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# EDITORIAL

Dear readers,

This Review has been published especially on the occasion of the Annual Meeting of the representative Editorial Board and the subsequent friendly meeting of the defence and security community of the Czech Republic. It will include the awarding of the best individuals, companies, and products and the launch of the new edition of the Security and Defence Technologies Catalogue 2023-24.

In the introduction, we bring you an interview with the new Chief of the General Staff of the Czech Army and other media outlets focused on the current complex international situation. Of course, some articles and interviews also refer to the activities of the Czech Defence and Security Industry.

The publishing house MS Line and the editors of Reviews are very appreciative that in the past year, a significant part of defence companies used our media to present their activities. Currently, Czech companies have once again ranked among the world's leading countries in this area of industry and prove that many Czech high-end products and know-how are more than competitive.

First of all, we would like to thank the member companies of the ADSI CR, as well as the representative Editorial Board, the Ministry of Foreign Affairs of the Czech Republic, the Ministry of Defence of the Czech Republic, the Ministry of the Interior of the Czech Republic, the Ministry of Industry and Trade of the Czech Republic, the DG FRS of the Czech Republic and their executive departments for supporting our work and for their active participation in the creation of our production. Of course, our big thanks go to the Presidium and the Board of Directors of the ADSI CR, the Brno Trade Fairs, the management of the FFF and NATO Days, as well as many others for their excellent cooperation in 2022.

We are honoured that even our publishing house and editors could, at least to a small extent, contribute to the success of the Czech Defence and Security Industry in the form of more than twenty-five years of support and promotion at home and abroad. If you give us the opportunity in this direction, we will always be there for you.

**Šárka Cook, Editor in Chief**



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# Exclusively with the Chief of the General Staff of the CRA

In the introductory speech of the Chief of the General Staff of the Army of the Czech Republic, in the currently published Security and Defence Technologies Catalogue of the Czech Republic 2023-2024, Maj. Gen. Dipl. Eng. Karel Řehka says, among other things, "My top priority in the position of the Chief of the General Staff of the CRA is the combat capability of the Army, and the Czech arms companies will always be a full-fledged part of it." After he is being in this position for a half year, our editors have prepared an exclusive interview for Review readers.



## General, what are the key priorities of the Czech Armed Forces in the year 2023?

First and foremost, it is combat readiness. In order for us to be able to face the opponent and be ready to respond here and now, we have to prove a high quality in fundamental areas. That involves military review of the national defence posture, preparation for future warfare and rapid modernization. Especially in modernization we have a 30-year long unaddressed deficiency that will not be resolved overnight. However, in the armed forces, the personnel is crucial. To me, this is extremely important. Only highly motivated and determined soldiers and airmen can win wars. It is never machines but the

people who operate them.

We certainly want to step up recruitment. The Czech Armed Forces grows old and we lack personnel in numerous positions, for example drivers or IT specialists. We have to fill that gap fast. We will intensively engage in cultivating the strategic discussion. This means that the Czech Armed Forces has to contribute its expertise to national defence, offer appropriate specialists to the media and generally into the public debate. We want to engage the academia; the first meeting already took place and other will follow.

## Can you briefly outline the requirements of the Czech Armed Forces up to 2030 with specific focus on modernisation and acquisition of new weapons and personal equipment?

It is necessary to decommission the obsolete Russian made vehicles from inventory and eliminate our dependency on spare parts delivery. This is absolutely crucial. We will certainly tackle the replacement of tactical aircraft, medium transport aircraft and the modernisation of the Czech Air Force command posts. We will also act harness the lessons learnt from the war in Ukraine.

The Land Forces are the backbone of the Czech Armed Forces and we owe the development of the heavy brigade to all the soldiers, which primarily involves the tracked infantry fighting vehicle acquisition program. Again, I wish to note that the vehicles must be operated by highly trained soldiers. The soldiers must have a good grasp of technology. It is indispensable for our job nowadays.

## How would you evaluate the quality of the Czech defence and security industry and the cooperation of the Czech Armed Forces with Czech industry? What are its strengths and weaknesses?

I think the Czech defence industry is highly competitive and its products show an excellent quality. I particularly refer to small arms and optical devices. It is also thanks to the involvement of Czech companies in strategic development projects and teaming with international defence suppliers. Czech companies are geographically close and that is of immense strategic importance. In case of a major threat, the swiftness of spare parts delivery plays a huge role.

Companies must develop and stay competitive too. The Czech defence industry invests little into new technologies and capacities. However, this is related to the size of the domestic market. There naturally is the possibility to further improve the cooperation of the Czech Armed Forces and our defence industry businesses. We must mutually communicate and address the development of the Armed Forces.

## The state defence budget is progressively increasing in connection with the very complicated international situation. What are currently the Czech Armed Forces' top priorities in the domain of armaments, vehicles and other equipment?

Let me reiterate that we must get rid of all the Russian equipment, be it in Land



Forces or the Air Force. It is also necessary to improve interoperability with our NATO Allies.

As for specific projects, I will mention the replacement of JAS-39 Gripen aircraft, the acquisition of MADR 3D radar system to replace the Russian P-37, PRV-17 and ST-68 radars, the acquisition of SPYDER short range air defence batteries replacing the Russian KUB complex, and the acquisition of H-1 helicopters. In terms of technology, that involves realtime data sharing using the Link-16 technology, IFF identification, and secure and jamming resistant ground-air-ground radio connection.

With regard to Land Forces, I would like to mention the completion of the tracked infantry fighting vehicle program that will replace almost 50 years old BMP-2, the acquisition of new MBTs to replace the T-72 tanks, or major modernisation of the artillery thanks to CAE-SAR guns with new fire control system. Improving service conditions for the military personnel is also crucial. We are planning to invest into defence property, Air Force bases, Land Forces units and training facilities. These were neglected in the past and it is our internal





debt. We have to react to the economic situation because it naturally concerns military personnel too. We already took the first steps and prepare for the next. I am really grateful that the budget is on the rise. We are wiping out our long-time debt and simultaneously preparing to fight on the battlefields of the future. We really do need more funding. I must not forget to remind that it is the security of us all that is at stake.

**The war in Ukraine shows us how much air defence is important for national defence. According to military analysts, this domain was for various reasons underestimated not only in the Czech Republic but also in numerous EU Member States. How do the Czech Armed Forces plan to proceed in this field and is it feasible at all to eliminate this deficiency in appropriate timeframes?**

Taking into account the conflict in Ukraine, the funds invested into Ground Based Air Defence are completely insufficient. We had lived for decades pe-

acefully, calmly and safely which lulled everybody in Europe into a false sense of security.

It is necessary to invest in air and missile defence and counter-UAV systems. We want to intensely address the interconnection of command systems and Air Force control while using the so-called tactical datalink and the most advanced Mode 5 Identification Friend or Foe. We are currently preparing revisions of strategic security policy documents of the Czech Republic. It will also reflect the need to strengthen our air defence posture.

We want to develop these systems not only by increasing the number of fire units but by improving their detection capabilities, data sharing or operational preparation of the environment.

Our ground based air defence will be strengthened by the SPYDER system in 2025 and 2026. It will be a quantum leap thanks to which our air defence will be able to engage over greater ranges and track multiple targets simultaneously. This is just the first indispensable step only to be followed by other ones.

In the long run, we expect further strengthening of air defence, including the missile defence.

**We hope that the COVID-19 epidemic is finally over. How do you evaluate the performance of missions by the Czech Armed Forces during that period?**

I discussed it with military personnel, the assistance during the pandemic was truly demanding for them. We showed to the tax payers that we are not only warriors but we can also be of assistance. Many of the service personnel conducted many activities for the first time and under extreme conditions. It was for us an uncommon situation but we coped successfully.

