can be used in the military and civilian sectors.

Our Options

In stock armor plates from the world's leading producers

Production of semi-finished parts
– parts for the military and the civilian sector

Production possibilities
– cut parts – laser / 3D plasma
– edged & twisted parts
– drilled, milled & grinded parts

Delivery of complete sets

protectparts.cz/en

ARMOX

SSAB

ARMOX 370
ARMOX 440
ARMOX 500
ARMOX 600

RAMOR

SSAB

RAMOR 450
RAMOR 500
RAMOR 550
RAMOR 600

DIFENDER

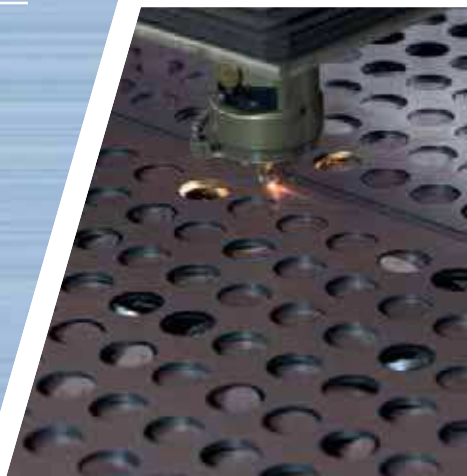
DILLINGER

DIFENDER 400
DIFENDER 450
DIFENDER 500
DIFENDER 600

MARS

INDUSTEEL

MARS 380
MARS 440
MARS 500
MARS 600
MARS 650
MARS 650 Perforated



35 YEARS OF AURA IN MILITARY LOGISTICS

Current armed conflicts around the world, and especially the Russian aggression in Ukraine, clearly highlight the priority role of logistical support in conducting military operations. Currently, the Czech government and the command of the Armed Forces of the Czech Republic, as well as the logistical structures of the North Atlantic Alliance, are paying extraordinary attention to the area of military logistics. However, this has not always been the case, which has often been felt by AURA in its activities. The company has been involved in information systems for supporting military logistics since the 1990s. It is increasingly finding its way abroad, which is why it is currently the largest Czech exporter of information systems for military logistics. Its codification software MC CATALOGUE has even become the most widely used information system for supporting NATO codification worldwide.

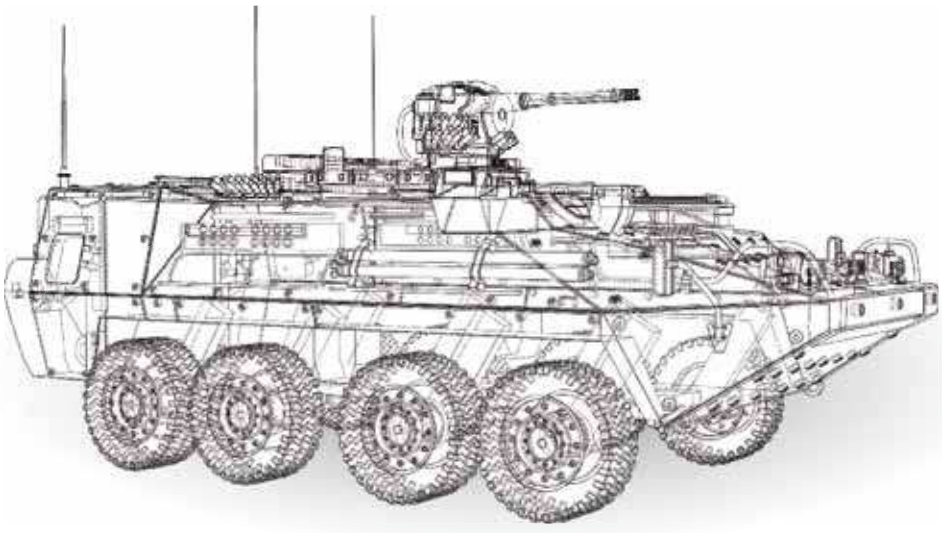
Logistics information support by AURA

AURA has been collaborating with the Ministry of Defence and the Armed Forces of the Czech Republic for a very long time and has a very good understanding of their needs. The company's management believes that the new "Concept of the Czech Armed Forces Development by 2035" is not particularly groundbreaking in terms of logistics content compared to the past, except for the clear proclamation of its priority. From other available documents, it can be seen that the logical basis for resource planning is the provision and monitoring of the life cycle of the equipment in use. The extent of the use of weapons, equipment and technology is properly planned on the basis of the establishment of training tasks and the fulfilment of allied commitments. This is also related to the need for planning spare parts, ammunition, etc., which essentially represents requirements for necessary stocks. These are similar processes of managing material resources as in larger civilian organizations. However, the armed forces differ in the nature of their activities, specific material, high level of protection of information, whether about sensitive material, its quantity, location or storage and use. They also differ in their goal, which is not profit generation like in commercial entities, but rather ensuring the defence of the state.

AURA was fortunate to be close to the significant transformation of the Armed Forces of the Czech Republic when various material and armament administrations were integrated into one unified armed forces logistics system. Together with a foreign partner and armed forces experts, AURA contributed to the unification of logistics asset management processes. Across organisational structures of the Ministry of Defence and the Armed Forces of the Czech Republic, as well as across all types of troops. It should be emphasised that the driving force behind these significant changes was the accession to the North Atlantic Alliance and the fulfilment of the conditions for the implementation of various NATO standards in Czech conditions.

MC CATALOGUE – key integration aspect

Today, perhaps no one doubts that the key integration aspect is the application of principles of uniform identification and codification of materiel according to the NATO Codification System standards. Both within the narrower scope of the Ministry of Defence and the Armed Forces of the Czech Republic, and in the broader context of full cooperation among NATO member countries and partner countries, for example in the Partnership for Peace or the Mediterranean Dialogue. AURA makes a significant contribution in this area with its internationally acclaimed information system, MC CATALOGUE, which is currently the most widely used software for codification support in the world. It is used by 20 countries across five continents. Current experience and international insights indicate that the identification of assets according to the NATO Codification System standards should be applied across all defence sectors and also within the State Material Reserves



Administration, as stipulated by Czech law no. 309/2000 Coll., on defence standardization, cataloguing, and state quality assurance of products and services intended for state defence. This is also confirmed by the knowledge and experience from the war in Ukraine. For this reason, in recent years, AURA has been intensively working on the new WEB-KAT codification software for the Ministry of Defence, which is based on MC CATALOGUE and which has been adapted for the codification of products intended for state defence as well as for other users outside the defence sector.

Logistics information system

Logistics in general includes, in addition to the actual material, a whole spectrum of processes and activities that often fail to be integrated in both civilian and military organisations. Information support plays a significant role in this effort. Today's logistics of the Armed Forces of the Czech Republic is supported at all levels of command and control by the Logistics Information System developed by AURA. Responsible officials have access to up-to-date information and can make responsible decisions or conduct necessary analyses. Within its range of functionalities, the Logistics Information System naturally covers the issue of inventory, both in terms of inventory classification and in monitoring qualitative and quantitative parameters. It supports the monitoring of key aspects of the material and technique life cycle. The system has been and is being tested in practice both at stationary and mobile command posts. Primarily due to technological advancements, AURA is carefully preparing to apply new trends and current challenges, which will enhance the interoperability among NATO member countries, integration with command and control systems, and integration within crisis management at the national level.

Project Publi and the defence industry

Perhaps everyone has already accepted the fact that digitalisation is inevitable for all levels of communication. AURA has embarked on this by supporting the Publi platform of the company Code Creator, in which it has entered as an investor. A separate chapter of the support of information systems for military logistics is the library aobp.publi.cz. It has become part of the support of business activities of companies through the Defence and Security Industry Association (DSIA) of the Czech Republic. It is another form of support for Czech companies, not only in the Czech Republic but also abroad. From promotion and information sharing AURA hopes to further expand both start-ups, as well as established successful brands. Gradually, the DSIA library has been filled with useful, particularly marketing logistics materials from the more active DSIA members, making it simple and centrally accessible to deliver sought-after materials to customers. Most of these are classic PDF format, but the mobile customer requires a responsive layout and convenient access to information. This still needs to be worked on, but in collaboration with other companies.

Ease of access to documents is one of the basic features of Publi. Still improving and simplifying its functionalities, so that customers can access documents through the app for any system in a unified format. Consequently, they don't have to install programs on computers, click through websites and search for the right link in their e-mail. They simply launch the app, click on the cover and read. Moreover, they can download the document on a fast network and read it later in offline mode.

Thanks to four years of collaborative effort to develop and promote the platform, Publi is gradually becoming a useful tool in both corporate environments and government administration. An interesting project is, for example, the publication of the Ministry of Foreign Affairs' Opportunity Map in the DSIA library. The electronic version reached multiple times more users compared to the traditional printed format. There have also been a significant reduction in financial costs for the document production and distribution, and last but not least, a reduction in the carbon footprint due to the digitisation and electronic processing.

Conclusion

AURA will continue to find its application in the field of information support for military logistics. This decision was made by its management several years ago, before the covid pandemic, the energy crisis and Russia's invasion of Ukraine. The foresight and correctness of their decision are evident in the current conflict development worldwide. It is clear that military logistics has come to the forefront not only of military theory, but it is also strongly supported in practice. And this is where AURA firmly holds its place both domestically and, most importantly, internationally with its own global information systems.

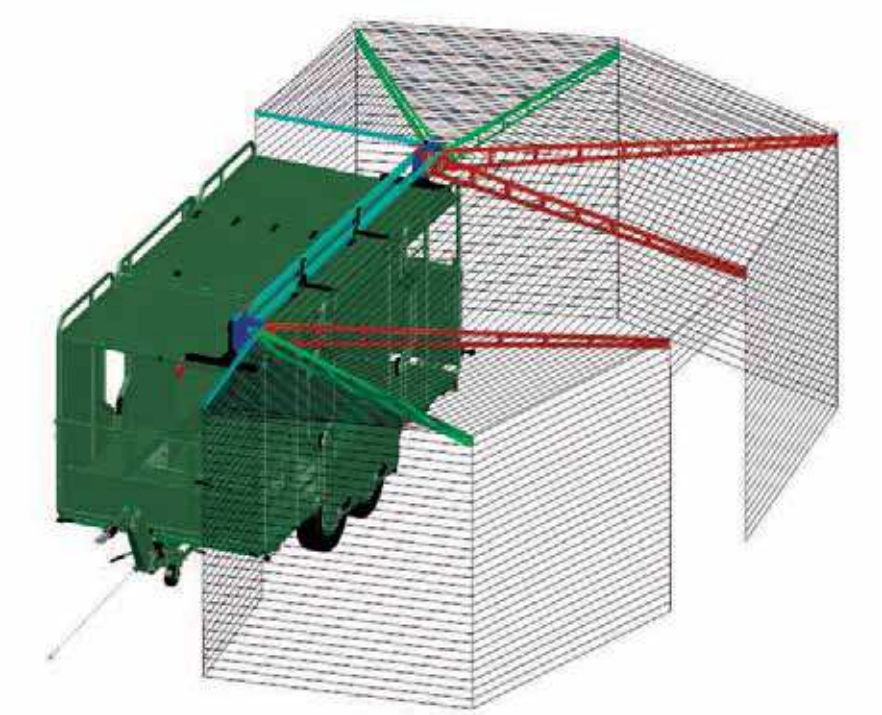
Author: Antonín Svěrák & coll.
Photo: AURA archive