I would note that the military personnel were assisting not only in hospitals or vaccination centres, but we significantly contributed to the operation of the Smart Quarantine programme which placed high demands on coordination and the organisation of the whole system. In my opinion, we deployed some



of the best service members for that effort.

Even during the pandemic the armed forces had to maintain the military training and combat readiness at highest possible standards. People tend to forget that. I cannot but say again that the principal duty of the armed forces is to fight. The defence of our country and our allies comes first. The public trusts us greatly and we appreciate it.

**How would you comment on the current cooperation between the Czech Armed Forces and other NATO nations' armed forces?**

If we were to defend ourselves, then it would be in the NATO framework. As a matter of fact, our strategy is not to lay mines somewhere in the mountains. The thing is to be a reliable partner and it is not a cliché. There is no alternative to NATO membership. It is an essential of life.

In order for us to be a reliable Ally, we need to deserve such recognition. No assistance comes for free and we need to show resolve and fight. Including as a society, because not only the Armed

Forces but indeed all citizens need to be resilient.

This year we are honouring thirty years of the Czech military and I am pleased that we have progressively served in peacekeeping and later in peace enforcement missions, which we have been in command of multiple times and a high professionalism and responsibility always go hand in hand with that. We have proven to our Allies that we are good masters of our trade.

**In conclusion, General, do you seek to make use of the rich experience you gained in your previous appointments now as the Chief of General Staff?**

Before becoming the Chief of General Staff, I served in many military assignments and as the Director of the National Cyber and Information Security Authority, which was in the civilian sphere. Naturally I seek to leverage on my previous experience to a maximum extent.

My arrival to the General Staff does not bring about a revolution. The cor-

nerstone of our efforts are individuals, who have served in the Czech Armed for some time and I do not have to say that the requirements we are placing on service personnel have recently grown with a high intensity.

I always took my assignments as a service. Every mission has a starting point and an endpoint. That is normal. No one knows everything and I have to learn and improve my skillset everyday too. That goes with the life of the Chief of General Staff as well as with the life of every other soldier and airman.

Author Miloš Soukup

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# Interview with Tomáš Kopečný about Support for Ukraine and Possible Post-war Recovery Scenarios



**“From the point of view of the security situation in Europe, the war provoked by the Russian Federation against Ukraine currently represents the most significant security risk”, says Tomáš Kopečný, the Newly appointed Government coordinator for the reconstruction of Ukraine of the Czech Republic. How do you evaluate the actual help provided to Ukraine from the Czech Republic, and what is planned for the future?**

"We can learn about the progress of the war, the development of the movement of forces on the front, and the humanitarian situation of the residents of Ukrainian cities and towns from the media every day, yet, in my opinion, some topics deserve more attention not only due to their strategic and security importance but also especially be-

cause of the extremely important opportunity they represent not only for the Defence Industry of the Czech Republic."

**The Ministry of Defence has, under your tenure, become responsible for the coordination of military help to Ukraine. Can you provide us with an assessment?**

First, a quick overview. The Czech Republic is one of the biggest suppliers of military equipment to Ukraine. Czech citizens then showed extraordinary solidarity when they collected more than 1.3 billion CZK in the fundraising for military material for Ukraine. In absolute numbers, the Czech Republic is among the five biggest supporters of Ukraine. This definitely proves that the Czech Republic and its citizens are well aware of the importance of suppressing Russian influence on the continent and that the values of freedom and democracy need to be defended everywhere in the world.

**But a significant part of the military help was provided by private companies on a commercial basis. How do you assess their involvement?**

In recent months, the Defence Industry of the Czech Republic has demonstrated that it is capable of extremely good adaptability when it was able to effectively find functional solutions for the needs of the Ukrainian Armed Forces. The Czech Republic has built up a considerable reputation in this respect, which is why we are now in a strong position for negotiations with Ukrainian partners on the possibility of further supplies of not only military equipment. This is precisely the decisive moment in Czech-Ukrainian relations, which brings significant opportunities

across all sectors. The Czech industry in all sectors of the economy can now benefit from this position, provided that it will be able to respond flexibly and quickly to Ukrainian needs in coordination with foreign partners and donors – as it was and is in the case of the Defence Industry.

**What troubles Ukraine the most in terms of the current need for military equipment and how was this reflected in the winter season?**

In terms of supplied military equipment, Ukraine has been struggling for a long time with a lack of large-caliber ammunition, as well as heavy equipment and air defence systems. In addition, of course, the winter is taking its toll on both the equipment and the soldiers, although the efforts of the last few months have been aimed at ensuring satisfactory conditions, especially concerning the supplies of suitable winter equipment. Recent initiatives thus consist on the one hand in the supply of strategic military equipment, and also in ensuring the combat capability of Ukrainian units - whether it is further planned supplies of military equipment, winter equipment, or, for example, the planned provision of training on the territory of the Czech Republic.

Mines have become a major problem for Ukraine, affecting not only the places of the fiercest fighting but also cities, agricultural areas, and Ukrainian ports. In the future, supplies of military equipment to Ukraine will thus have to include solutions that will help with the disposal of booby trap devices that represent a potential humanitarian problem. Not only in terms of acute loss of human life and property but also to ensure the supply of Ukrainian grain to the whole world.

### **And Russian attacks on Ukrainian power plants?**

With the beginning of the winter season, the development on the battlefields has slowed down due to difficult terrain, and Ukraine is facing increased efforts of Russian artillery all the more. These attacks targeting Ukraine's critical infrastructure have no other purpose than to break Ukraine's fighting spirit by trying to make an already harsh winter more difficult for them with electricity and heat supply problems. In addition, with the freezing temperatures, it can be expected that the heavy equipment, which was not so mobile in the muddy terrain, will go into action again. The cold season thus brings many challenges.

In the short term, the Western countries are trying to provide Ukraine with technologies that could at least partially replace the missing, i.e. destroyed, elements of the critical energy infrastructure. This mainly concerns large transformers and power generators. This initiative is also coordinated at the level of the European Union. From the point of view of the current situation, this aid must be as fast as possible, so it mainly concerns capacities that can be delivered to Ukraine in real time, i.e. especially spare or surplus equipment.

### **We probably don't have many such devices, do we?**

The fact and some pitfalls, of course, is that these large, often custom-made devices are rarely in stock and not needed, moreover, Ukraine, due to its past orientation to the East and as a former union republic of the USSR, faces the incompatibility of Western devices that are not designed for the local voltage network.

This represents a challenge for companies in the energy sector because already in the current situation of managing the acute energy crisis, not only in Ukraine, it will be necessary to come up with solutions specified to extinguish the most pressing momentary impacts, but in the long term, Ukraine will probably also choose a greater preference for the West in the energy sector and this will be related to the configuration of distribution networks and related equipment according to Western parameters.

### **Let's move on. What do you think the potential recovery of a war-torn country should look like? After all, it can't just**

### **be about delivering a few power generators from Europe to Ukraine.**

Definitely not. And it can't. In the current situation, the provision of temporary heated dwellings remains a problem, both in the area of humanitarian aid, i.e. the settlements most affected by the war, and in terms of ensuring the wintering of the Ukrainian Armed Forces, whose bases were heavily damaged by the attacks of the Russian Army. However, this sad fact can't be compared with the huge cultural and human damage that the Russian Army caused during the war in Ukraine. Therefore, short-term solutions are only provisional, preliminary measures to avert the current humanitarian crisis, but they can't be sufficient for the war-affected country to reach 100 % functionality ante bellum.