RESCUE TRAILER

COMMAND POST

APPLICATION AREAS:

- Support during emergency situations
- Team coordination directly at the site
- Command and information base



PROVIDES:

- Mobile base on a chassis
- Short-term and long-term use
- Communication technologies
- Satellite/GSM internet
- IP touch screens
- Telescopic mast for technological equipment
- Air conditioning/heating
- Optional levels of ballistic protection
- Lighting mast
- Teleconferencing video system
- Thermal and laser cameras (PAN/TILT)
- 45 m^2 foldable roof
- Power sources for continuous operation: solar panels – traction battery – generator – methanol cells

FORWARD OPERATING BASE

APPLICATION AREAS:

- Treatment of a large number of people
- Mass traffic accidents
- Natural disasters
- Mobile hospital

PROVIDES:

- Mobile medical workstation
- Expanded logistical capabilities
- Quick establishment of a base camp
- Mobility – rapid relocation by personal and cargo vehicles
- ALL-IN-ONE solution – energy independence, inflatable tents, medical supplies, disinfection station
- 45 m^2 foldable roof with optional side closures
- Heating/cooling options
- 230V, 12V, and USB outlets, traction battery + generator
- Off-road capability – 33" tires, 700mm ground clearance
- Cost-effective logistical solution with long lifespan
- Comfortable and safe transport of injured individuals
- Transport of a large number of people from hazardous areas

FORENSIC TRAILER

For conducting diving operations to locate, document, and retrieve objects.
The configuration is designed to support the activities of 5 divers, including communication capabilities for live video transmission.
The roof can support a load of up to 800 kg.

TRAILER FOR PYROTECHNICIANS

Meets ballistic protection requirements for the removal and transport of hazardous munitions.
Includes communication technologies and a robot designed for initial reconnaissance.

UNMANNED AERIAL VEHICLES (UAVS) IN THE EUROPEAN MARKET: ROLE AND APPLICATIONS

In the world of constant technological advancement, the choice between specialized UAVs and universal platforms becomes a key element. In connection with the rapid development of military technologies, the demand for efficient and flexible solutions for military operations in the European market is becoming particularly important.

The role of unmanned aerial vehicles in military operations is increasingly important, especially in ensuring reliable communication and support on the battlefield. The possibility of using a UAV as a repeater expands the possibilities for information transmission and communication even in difficult conditions. A UAV in repeater mode can secure data transmission between remote locations where communication with ground stations is problematic or impossible. One example of innovative solutions in the UAVs market is the "SPARROW" by UAVSAVE.

SPARROW has several configuration options that allow adapting it to different tasks on the battlefield. SPARROW can play different roles and perform the following functions:

1. **Scout:** Photo and video data collection and its transmission without transmission
3. **Observer:** Assistance when aiming artillery fire
4. **Repeater:** Establishing communication within the MESH network
5. **Electronic warfare:** Detection of radio-electronic devices
6. **Carrier:** Cargo transportation
7. **False target:** A deceptive target

Such versatility allows SPARROW to successfully carry out various advantages of quick task preparation and simple setup options to control UAVs without smartphones or tablets; SPARROW represents a significant solution for the European market.

The UAV industry continues to evolve and attract attention to innovative solutions like UAVSAVE's SPARROW. These technologies are becoming a key element in ensuring the effectiveness and reliability of military operations, emphasizing the importance of adaptability and flexibility in modern military strategy.

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Vojenský výzkumný ústav, s. p.

CURRENT CHALLENGES OF PROTECTION AGAINST WEAPONS OF MASS DESTRUCTION IN THE AREA OF DECONTAMINATION OF EQUIPMENT AND PERSONNEL.

"The right technology, at the right time, in the right place and at the right cost."[1)]

The field of decontamination is an important and integral part of the system of measures to reduce the consequences and increase the protection of the Armed Forces, the population, and potentially affected territories when weapons of mass destruction (WMD) are employed. NATO defines weapons of mass destruction as any weapon or weapon system using CBRN materials capable of causing widespread devastation and loss of life. ‚CBRN materials' means any chemical, biological, radiological or nuclear substance that may pose a danger to armed forces, populations and territories, regardless of origin or whether the CBRN material was originally designed as a weapon.[2)]

In modern warfare, there will be significant changes in the concepts and methods of carrying out decontamination operations in the Armed Forces. The concept of large-capacity systems for the decontamination of large military groups is changing. Today the concepts of the operational capabilities of smaller and operationally independent units is emphasized. In this context, equipping the units with means for immediate and partial (operational) decontamination while simultaneously increasing their effectiveness becomes more important. This article describes the decontamination technologies comprehensive systems to include decontamination mixtures, their applications, and procedures of the decontamination operations.