### **So what exactly is the plan?**

The initiatives taken to manage the humanitarian crisis, which has already brought millions of refugees to Europe from Ukraine as a result of Russian aggression, must in the future be followed up by a comprehensive program for the post-war reconstruction of Ukraine, a sort of "Marshall Plan" for the 21<sup>st</sup> century. As part of the recovery, the task of the states of our circle of civilization is to help Ukraine on its way to European integration. The post-war recovery thus represents an extraordinary opportunity to participate in the creation of a new, recovered Ukraine, which will be closer to the EU not only in terms of common interests and foreign-political direction but also in terms of interconnectedness in technologies that will correspond to European standards.

### **That all sounds great, but where to get the funding for all of this?**

Of course, the logical question regarding recovery is the issue of financial security. Significant involvement of the G7 states can be expected. The world's strongest economies will have a huge share in the recovery, especially in the area of providing financial resources for the implementation of specific projects. The USA, Great Britain, France, and Japan; all of them are planning large-scale activities and will surely be counted among the main donors.

At the European level, this initiative is covered by the comprehensive strategic plan for the recovery of Ukraine called "RebuildUkraine". This plan is to be implemented

in close coordination with Ukrainian authorities such as the National Recovery Council of Ukraine, which would be responsible for its implementation. The Ukrainian Government has made clear its intention to include the recovery plan "RebuildUkraine" in the strategic partnership with the European Union. At the EU level, an International Coordination Platform is also being created, which would be led jointly by the European Commission and the Ukrainian Government. The platform should bring together supporting partners and organizations, i.e. not only EU member states but also international partners and international financial institutions. The financial resources that the EU intends to provide include, in addition to those allocated to the strategic recovery plan, also newly created grants based on extraordinary contributions from member states, as well as the frozen assets of Russian oligarchs abroad.

### **And do we have any information from where else in the world will financial resources flow to Ukraine?**

Similar initiatives, such as those at the EU level, can be expected from other international institutions as well. The World Bank and the International Monetary Fund will participate financially in the recovery, significant assistance is planned to be provided by the already mentioned USA, which are pioneers in this direction thanks to the Lend Lease Act for Ukraine (Ukraine Democracy Defence Lend-Lease Act of 2022, editor's note) and other initiatives. Other possible bilateral activities are being discussed, e.g. Holland is very active in this direction. Last but not least, the recovery of Ukraine is of course the main interest of the Ukrainian Government, which will allocate a substantial part of the state budget to it in the coming years.

The post-war recovery of Ukraine presents a challenge to the entire Western world. Although it will be a multi-year intensive effort, the opportunities that this issue brings with it are not only extremely extensive but also strategically important. The Czech Republic, as a part of the international community and European structures, can once again prove that it is on the right side of history in this area as well.

# The Defence Industry at a Time of a Global Turning Point

German Chancellor Olaf Scholz wrote in Foreign Affairs that the world was facing "a global turning point". Russian war in Ukraine represents the end of one era. New great powers have emerged or been reborn, including an economically strong and politically assertive China. In this new world, different countries and models of governance will fight for power and influence.

The Chancellor's words thus portend complex political, economic, and security development in the coming years, which may lead to a complete or even partial return of the "Cold War" to international politics, even if within the contours of the new realities of the changed world.

It also represents a dramatic change in the role of the Defence Industry in the Security Policy of Western countries, including the Czech Republic. The years of drawing the "peace dividends" after the end of the Cold War, which also meant a partial reduction in spending on armaments, are definitely over. At the same time, the Russian War in Ukraine has become a kind of "strategic shock", which forces an accelerated increase in defence budgets, and thus also the capacities and capabilities of the Defence Industry.

This was foreshadowed by the unprecedented German "security turnaround" announced in May last year. A special financial fund of 100 billion EUR was created to cover the defence needs of the Federal Republic for five years. The USA and the EU as a whole have also provided unprecedented military aid to Ukraine: without the supply of arms and weapon systems, Ukraine would have difficulties facing a Russian invasion. Supplies attack the threshold of roughly thirty billion USD, with the United States of America being the main funder. At the same time, it is clear that they will continue intensively this year as well.

However, the war also revealed the "Achilles heel" of the West: the extent of the armament aid means that not only

the smaller but also some of the larger NATO countries are beginning to experience a weapons and ammunition deficit. In some countries, there are concerns that the lack of weapons in domestic stocks could increase their vulnerability. The governments of NATO member countries are calling on the armament industry to increase production, both for supplies to Ukraine and to replenish their own stocks. But it is not easy at all. Some countries may find it difficult to replenish their reserves quickly because they no longer have a strong defence sector that could quickly produce replacements, and many of them rely on the dominant US Defence Industry, which has pushed out some competitors. How to expand production after decades of "piece orders" when even the most essential thing, i.e. qualified workforce, is lacking today?

How is the Czech Republic doing in this sphere? Just in the first half of last year, it provided armaments aid of 5 billion CZK. From the army's so-called inviolable reserve supplies, there were provided T-72 tanks, armoured infantry fighting vehicles, helicopters, ammunition, and small arms. According to unofficial information published in the Czech media, Czech armament companies also provided tanks, armoured infantry fighting vehicles, howitzers, and rocket launchers to Ukraine. The government has also approved additional aid - the supply of heavy military equipment. However, the particular specification of the aid is subject to secrecy for security reasons.

You can get an idea of the extent of the help for Ukraine based on the data of

some armament companies. Holding CSG, which includes Tatra from Kopřivnice, Excalibur from Šternberk in Moravia, and the radar manufacturer Retia from Pardubice, is counting on sales of around 30 billion CZK. It is Excalibur that repairs and supplies T-72 tanks, tracked armoured infantry fighting vehicles, and rocket launchers to Ukraine. The fact is that almost fifty percent of Czech armaments exports will go to Ukraine this year. Other deliveries worth tens of billions of CZK have been contracted by the Defence Industry companies - arms licenses for the next 3-4 years of 31 billion CZK were granted for export to Ukraine. The greatest interest is in ammunition, spare parts for delivered military equipment, or other military equipment. Servicing and repairing weapons must also be ensured.

It is evident that the ability to produce weapons, provide the necessary service and also cooperate with foreign partners significantly contributes to strengthening the state's defence capabilities. And it is certainly an undoubted advantage that in the Czech Republic, as in other European countries, there is a "national armaments champion" - Czechoslovak Group holding, which also means a competitive advantage within the European armaments market. Thanks to the prosperous Defence Industry, considerable funds also return to the state budget, which also contributes to maintaining the country's economic stability.

In this context, the senselessness of the trend that appeared in the past months - to include the Defence Industry into the category of "unsustainable" productions

in terms of their low perspective and sustainability within the so-called social taxonomy as part of the European Green Deal, "stands out" again. The implied importance of the Defence Industry and the reality of the security situation in Europe after the outbreak of war in its east require such an approach to become a thing of the past. It makes no sense even in connection with the simultaneous extensive support of the armaments industry by the EU, among other in the form of the European Defence Fund.

But this year may be complicated for the Defence Industry. A permanently worsened security situation may require the further development of production and repair armament capacities and the strengthening of logistical ties. Mr. Jiří Hynek, the President of ADSI CR, also raised a "warning finger". As he said, the year 2022 was also exceptional because Czech companies drew on stocks of old Soviet technology. "However, this kind of growth will not happen again, because a lot of stocks were used and these started to run short." According to Mr. Hynek, there will soon come a phase when companies will have to produce everything, which is not easy because supplies of materials are delayed and there is a lack of the already mentioned qualified workforce.

At the same time, the production of weapons depends on the continuous supply of raw materials, and these are also threatened by the failure of the Russian and Ukrainian markets. Once again, the crisis situation shows the dependence on China, which controls the extraction of raw materials in Africa and the production of many key components. In addition, it has 85 % of the world's reserves of precious metals for modern technologies. Achieving raw material strategic autonomy is thus a strategic challenge for NATO and the EU.

Raw material shortages are also accompanied by an energy crisis. The huge increase in energy prices is also reflected in the production of some basic raw materials, without which the arms factories can't do. In particular, we are talking about nitric acid, which is a key component for the production of all types of gunpowder, both for handguns and artillery and tank ammunition. And in the Czech Republic, such a situation is impending: Lovochemie a.s., which is the largest Czech producer of nitric acid, did not even rule out a com-

plete shutdown of production some time ago. According to the German newspaper Die Welt, German arms factories are also facing a shortage of fibre residues that arise during the processing of raw cotton. Their reaction with nitric acid and sulfuric acid produces nitrocellulose, which is used to produce gunpowder. And China is the most important supplier of cotton residues. However, deliveries from China have now slowed down considerably. It already started with the disruption of supply chains due to the pandemic. It can now take up to nine months from order placement to delivery, whereas in the past, three months at most was enough. The question is what the loosening of Covid restrictions in China can do to supplies today - it is expected that there will be a mass infection of the population. The situation is thus very unpredictable. In addition, some analysts say that behind the supply cuts, there is the fact that the Chinese see them as part of a "system competition" between the West and China.

Even domestic arms factories have to watch the USA-China rivalry. The USA has banned imports of advanced computer semiconductors to China to prevent it from becoming a world leader in artificial intelligence as it could boost China's military potential. We are thus witnessing a new type of arms supplies race. At the same time, the USA has to count on retaliation, which can affect large American companies such as Apple, Qualcomm, Cisco, Microsoft, and Boeing doing business on a large scale in the Chinese market. Taiwan is also related to this. If the situation around the island continues to escalate, it will bring production problems for the world's largest chip maker - TSMC. The effects would be unfathomable for the USA and Europe, including the Defence Industry.

In light of the above challenges and potential turbulences, it is so important to what extent Czech Defence Industry companies can expand and diversify their production portfolio and obtain new contracts outside of Ukraine. Undoubtedly, the holding company CSG, which managed to get the world manufacturer of small-calibre ammunition Fiocchi with production in Italy, Great Britain, and the USA, has been successful in this regard. At the same time, CSG penetrated the Asian market, where it won two contracts for the Indonesian Ministry of Defence with a total value of over

500 million EUR (almost 12.2 billion CZK) for the delivery of a medium-range air defence system and a tactical ballistic missile system. Excalibur International is responsible for the contract, which is part of the holding and another holding company, Retia, participates in it. The order has two big benefits: it is the first time that a company from the CSG holding is a supplier and system integrator of the entire air defence system, and at the same time it is a strategic project of cooperation between the Czech and Turkish Defence Industries. The purchase of 210 infantry fighting vehicles CV90 from the British-Swedish company BAE Systems should also be a great opportunity for the Czech Defence Industry. The contract for this largest arms order in the history of the Czech Army is to be signed this year. The value of the contract will exceed 50 billion CZK, while its contractual condition is that at least 40 percent of the contract will return to Czech companies, which represents approx. 20 billion CZK. This is how it should happen: company representatives have already presented their intention to use the potential of more than 30 domestic companies. The state enterprise VOP CZ would be in charge of the chassis and the overall integration of the armoured infantry fighting vehicles, while the Excalibur Army company from the CSG holding would be responsible for the production of the tower. Other components for armoured vehicles are to be supplied, for example, by the companies Meopta and Ray Service, VR Group, URC Systems, Pramacom, Poličské strojírna, and Agados. In practice, it will thus prove that the order can significantly contribute to the further development and sustainability of the Defence Industry in our country. At a time of expected economic uncertainty and security turbulence, this represents considerable added value.

*PhDr. Miloš Balabán, Ph.D., the Chairman of The Prague Security Conference. z.s.*



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The Material Research Centre is specialized research centre operated as a separate department at the Faculty of Chemistry, Brno University of Technology. The centre specializes in applied research in the field of inorganic materials, binders, heat resistant (refractory) materials, advanced ceramics, special composites with controlled properties and polymers.

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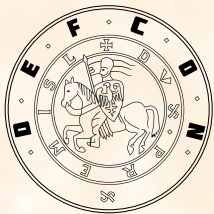
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The Czech Technical University in Prague (CTU) is one of the biggest and oldest technical universities in Europe. CTU currently has eight faculties (Civil Engineering, Mechanical Engineering, Electrical Engineering, Nuclear Science and Physical Engineering, Architecture, Transportation Sciences, Biomedical Engineering, Information Technology) and more than 18,500 students. For the 2018/19 academic year, CTU in Prague is offering its students 252 accredited study programmes in Czech language and 83 in foreign languages. CTU educates modern specialists, scientists and managers with knowledge of foreign languages, who are dynamic, flexible and can adapt quickly to the requirements of the market.

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The main areas of activities DEFCON s.r.o. are deliveries of spare parts, upgrades, service activities, provision of flying and ground staff training, including the complete solution of projects in the areas of foreign trade with other military equipment and material. Another area of activity is the presentation of Czech defence industry companies abroad and their representation.

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# NEW HAND GRENADES – CZECH MADE



ZEVETA AMMUNITION a.s. as a traditional Czech manufacturer of ammunition and pyrotechnics constantly develops new products and innovates existing ones. It has currently completed development work on the modernization of hand grenades, including the development of a new igniter so that the user receives a modern means of tactical use that meets all current trends in the field of hand grenades. Emphasis is placed especially on ZEVETA's ability to produce all parts of a hand grenade, including the initiation chain, self-help and under its own direction, and thus provide the Czech Republic with the opportunity to bring back to life the independent and original production of hand grenades after a long time. Structurally, the igniter being prepared

consists of a lever-type throw fuse, which is secured by a transport safety pin. The igniter has a time function with a standard delay interval of 3 to 5 seconds, which can be set at the factory at the customer's request, thus preparing a customized igniter. The removal of the switch and impact mode greatly simplified the entire igniter and thus the use of the hand grenade. Hand grenades are intended to be thrown from the user's hand and are therefore designed in such a way that their handling meets the normal handling and safety standards for this type of ammunition, i.e. protection against unwanted initiation during handling and at the moment of readiness for use.

The new hand grenade is marked as HG-

22/3.5 and will be produced in several basic variants:

- The HGF-22/3.5 fragmentation hand grenade is a hand-thrown infantry grenade intended for use during offensive operations against soft targets. HGF is an assault grenade with a plastic outer shell with ridges for better grip. The body of the grenade is filled with an explosive charge that is surrounded by steel balls. When the grenade explodes, it creates an overpressure and a shock wave, which are combined with the effect of small steel balls acting as shrapnel.

- The HGO-22/3.5 assault hand grenade is a hand-thrown infantry grenade intended for use during assault operations in built-up areas. HGO is an assault grenade with a plastic outer shell with ridges for better grip. The body of the grenade is filled with an explosive charge. The grenade creates overpressure and a shock wave.

- The HGT-22/3.5 thermobaric hand grenade is a hand-thrown infantry grenade with an increased pressure and heat effect, intended for use during offensive operations in built-up areas. During development, the effect of the thermobaric grenade filling was tested and proved against standard TNT, which is commonly used for the production of hand grenades, and the result is a composition with an effect of 170-180 % of the equivalent amount of TNT, i.e. almost double compared to TNT.

The portfolio of hand grenades will also be supplemented with reduced, training and school versions so that the user is provided with a complete program for training and using these devices.



# PBS Turbine Propulsion Units

## Gaining Success in Western Markets

PBS Velka Bites invests around one hundred million a year in development projects, with which it wants to succeed primarily in Western markets. These efforts are bearing fruit, and turbojet engines with PBS nameplates provide power to UAVs from the Italy-based Leonardo company, for example, while turboshaft engines provide power to heavy UAVs manufactured in Sweden. The company's activities in the US and India have also been successful.