Trends in the research and development of new decontamination mixtures we see the increase in decontamination efficiency while limiting effects to personnel, corrosivity, and other adverse effects. An increase in the effectiveness of decontamination can be achieved by extending the duration of action of decontamination mixtures (reduction the drying of mixtures) on decontaminated surfaces using gels, emulsions, foams, and thixotropic additives. Increasing the effectiveness of decontamination mixtures is also supported by the application of detergents increasing retention of liquid decontamination mixtures on solid surfaces, providing longer contact of reactive components of decontamination mixtures to liquid contaminant molecules. In the field of technical means for the application of decontamination mixtures, research, and development are mainly focused on their continuous preparation using various types of mixing devices inbuilt directly into the decontamination spray or brush lances or portable mixers attached before the connected application device.

The concept of equipping units with means and technologies for immediate and partial decontamination is also changing regarding the development of weapon systems that increasingly use special electronic and optical devices and equipment, generally all surfaces with a low level of resistance against WMD, classified as‚sensitive materials'. These sensitive

[1)] Douglas W. Bryce, Joint Program Executive Officer for Chemical, Biological, Radiological and Nuclear Defense
[2)] NATO's Chemical, Biological, Radiological and Nuclear (CBRN) Defence Policy https://www.nato.int/cps/en/natohq/official_texts_197768.htm, 14 Jun. 2022

materials are also not resistant to the action of most standard decontamination technologies, and after their application, they can often be destroyed, damaged or, in the best case, significantly reduced in their functionality.

In this regard, increasing the resistance of sensitive components of military equipment plays a significant role. In this context, intensive research into protective coating systems, or preventive protective coatings resistant to penetration of chemical contaminants and adhesion of particles of radioactive and biological contaminants. The most important type of resistant coating referred to as CARC (Chemical Agent Resistant Coatings) is program-improved and its use not only for the protection of sensitive surfaces brings a substantial increase in the effectiveness and efficiency of decontamination processes. The use of catalytic nanostructured adsorptive materials based on metal oxides or complex chelating agents as additives in protective coating systems and reactive polymer materials can also significantly contribute to the active protection of sensitive surfaces and substantially increase the effectiveness of the decontamination process.

For the decontamination of sensitive materials, and non-hardened surfaces that cannot be provided with a protective coating system, a wide range of procedures and means are offered for its effective decontamination. Currently, there are systems being studied for the use of the supercritical fluid extraction method (ionic liquid), microwave radiation and cold plasma, the use of photo-catalytically active metal oxides, nanostructured reactive composite sorbents, combined active solid adsorption and solvent systems, the use of enzymes and enzyme models, peroxide micro-emulsion mixtures, singlet oxygen, ozone and other reactive forms of oxygen, use of modified vapor phase hydrogen peroxide and ammonia, hydroxyl radicals and peracetic acid in the liquid and vapor phase, adsorption wipes (microfibers, powders, decontamination gels), use of systems for laser cleaning of solid surfaces and hot air decontamination (ineffective for R and N contaminants, the need to add an active substance for B contaminants, the need to trap vapor phase C contaminants released in closed spaces).

For most existing and potentially future decontamination technologies, the nature of their action requires a specification for which type of contaminant (C, B, R, N) the technology can be used for. E.g. chemically reactive decontamination technologies for C and B contaminants cannot be practically applied to R and N types of contaminants. However, systems of detergent washing mixtures containing active ingredients, or other physical methods of decontamination, exist and are being intensively studied, which enable the removal of all types of contaminants from solid surfaces of military equipment and material. However, especially in the case of R and N contaminants, decontamination waste products should be separated after the end of decontamination process so that there is no secondary contamination of the place where the decontamination was carried out.

The synergistic use of some decontamination technologies, e.g. for the immediate decontamination of personnel and small