The new PBS TJ200 jet engine is in the final development phase

Today, Prvni brnenska strojirna Velka Bites a. s. is a synonym for top-quality aircraft turbine power systems in the world, which have earned credit with their customers primarily by their reliability proven in thousands of aviation applications, but also by the ability of their manufacturer to adapt themselves to customer requirements. PBS turbine engines can be found in a wide variety of both manned and unmanned versions of aircraft all over the world. Several major defence applications on which PBS currently cooperates are now in their prototyping or testing phase. One of the brand-new projects is the development of the PBS TJ200 turbojet engine, designed primarily for modern defence UAVs of the 5th generation. It will be an engine which will significantly increase the power output limits of the existing range of PBS turbine engines while maintaining a very narrow frontal diameter, which is a

key parameter for this category of aircraft engines. The company will unveil this engine to the professional public for the first time at this year's most important air show, i.e., at Paris Air Show 2023.

However, the company is also upgrading its existing products. For example, it is currently working on the implementation of a pyro-ignition system, the aim of which is to significantly reduce the in-flight starting time of turbojet engines at high altitudes to below 7 seconds. This is an important feature for applications with in-flight starting ability.

Another project, which has already been successfully completed, is the modification of the PBS TJ150 engine for repeated use after landing in salt water. The customer and ordering party of this modification was Leonardo, a leading European aerospace manufacturer, which has chosen these engines produced in Velka Bites for its upgraded successful aerial target drone Mirach 100/5 V2.

The company is also succeeding with other key products, which are auxiliary



Safir 5K/G MI40 auxiliary power unit





The American NASC TRACER UAV is powered by a pair of PBS turbine engines

power units (APU) and environmental control system (ECS). The APU start the main engines of aircraft and helicopters and supply electrical energy for their pre-flight preparation. The ECS, which cools or heats the cockpit or cargo compartments, could be interconnected with this system as well. The ability to offer customers both these systems cooperating together brings a competitive advantage in PBS's current efforts aimed at being awarded a contract to supply auxiliary power units and environmental control systems for a major medium-weight helicopter project in the Middle East region.

The year 2023 will be important for PBS also in terms of another of its manufacturing segments. In addition to aerospace products and precision castings from its own foundry, PBS offers very specific turbines for the cryogenic industry as well. PBS supplies several types of equipment for rare gas liquefiers. The cryogenic compressor cascade made by PBS Velka Bites is used, for example, at CERN in Switzerland. The company is also working on several key development projects in this area. The result of one of them, the most powerful PBS cryogenic turboexpander to date, is going to be launched on the market by the company this year. The product is targeting the rapidly developing hydrogen energy industry.

Recently, PBS has also invested heavily in its business development activities. It has established affiliated companies in the US and India, which are looking for opportunities to sell high-end products from Velka Bites in those markets. Both companies have been succeeding in their activities.

For example, PBS gained an order for the delivery of hundreds of 400 N thrust engines to the US. PBS INDIA is currently dealing with dozens of overhauls of previously delivered auxiliary power units which start 10-tonne transport helicopters in India. It also competes with world-renowned brands for the delivery of APU and ECS units for the project of the new Indian Multi Role Helicopter abbreviated as IMRH. Equally important are the PBS's efforts to join the European defence industry structures. In addition to the already mentioned successful cooperation with Leonardo, cooperation within the framework of other European projects is also being developed, and therefore it is possible to state that the long-term goal of succeeding with PBS final products on Western markets appears to be gradually fulfilled. A completely new and important chapter is the developing cooperation with several key companies in the Ukrainian defence industry.

However, one should not forget the long-standing successful cooperation with the Czech defence and aerospace industry. After all, it was the cooperation on the project of the globally successful L-39 Albatros trainer aircraft of AERO Vodochody AEROSPACE that started PBS' journey into the aerospace and defence sector.

This long-term cooperation continues with the successful L-39NG project. At this point, it is also certainly worth mentioning the successful partnership with industry associations, especially the Defence and Security Industry Association of the Czech Republic ("DSIA"), which has been a respected and recognised partner of Czech companies operating in this field since its establishment, as well as the newly established Association of Aerospace Industries of the Czech Republic ("ALKP").

První brněnská strojírna Velka Bites a. s. is entering a new chapter of its existence characterised not only by orientation towards demanding Western markets, but also by developing cooperation with companies operating in the defence industry. This phase will bring not only new challenges but also provide interesting opportunities. Whether it is the increasingly growing unmanned aerial vehicle sector or the turbojet-powered missile sector, PBS has very much to offer to its partners.



Leonardo Mirach 100-5 V2 target drone with PBS TJ150 engine

# Crises Test the Strength of AURA

## Interview with the owner and general director of AURA, Mr. Filip Engelsmann



**Mr. Director, the covid pandemic is hopefully behind us, but there is the Russian invasion of Ukraine with all its consequences and we are struggling with the energy crisis. How does your company experience and manage all the difficulties?**

We are indeed not living in easy times. The past year has tested us all in every way – economically, militarily, in terms of health and morally. It is positive that we have been able to partly go back to face-to-face meetings, appointments, seminars and training sessions to compensate for the handicap of personal relationships. We appreciated the standard course of the Future Forces 2022 trade fair in Prague Letňany with the possibility of meetings with domestic and foreign customers and partners. We presented here innovations in the field of crisis logistics, material lifecycle management, controlled document distribution and cataloguing of assets supplied to the armed

forces. Furthermore, we were happy to praise already the 28<sup>th</sup> meeting of the users of MC CATALOGUE, the most widely used codification software in the world which is produced by AURA, this time in Bratislava. Once again, we were able to personally experience the traditional meeting of the Czech defence and security community, which followed the annual meeting of the representative editorial board of the Review magazine. But what I could hardly have imagined, and unfortunately neither the self-proclaimed "crisis" experts, was the invasion of Ukraine by Russian armed forces with all its consequences, including an energy crisis that Europe cannot deal with. It is obvious that AURA, as well as our entire republic, the European Union and other world communities must work very intensively and in a coordinated manner to eliminate the current catastrophic crises.

**AURA is a renowned Czech exporter of information systems for military logistics. Is it currently able to respond to predictable changes and adapt its portfolio to new requirements?**

For more than thirty years, AURA has consistently focused on the information support of logistics processes. It actively applies its long-term acquired knowledge and experience in this area in the development and modernization of the Logistics Information System, abbreviated as ISL, which supports military logistics of all components of the armed forces in an integrated manner. This year, our company made a contract with the Ministry of Defence of the Czech Republic not only for the support and maintenance of ISL, but also for its evaluation. The deterioration of the security situation

in Europe and crucial importance of logistics support for the operational capability of the troops have contributed to the fact that the Ministry of Defence has become increasingly aware of the strategic and irreplaceable importance of high-quality, stable and available information support in this area, which is provided by our product – ISL. This was also reflected in the conclusion of the contract, thanks to which the Ministry of Defence is guaranteed the availability of necessary services in case of declaration of a state of national emergency or war. The conclusion of this contract is a challenge and major commitment for our company.

As for new customers, a significant event and a recent milestone for AURA is the delivery of our Logistics Information System for the State Emergency Service of Ukraine. We are thus successful in fulfilling our long-term goals, which is to maintain our position of the best in the codification world and to follow up on a much higher goal, i.e. to offer sophisticated comprehensive solutions such as an integrated logistics information system.

**Your MC CATALOGUE remains the most widely used codification software in the world. What can you tell us about its development?**

One of our best development teams, led by Mr. Roman Hanzal, works on the development and implementation of MC CATALOGUE on a permanent and systematic basis. I have no fear that we could abandon our leading position in the world market. On the contrary, despite all the difficulties that all of us have had to overcome recently, we have succeeded in expanding our exclusi-



ve codification territory. Especially in the Arab world, for example in Qatar, Jordan or Algeria. But we have also been successful in other countries. I very much appreciate that the honourable Japanese government considers AURA to be a trusted supplier for the Japanese state procurement market. In this sense we have received a relevant Qualification Notice issued by the Japanese government. We are currently paying great attention to the training and care of our codification software customer. For example, we organized a webinar on NDER this year, which was attended by more than 70 participants from 18 countries around the world. We have now started intensive preparations for the well-known and traditional NCS College, which will take place in Brno at the turn of August and September 2023. In our educational activities, we make extensive use of Publi – our multimedia e-library, which is playing an increasingly important role as an effective platform for the Defence and Security Industry Association to communicate information about its members' products to potential customers in Czechia and abroad.

**Is your company preparing something new also in the field of practical codification for the defence industry, i.e. in the activities of the codification agency?**

Those who need to codify their produ-

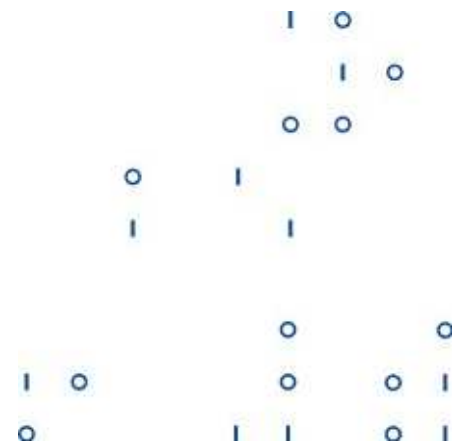
cts, which they supply to the department of Defence must have noticed significant changes, almost an earthquake of a lower magnitude on the Richter scale, in this part of the codification contract clause fulfillment of a purchase contract. In connection with its national scope and legislative changes in the field of international exchange of codification data, the National Codification Bureau is switching to a new codification tool, WEB-KAT, which will be a mandatory

software tool for all certified agencies. This codification tool based on MC CATALOGUE was supplied by our company, which won the tender. In the further development we expect a close connection with ISL, specifically its Catalogue module. Another positive piece of news is that our Codification agency won the tender for the screening and codification of items for LOM, s.p., which is a significant order in the field of codification in Czechia.

**Mr. Director, is there anything else you would like to say in conclusion?**

Yes, I would, and I'll be very laconic. "Acta non verba", as the former French military leader and Minister of War Lazare Hoche said. It means actions not words, we have had too many of those already.

*The interview was prepared by Antonín Svěrák*



# 30 years of IDET and 95 years of the Brno Exhibition Centre

The Brno Exhibition Centre will continue to host important trade shows that are important for many sectors of industry this year. One of them will be the IDET International Defence and Security Technologies Fair, which will celebrate 30 years since its first season. Modern defence technologies will be presented in Brno with the participation of major companies in the industry from 24 to 26 May 2023. We have interviewed Tomáš Moravec, CEO of BVV Trade Fairs Brno, about the preparations for the fair.



**What position does IDET occupy in the portfolio of BVV Trade Fairs Brno?**

IDET is an extremely specific event in our expo calendar due to its nature and orientation. The presence of the highest political representatives and official military delegations from countries that are commercially interesting for the Czech defence industry is crucial for the success of this trade show. I am pleased that thanks to close cooperation with the Ministry of Defence of the Czech Republic and the Defence and Security Industry Association of the Czech Republic, their participation can be regularly made happen.

**Investment in the defence industry is a topic of discussion in many countries in view of the current situation in Ukraine. Will this be reflected in the shape of this year's IDET?**

Ukrainian companies from the defence industry are expected to be featured. This war conflict has changed the perception of the security situation not only in Europe but also in other countries around the world. Countries are more focused on the issue of modernization of the armed forces, which is related to the promotion of investment in the defence industry and the related interest of companies in exhibiting at the fair. I believe that IDET will confirm its position and contribute to the establishment of new business relations and partnerships. The dominant features of the fair will of course include the exhibition of the Ministry of Defence and the Czech Armed Forces.

**IDET is associated with a number of extra events. What are you preparing this year?**

An attractive part of the programme will be the outdoor IDET ARENA, which will show military, firefighting and police equipment in action. The Start-up Innovation Zone project, which aims to raise the profile of innovative Czech start-ups operating in the defence industry, will also return. We also expect to hold several seminars focused on current industry topics. We are also planning to introduce our new virtual platform to exhibitors and visitors to the fair.

**2023 is a year of celebration for BVV Trade Fairs Brno. In addition to the 30th anniversary of IDET, you are also celebrating the 95th anniversary of the Brno Exhibition Centre. What specifically is in the pipeline?**

On the occasion of IDET's anniversary, we are preparing several surprises that we will gradually reveal during the communication campaign. We will gradually commemorate the 95th anniversary of the Brno Exhibition Centre throughout the year, whether through dedicated events or, for example, a new logo, which you can already notice on our visuals. The culmination of the celebrations will then be Saturday 27 May 2023, when Security Day will take place at the expo grounds. For this day, we are also planning a further entertainment programme in order to celebrate our half-round anniversary with as many visitors as possible.

**You have been in the trade fair business all your professional life. What do you think trade fairs will look like in the future?**

Trade fairs are a platform for people to meet over connecting topics and provide dignified backdrop to such encounters; they bring exclusive contacts and ideally an overview of the industry. On these face, like other industries, the weakening caused by the covid-19 era as well as instability and the emerging economic recession, which invariably mean a drop in the companies' spending on marketing and presentation. In the long term, however, this cyclical phenomenon is repeating itself and I expect that trade fairs will again experience a period of growth in exhibitor and visitor numbers after the period of decline. After all, how else to present news than at a trade show in front of a diversified range of visitors and potential customers.

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# Interview with the Director of the Security Department of the Ministry of the Interior of the Czech Republic JUDr. Josef Veselý, Ph.D.

He started working for the Police as an ordinary policeman, later as an investigator at the district and regional level, from 1997 to 2001 he worked at the Investigation Office for the Czech Republic (as the Department Director and then as the Deputy). He has worked at the Ministry of the Interior of the Czech Republic since 2001. He graduated from the Law Faculty of Charles University in Prague and has been the Director of the Security Department of the Ministry of Interior since 2004.



## Mr. Director, what are the main tasks of the Security Department of the Ministry of the Interior of the Czech Republic (DM MI CR)?

The Security Department of the Ministry of the Interior has a wide range of legal activities, especially in the sphere of the protection of classified information, issuing so-called lustration certificates, issuing cover documents, and also operating a classified information system for public administration bodies. Here, I would like to draw attention to activities that are interesting from the public's point of view, namely the acceptance, registration, and processing of applications for issuing the so-called lustration certificates, as well as ensuring the operation of government and departmental secret connections. The Security Department further manages and coordinates the protection of classified information in the Ministry, in the organizational units of the state, in state-

ded organizations, established to fulfil tasks in the Ministry's sphere of competence, for which the Ministry performs constituent functions, and in the Police, including personnel, administrative and physical security. The Director of the Security Department, on the authority of the Minister of the Interior, performs the function of the Security Director and fulfils the duties of a responsible person in the area of the protection of classified information and security competence. You mentioned the lustration law. Can we talk about it now? Since when has it been in force, what does the lustration certificate contain and how has it proven itself in practice? As far as I know, there were several attempts to change it or even cancel it...