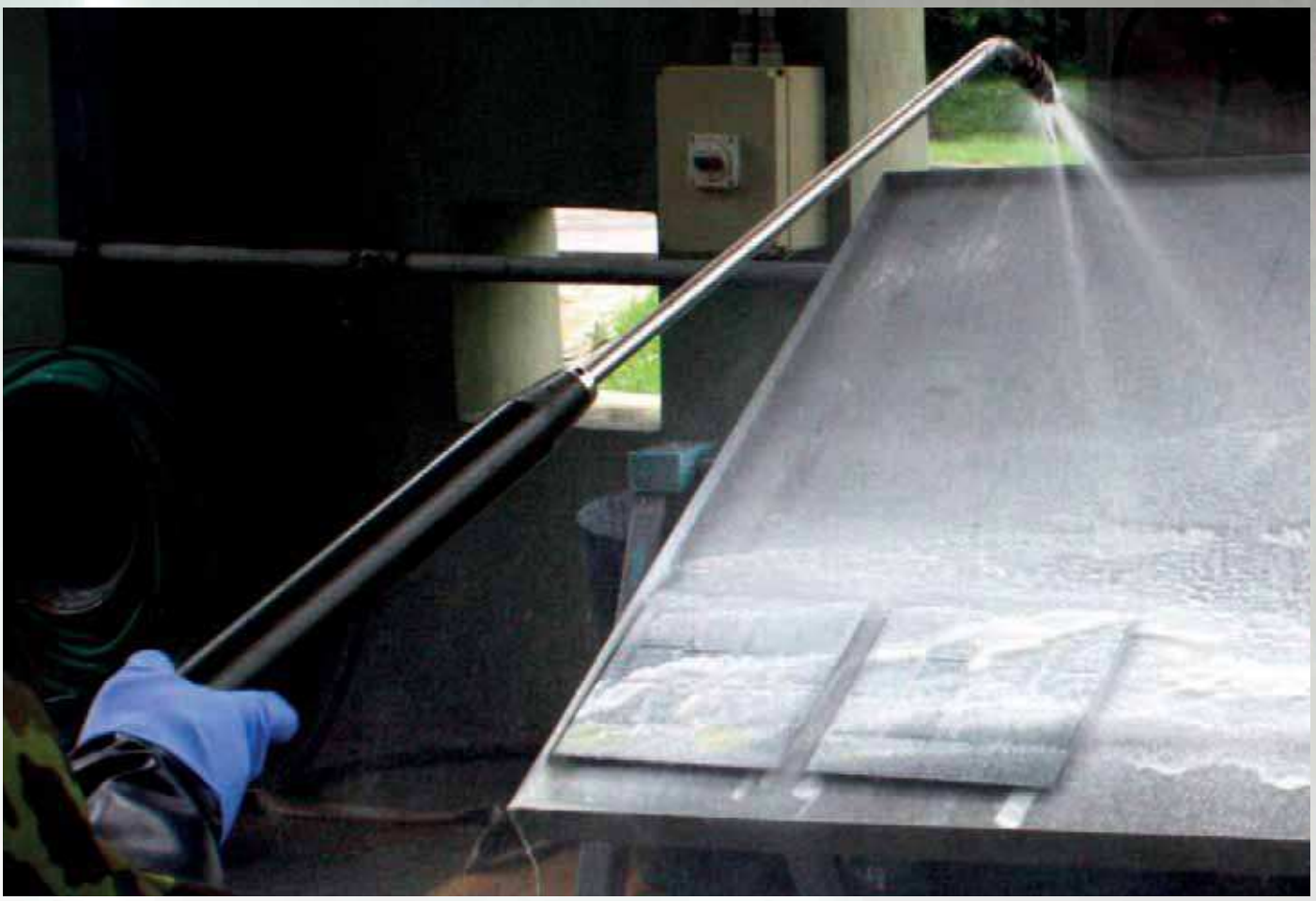
arms or for the decontamination of surfaces of military equipment and non-permeable individual protective equipment, is also important in operationally ensuring the combat capability of units under the conditions of WMD use. In general, any decontamination operation carried out as soon as possible after contamination significantly reduces the risk of exposure of unprotected personnel. In this context, the possibilities of using so-called 'autonomous decontamination systems' of military equipment are being studied, enabling the application of a decontamination mixture immediately after the detection of a contaminant without the need for the vehicle crew to enter the contaminated environment.

Also, the requirement to equip smaller combined-army units with highly mobile, modular decontamination means enabling partial decontamination of personnel and military equipment in operational scale is an important trend in the current concept of military tactics in armed conflict. Concepts and systems of modular‚light decontamination' are being studied in the Czech Armed Forces as well as in other NATO Armed Forces, which are easily transportable, either in a container version or on the chassis of a light all-terrain vehicle.

Increasing interest in the efficiency and quality of decontamination processes is also reflected in the concept of so-called combined decontamination procedures, where, for example, in the case of massive contamination of small arms or personnel protective equipment, classic decontamination procedures are used with a subsequent process of decontamination of toxic agent residuals adsorbed in the structure of low agent resistant materials.

The required reduction of residual contamination values below the threshold limits brings the somewhat neglected problem of real-time control of residual contamination, both in the case of decontamination of large combat vehicles as well as in the case of small arms, individual protection equipment or sensitive components of military equipment. Procedures and equipment are currently being studied to detect residual contaminants released from sensitive and variable surfaces using a colorimetric residual contamination detection technology. In the case of checking the effectiveness of the decontamination efficiency on large-scale surfaces, the optical spectral method of non-contact detection using the characteristic spectral properties of molecules and atoms of toxic chemical contaminants with the use of hyperspectral cameras and detectors could be used. These are mainly methods associated with the measurement of emission, absorption, scattering or mobility spectra, as well as Raman spectroscopy and laser-induced fluorescence.

A separate issue is the decontamination of the surfaces of the internal spaces of military equipment and objects. This is a wide range of potentially contaminated surfaces, classified mainly as sensitive. Therefore, systems which could enable a substantial reduction of their contamination are intensively studied. Prescriptive prevention limiting the entry of concentrated contaminants into the interior spaces of military equipment and objects appears to be a very effective means of protecting these spaces. If contamination nevertheless occurs, it will be contamination that can be reduced by the above-men-



tioned specific means for decontamination of sensitive surfaces, especially with the possible use of combined active adsorptive and solvent systems, singlet oxygen, ozone, and other reactive forms of oxygen, and in particular the use of modified hydrogen peroxide and ammonia, hydroxyl radicals and peracetic acid in the vapor phase. Specific to this type of decontamination will be technical means enabling continuous preparation and volumetric application of the decontamination medium in the vapor phase or the form of an aerosol.