Act No. 451/1991 Coll., an act establishing certain additional prerequisites for the performance of certain functions in state bodies and organizations of the Czech and Slovak Federal Republic, the Czech Republic and the Slovak Republic (Lustration Act), was adopted by the then Federal Assembly on 4<sup>th</sup> October 1991. Undoubtedly, this is one of the most famous post-November (1989) standards. The so-called Lustration Law was supposed to prevent (and does prevent) former members or collaborators of the State Security (StB), high-ranking officials of the Communist Party of the Czech Republic, or the People's Militia from reaching high positions at the head of the state, the Army, the Courts, but also in television or radio, for example. The lustration certificate is being issued for the purposes of the performance of statutory functions filled by election, appointment, or establishment. The lustration certificate certifies whether or not the lustrated person was or was not, in the period from 25<sup>th</sup> February 1948 to 17<sup>th</sup> November 1989, a member of the National Security

Corps classified in the State Security folder and whether or not he/she was registered in StB materials as a collaborator within the meaning of § 2, paragraph 1 letter b) of the Law, (i.e. the person was not registered in the materials of the State Security as a resident, agent, owner of a rented apartment, owner of a conspiracy apartment, informer or ideological collaborator of the State Security).

The Law does not apply to citizens born after 1st December 1971. These citizens are not required to submit a lustration certificate or a Statutory Declaration.

During the discussion itself, more than a hundred amendments had to be resolved. Despite repeated attempts to cancel it, it is still valid today. Right from the start, the draft law had many opponents who (to this day) point out that it contains the principle of collective guilt.

The law was originally supposed to be valid for five years, but despite the veto of then-President Václav Havel, the members of Parliament first extended it by five years, then cancelled the limitation of validity completely. In 1992, the Constitutional Court deleted from it the categories "Confidant" and "Candidate of secret cooperation", in which the StB also included citizens without their knowledge. Of course, there were proposals to cancel it, but these never passed, so the Lustration Law is still in effect today. However, since 2014, Members of the Government do not have to have a negative certificate. This was made possible by the accompanying norm to the Service Act. In accordance with the program statement of the government, an amendment to the Law is being prepared, which, if approved, will cancel this exception and the Lustration Law will once again

apply to both Ministers and Deputies of the Members of the Government.

For information, I present the statistics of lustration certificates issued. From 1991 to the end of April 2022, a total of 505,227 lustration certificates were issued, of which 10,823 were positive.

**When it comes to the protection of classified information, in what areas does the Security Department manage and coordinate? Can you be specific?**

Act No. 412/2005 Coll., on the protection of classified information and on security competence exhaustively determines the types of protection of classified information.

These are:

- a) personnel security**, which consists of the selection of individuals who should have access to classified information, verification of the conditions for their access to classified information, their education and protection;
- b) industrial security**, which consists of a system of measures to ascertain and verify the conditions for an entrepreneur's access to classified information and to ensure the entrepreneur's handling of classified information in accordance with this Act;
- c) administrative security**, which consists of a system of measures during the creation, receipt, registration, processing, sending, transportation, transfer, storage, shredding, archiving, or another handling of classified information;
- d) physical security**, which consists of a system of measures designed to prevent or make it difficult for an unauthorized person to access classified information, or to record access or an attempt to access it;
- e) the security of information** or communication systems, which consists of a system of measures aimed at ensuring the confidentiality, integrity, and availability of classified information handled by these systems, and the responsibility of the administration and users for their activities in the information or communication system; and
- f) cryptographic protection**, which consists of a system of measures to protect classified information by using cryptographic methods and cryptographic materials during the processing, transmission, or storage of classified information.

As far as classified information is concerned, I think that the Ministry of the Interior, along with the Ministry of Defense, is one of the entities with the largest number of people

who come into contact with classified information, and also that the most classified information is processed here (during the year 2021, 25,596 persons with access to classified information and 70,805 processed classified documents).

**With the protection of classified information (previously facts), there is also the operation of a classified connection. What tasks does the Security Department of the Ministry of Interior perform in this area?**

Government secret connection is solved by the Act of the Czech National Council No. 2/1969 Coll., dated 8th January 1969 on the establishment of Ministries and other central state administration bodies of the Czech Republic (Competence Act). In § 12, it states that "The Ministry of the Interior is the central state administration body for internal affairs, among other things, it operates an information system for dealing with classified information between public authorities". The government secret connection has been operated by the Ministry of the Interior since 1969.

The VegaT-2G information system is intended for the processing, storage, and transmission of Secret and NATO SECRET information between the highest state and government officials and other designated persons in public authorities.

The VegaD-2G information system is intended for the processing, storage, and transmission of information classified as Confidential, CONFIDENTIEL UE/EU CONFIDENTIAL, and NATO CONFIDENTIAL between the highest state and government officials and other designated persons in public authorities. It enables communication with the Beta-2G information system, which is intended for communication between departments of the Ministry of the Interior of the Czech Republic, the Police of the Czech Republic, and the Fire and Rescue Service of the Czech Republic.

The information systems VegaT-2G and VegaD-2G and Beta-2G are referred to by the established name "government secret connection".

**In this context, there arises the question about equipping with technology. Does it match your ideas? Do you cooperate in any way with the Czech industry and Czech companies?**

For the information systems of the gover-

ment's secret connection, new hardware and software were purchased between 2017 and 2019 with the use of EU funds to equip data centres and user workplaces designated as submission points. Some of the components were manufactured in the Czech Republic. The situation is different with cryptographic means that are exclusively foreign-made. There are still no entities in the Czech Republic that would be able to produce such special equipment, produced mainly for military use.

We are currently creating an additional range of services for users of the government secret connection, such as video conferencing, electronic signature, etc.

**As the Director of the Security Department of the Ministry of Interior, you are entrusted by the Minister with the performance of the function of the Security Director. What does this mean for you personally?**

The Act on the Protection of Classified Information regulates the principles for determining information as classified information, the conditions for access to it and other requirements for their protection, the principles for determining sensitive activities, and the conditions for their performance and the associated performance of the state administration. According to this law on the protection of classified information, the responsible person in each Ministry is the Minister directly, who can authorize a person who meets all the requirements of the Law to perform the function of the Security Director.

The Security Director ensures the comprehensive performance of all agendas for the protection of classified information, i.e. object, and administrative security, and ensures the performance of activities related to the register of classified information and in the field of information systems. I would like to state here that in the framework of personnel security, according to the provisions of § 141 of the Act on the Protection of Classified Information (Act No. 412/2005 Coll., on the Protection of Classified Information and on Security Qualification, as amended), the Ministry of the Interior has the status of the National Security Office in security procedures for members of the Police of the Czech Republic where the Minister of the Interior has decided.

*Mr. Director, thank you for the interview  
Jaroslav Jonák*

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# LOM Praha at Professional Crossroads

The state enterprise LOM Praha recently celebrated more than 100 years of its existence. In terms of size and number of employees, it is one of the leading industrial plants in the Czech Republic. The role played by LOM Praha is becoming extraordinarily important, especially now, when the Army of the Czech Republic will be renewing a significant proportion of its aviation equipment. This was one of the reasons for our interview with the director of the state enterprise, Mgr. Jiří Protiva.