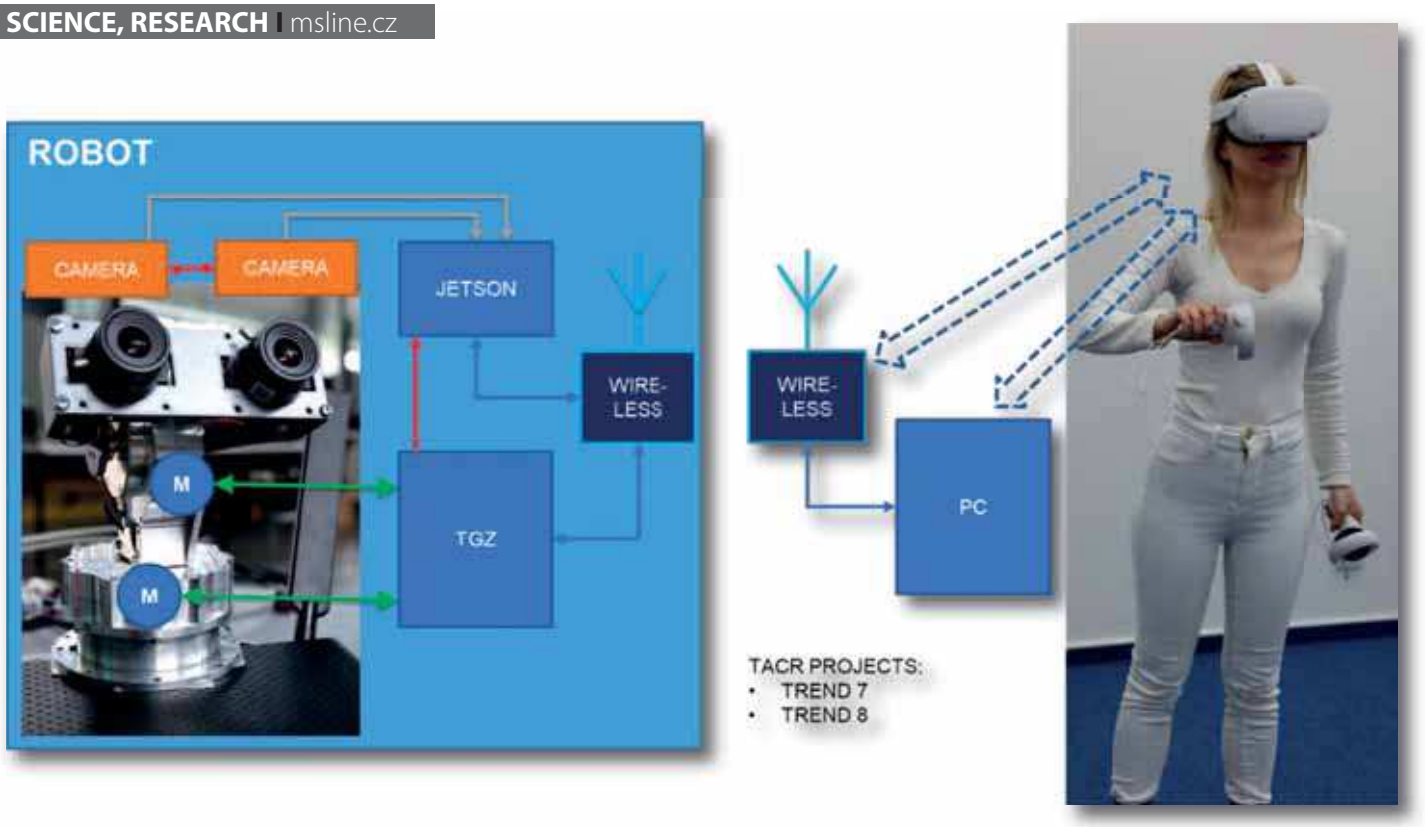
Since the decontamination of terrain, buildings, and logistics points (railway stations, airports, ports) when hit by weapons of mass destruction is very time-consuming and logistically demanding, the principle of spontaneous decontamination can be used in the case of the use of chemical weapons. Experimentally verified computer simulations can make it possible to make a qualified estimate of the levels of residual contamination at a specific moment in time, as well as the time after which the value of residual contamination due to atmospheric influences will decrease below the permissible limit.

Currently, the requirements for ecological sustainability in the implementation of decontamination processes are also gaining importance. Separation, minimization of the amount, and disposal of, especially, liquid waste at decontamination sites, often containing toxic waste products, has recently emerged as an important part of the decontamination process. Although the solution to this requirement is very complex, the diverse types and amounts of waste products, time, logistics, and material capacities, this issue is intensively studied and will be one of the key parameters of the success of decontamination technologies in the future.

A specific issue studied recently is the ability to dispose of a limited amount of toxic chemicals originating, for example, from unexploded or unused ammunition or stored in operational ammunition depots. Small special means of operational use based on the principle of burning this type of liquid contaminants using small plasma generators or modified internal combustion or jet engines are being studied and developed.

The field of decontamination, including research, development, and use of diverse decontamination technologies enabling specialized and combined-army units to ensure survival and operational activity, is becoming more and more interdisciplinary concerning various types of threats resulting from the possible use of WMD and is an integral part of a functioning CBRN protection system. Elements and components that can be used for decontamination technology innovations are studied not only at specialized military research facilities, but basic and applied research is increasingly taking place at research facilities of the civil state and private sector. The results of research and development in the field of decontamination can be used not only for the protection of troops in the event of the use of weapons of mass destruction but also in the civilian sector as part of an integrated rescue system in the event of industrial accidents events associated with the release of toxic substances into the environment.

Author: Dipl. Eng. Miroslav Skoumal, CSc.



THE DEVELOPMENT OF ROBOTIC RECONNAISSANCE SYSTEMS FOR THE FORCES AT BRNO UNIVERSITY OF TECHNOLOGY

UARS
Universal adaptable robotic system

CEITEC and FEKT departments of Brno University of Technology have long been cooperating with the Czech Army and civilian forces in the development of technologies for remote-controlled and autonomous robotic exploration of areas dangerous or inaccessible to humans.

The researchers from BUT have knowledge in the field of advanced mobile robotics for the work in known and unknown terrain, in the field of highly immersive visual telepresence using ground and airborne robotic agents – UGV and UAS and specific knowledge for the implementation of artificial intelligence elements, especially the so-called deep neural networks, for automatic detection of objects in the visuosphere, including military equipment.

The cooperation with the University of Defence and several branches of the Czech Armed Forces is already in progress.

Development and production of special ground and aerial mobile robots

In the field of UGVs, the BUT has experience in the development of its own wheeled and, to a limited extent, tracked robotic chassis designed to work in outdoor environments. An example is the Orpheus line of robots – see following figures.

These machines are being developed in conjunction with the spinoff company LTR Ltd. both for development/research of primarily autonomous behaviour in the outdoor environment and as remotely controlled robotic platforms. For example, Orpheus-X4 is capable of fully autonomous search for ionizing radiation sources, their location and determination of their dose rates and spectra. Orpheus-AC3 is being incorporated into the arsenal of the Czech Armed Forces.

In addition, CEITEC and FEKT have several other mobile robots of their own design and with commercial chassis.

In the field of UAS, the departments have a number of multi-rotor drones of their own design and commercial solutions. The self-developed design has the advantage of greater variability according to customer needs. The use of self-developed or open-source code electronics is also a great advan-

tage, thanks to which the possibility of unauthorised misuse by foreign powers etc. is suppressed. In both areas – UGV and UAS, Brno University of Technology is capable of providing both high quality research, as well as the development and implementation of MIL-STD compatible tests (environmental, EMC, special), we also have experience with the implementation of advanced military technologies into the military.

ROJ – Robotic system controlled by artificial intelligence algorithms for intelligence and reconnaissance purposes, VJ02010036

BUT has recently been cooperating with the University of Defence on a project for swarm robotic reconnaissance of an unknown area. The goal is to create and demonstrate a fully autonomous robotic system that will include 7-10 multi-rotor drones, 3-4 ground robots and a control and evaluation station by the end of 2025. The application guarantor is the Army of the Czech Republic.

The system is primarily designed for reconnaissance at a distance of up to 2 km from the battle line in an adversary-controlled area. The system will be able to autonomously create a highly accurate photogrammetric map of the defined area, locate predefined equipment or live forces, and locate at least some CBRN threats. Everything is controlled from the operator station, and if communication is possible, at least some data is already available during the mission. Nevertheless, the system will also work on an electromagnetically disturbed battlefield. In addition, the system will complete the mission completely even if several robotic agents are lost, thanks to artificial intelligence elements. Each of the machines can function as a relay station, and communication is encrypted. It is possible to take control of each of the machines and, for example, to examine a found object in more detail directly by the operator or mission commander. The integration into existing systems compatible with the Czech Armed Forces and NATO is expected. In the initial phase of the project in 2022, further needs of the Czech Armed Forces and the national security forces in this area were identified and a number of additional applications were identified. Among them – CBRN threats in the civilian sector, civilian reportng services, artillery, etc.

Visual telepresence

Currently, the BUT is also developing a system for advanced control of mobile robots within two projects using so-called visual telepresence.

The principle can be explained using the following figure. The operator wears a virtual reality helmet on his head, and his head movements are sensed and transmitted to a camera head on the robot/drone/vehicle/observation tower. The operator naturally looks around in an area that would otherwise be dangerous or inaccessible to him. In addition, he may have information which he would not be able to perceive with his eyes – thermovision, multispectral scanning, laser scanning, radiation visualization, etc.

The system utilizes modern communication means and the goal is to create a visual perception as close to reality as possible while performing the carried part complying with MIL-STD standards.

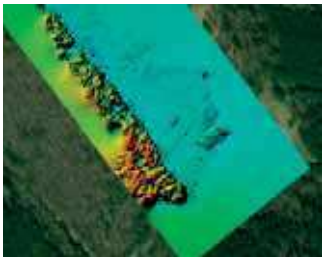
Advanced communication systems

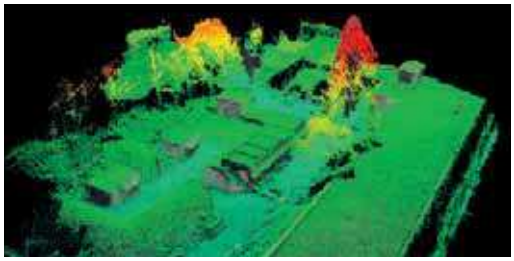
BUT works with systems that enable digital communication in areas of interest – e.g. on the battlefield, at natural disaster sites, etc. 5G networks (SA, NSA) and others are being investigated. BUT has not only its own communication units, but also instrumentation and infrastructure to verify their characteristics and suitability for deployment. In addition, BUT has advanced knowledge in the field of RF electromagnetic signal propagation and can therefore, for example, design the construction and placement of antennas on military equipment, etc.

Object recognition in data from optoelectronic systems

BUT has knowledge in the field of advanced image recognition or combination of RGB image with thermal vision, multispectral and hyperspectral data, laser scanning and other sources of optoelectronic data. For example, the research under the ROJ project mentioned above is in progress to enable automatic detection of selected techniques from image data. It will also be possible to apply this technique to a limited extent, for example to small fully autonomous drones, which will be able to automatically search for adversary equipment and live forces.

Author: prof. Eng. Luděk Žalud





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RAFAEL & IMOD DDR&D

Complete Successful Test of Advanced SPYDER Air Defense System in its Latest All-In-One Configuration

RAFAEL is pleased to announce the successful completion of a test for its advanced SPYDER air defense system in its newest configuration – All in One which was conducted by RAFAEL with the Israeli Ministry of Defense Directorate of Defense Research & Development. The test involved intercepting a unmanned aerial vehicle (UAV) in a challenging operational scenario, achieving a direct and effective hit.

RAFAEL, in collaboration with IMOD DDR&D, has successfully completed a test of the advanced SPYDER air defense system in its latest, unique configuration – All In One. The test included the interception of a UAV in a challenging operational scenario, achieving a direct and effective hit.

The SPYDER system, produced by RAFAEL, is operationally used by several military forces worldwide, providing air defense solutions against various airborne threats, including missiles, UAVs, aircraft, helicopters, and tactical ballistic missiles (TBMs). The system intercepts threats using two families of RAFAEL-manufactured interceptor missiles, PYTHON and Derby. Recently, RAFAEL introduced a new configuration for the SPYDER – the All in One, featuring an integrated radar, electro-optical launcher, advanced control and command system, and PYTHON and Derby interceptors, all mounted on a single platform. This configuration serves as an optimal air defense solution for point defense or area defense, either as part of a SPYDER battery or deployed independently with minimal operator involvement.

In the test conducted last month in Israel, the SPYDER All in One system successfully intercepted a UAV in a complex operational scenario, achieving a successful interception of the target.

Brigadier General (Res.) Pini Yungman, Executive Vice President and Head of the Air Defense Division at RAFAEL, stated, "RAFAEL is a global expert and a leading developer of air defense systems that have proven themselves in combat against a myriad of advanced threats and at various ranges. Among the leading systems currently in operational use in Israel and worldwide are Iron Dome, SPYDER, and David's Sling. The success of the current test with the SPYDER All in One system represents another technological breakthrough that RAFAEL pioneered, providing solutions tailored to different evolving..."

RAFEL

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Review

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Security & Defence Technologies Catalogue

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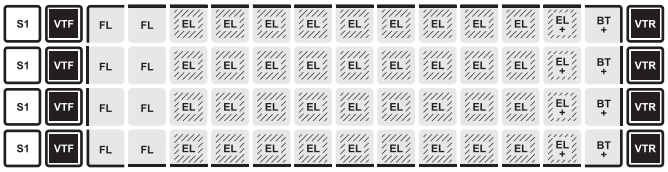
Modular Shooting Range
MSR OpenSpace

Diagram of the AD25 X4 OpenSpace shooting range



LEDIC MSR brings its own unique advanced solution of Modular Shooting Ranges based on a sophisticated and open system of connecting modules that can be transported using common means of transport. In this way, the most diverse possible range variants can be created to ensure a wide range of shooting training activities. Modular Shooting Ranges are intended for the army, police, other security forces and civil sector.

The concept of Modular Shooting Ranges as closed objects designed for different groups of users and their specific needs allows, by choosing the appropriate model, its ballistic resistance, the required shooting distance and the chosen level of equipment, to create a solution to meet the customer's individual training or commercial goals. All this while ensuring maximum safety, a hygienically sound and comfortable environment, continuous year-round operation and meeting high demands on noise protection measures.

The MSR OpenSpace concept ensures a shooting range space without any obstacles and thus enables the widest possible range of shooting and training activities without any restrictions. If necessary or desired by the customer, the interior space of the shooting range can be divided into separate areas operable shooting sections – each with a width of up to 10 m and essentially unlimited distance, different features and equipment. The concept also allows for the eventual relocation of the shooting range, its expansion or change of configuration. The requirements for the location of the shooting range are minimal.

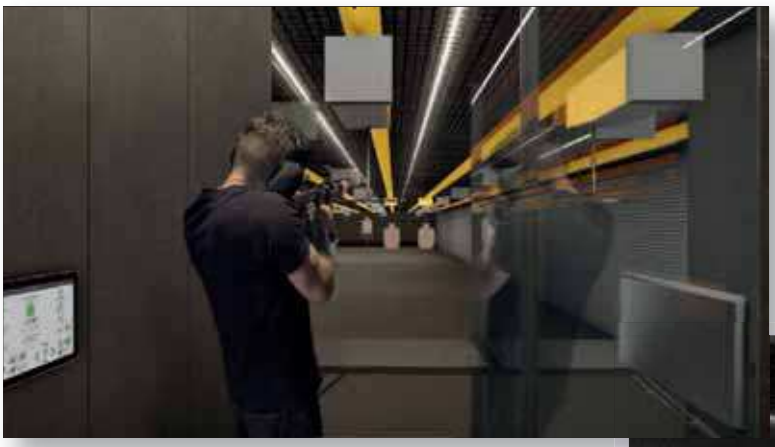
The solution is designed to achieve minimal fixed operating costs, enable self-service, remote management and monitoring, and ensure a long service life. The solution is also open for additional upgrade with training and control technologies and functions.

When choosing a Modular Shooting Range, the main criteria are only the required types of training, the power of ammunition and weapons, the shooting distance, the capacity and mode of operation of the range, the choice of the target system and other elements of the range's equipment.

Modules

VTF	VTR	EL	EL+	FL	BT+	S1
Ventilation Front	Ventilation Rear	Extension Large	Extension Large Plus	Fire Line Large	Bullet Trap Plus	Sector

LEDIC MSR



Defined parameters of shooting sections

S									
sectors	floors	m	stands	balistics	E_0J	E_0J	standard	shots/ day	pillars
S1	1	25	8	E	4 000	3 000	STA	10 000	NO

The MSR OpenSpace shooting range can be equipped with a target system from bke HITCOM GmbH, our partner in the field of target systems.

You can find more about the MSR OpenSpace concept at ***www.ledicmsr.cz*** *and in the promotional video on our YouTube channel here:* ***https://youtube/CvRJagc3Ef8***

Book your appointment for an individual presentation and test shooting at the Křeč Shooting Range, our company testing center, on the portal ***www.lscenter.cz****.*

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