**Our media cooperation together has been quite active for six years now. Back when you were Director of the Military Technical Institute (VTÚ) you convinced the heads of the Ministry of Defence and the Army of the Czech Republic that you possess extraordinary skills, and that they should be further exploited. When you managed to turn the stagnant VTÚ into a thriving modern enterprise in such a short space of time, you were faced with an even more challenging task - LOM Praha. And this brings me to my first question: How have you drawn on your experience from your previous post and how has your job today had to change?**

I have been in the arms industry for a long time. I have experience from the Ministry of Defence, and was then also given the opportunity to be in on the establishment of the VTÚ as administrative director, which is de facto the equivalent of a chief of staff. I was in charge of issues ranging from public procurement through human resources to PR, and I coordinated the operation of the state enterprise with other members of the management. This gave me enough essential experience to subsequently serve as the director of the VTÚ for six years. The beginning was not easy; I was faced with the challenge that the state enterprise had suffered an economic loss in 2014 and it was necessary to get it back on its feet, to gain a good reputation and, most importantly, to develop essential skills in the newly established state

enterprise on which the institute could build in the future. I believe we have succeeded. When I was subsequently appointed as director of the state enterprise LOM Praha, I found that the situation in LOM was similar in some ways, yet at the same time completely different, especially as regards its field and scope of expertise. The situation was similar in that LOM was in a crisis similar to that faced earlier by the VTÚ. Resolving such a complex problem is not just about me, of course, but about my entire team. As a manager, you have to have a specific vision, you have to have ambitions that you want to achieve, and you have to convince not only the company management but also the employees that your vision and ambitions are the right ones. The method I have found to work in moving things forward is to have more detailed knowledge of the issue at hand, which makes managerial decision-making more effective. I came to the state enterprise LOM Praha with the conviction that its more than a century of history should continue for at least another hundred years.

**You have been in your new position for practically two years, since starting on February 10, 2021. What do you think you have succeeded in doing in that time, or what do you think has not yet been achieved or you have not yet had time to achieve?**

We are gradually fulfilling the vision and ambitions that I and my team set out at the beginning. I will try to demonstrate this taking some of our key programs as examples. Firstly, it is about maintaining technical support for the Mi-series helicopter equipment within the framework of the so-called natio-



nal road, which we introduced after the start of the Russian aggression in Ukraine and the suspension of relations with the Russian Federation. The second area is the so-called westernization of the Eastern helicopter platform, which essentially involves the implementation of Western technologies to meet NATO standards.

Within the overall transformation of the state enterprise, it is also about maximum involvement in the H-1 platform, i.e. in training and life cycle support for VIPER and VENOM helicopters. On July 1st, 2022, we set up a new H-1 plant and have now completed the construction of a simulation hall in Náměšť nad Oslavou. All the necessary staff are already in place for this plant. Another positive step is the signing of a contract for L-39 NG trainers, which will gradually replace the existing L-39C fleet. The contract was concluded with Aero Vodochody in November last year, with the first of the 4 aircraft to be delivered by the end of 2024, i.e. next year. The contract also includes an option to purchase a further 4 aircraft to meet our customers' requirements and capacity for this type of flight training. This brings me to the economic parameters and management of LOM Praha for the years 2021 and 2022. Above all, our economic performance was positive in both years and we have seen the gradual recovery of the state enterprise. Now I am talking mainly about cash flow, which was not in good shape when I joined. There are certainly many areas to be improved, but

we are now focusing in particular on optimising internal processes to make the company more flexible.

**LOM Praha is one of the oldest companies in our country's industrial history. After the Second World War, LOM Praha focused entirely on repairing and servicing Soviet aviation technology. Apart from what you've already done, what can your company expect to see in this respect in the coming years?**

As far as post-Soviet aviation technology is concerned, for some time we'll continue

to follow the 'national path', which is a raft of legislative and technical measures that we have adopted precisely to enable us to go on providing repairs and maintenance primarily for the Czech Army according to their requirements, until the process of the full rearmament to Western platforms is completed. We also offer similar services abroad, primarily to our NATO and EU partners. Even with these, it has become clear that Russian cooperation is not possible and any repairs in Ukraine are risky due to the ongoing war. We are currently cooperating in this area with Slovakia, Poland, Bulgaria and Northern Macedonia.

**At present, it is obvious that LOM Praha is entering a very challenging period, especially the reorientation to Western technologies. What can you tell us about this?**

This has already been partly covered in previous answers. When I joined LOM Praha, my team and I immediately started to take steps to transform it. This transformation means that we are starting to focus on technology other than Mi-series helicopters. The service and maintenance of H-1 helicopters is essential for us, including the provision of simulation training for ground and flight crews, and to give one other possible example - the power unit plant is gradually refocusing on power units from other renowned Western manufacturers with the intention of transferring some of their repair and maintenance operations to the Czech Republic.



**Our Review for the Defence and Security Industry 2/2022 featured an interesting article about the new ground and synthetic training centre at LOM Praha. Have there been any changes over the past six months in terms of further perspectives? Can you mention your partner company, VR Group?**

Synthetic training is a fairly broad program, which includes our subsidiary VR Group in its development and production. It specialises in the development and production of simulation technologies for both air and ground forces, including laser combat simulators. The simulator equipment of our flight training centre in Pardubice is equipped and continuously upgraded with VR Group technologies. I consider the Tactical Simulation Centre to be the showcase of simulation technologies, offering training in the following entities: the L-39, L-159, Gripen, F-16 and a full mission simulator for the L-39NG is soon to be implemented. In addition, VR Group is a company that produces simulators not only for the army, but is also a partner for the Police of the Czech Republic and the Castle Guard. Through our subsidiary, we are also integrating simulation technologies into key projects for the modernization of our ground forces.

**This brings us to a question that will certainly be of interest even to those outside the industry. These are undoubtedly the KROVKA projects and the projects for the new UH-1Y VENOM and AH-1Z VIPER helicopters for the Czech Army. I think there is also a project on the horizon to buy 24 state-of-the-art supersonic F-35 II Lightnings. One can assume that LOM Praha will be involved in these projects. Can you tell us something more specific about this?**

The KROVKA project is a perfect example of the 'westernization' of Russian technology to NATO standards. LOM Praha is involved in the prototype stage of this project and we have started on series construction. There are several Mi-171Š helicopters ready for this upgrade, which is a retrofit that makes these helicopters the best equipped helicopter of this type in the world. I recently said that the H-1 platform represents the portfolio of the future for LOM Praha, and this really is true in view of the company's ongoing transformation. The H-1 project comprises 2 lines for the state enterprise, these being simulation, as part

of which we have built a simulation centre in Náměšť and, at the beginning of this year, through the army we notified the Americans that we are ready to implement the simulator in this building. The second line is repair and maintenance, where we are on the verge of signing a service contract with the Ministry of Defence. At the same time, the entire team is preparing for training at Bell Textron and GE Aviation in the US, which should take place in March and April this year. The third platform you mentioned is the F-35 program. In general, and I'll be glad if it remains that way, LOM Praha should be involved in whatever the Czech Air Force acquires. We are currently holding talks about our involvement in this project. By linking our own intent in this area and through

communication with the Czech Army and the US aircraft manufacturer, we have identified four main areas. These are training, in which we expect to use L-39 NG trainer aircraft, as well as simulation technology, where our subsidiary VR Group will play a significant role, and also maintenance and logistics. The decision on a possible acquisition is yet to be made, but for the option of an agreed purchase we want to be fully prepared and be clear on how we will feature in this project. The decision on a possible acquisition is yet to be made, but for the option of an agreed purchase we want to be fully prepared and be clear on how we will feature in this project.

**I think we have another relatively hidden setback approaching, and that is, or soon**



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**will be, skilled technical staff. This is not only a problem in the Czech Republic; one might say that it's a problem in all developed countries. What is LOM Praha doing about this, given such ambitious projects?**

There is undoubtedly a shortage of qualified technical employees on the market.

Not only aircraft mechanics, but also other professions. The labour market has a shortage of welders, plumbers and grinders, for example. That is why we should also focus on apprenticeships in this area.

As a board member of the Association of the Czech AeroSpace Industry, one of my new responsibilities is education. It is essential to show young people the prospects offered by the Czech aviation industry from primary school onwards. At the same time, this must be done from the viewpoint of increasing defence literacy, so that more and more people are aware that the Czech aviation industry is also the basis for ensuring the security and defence of our country.

In addition to schools, I think it is also important to involve research organisations and especially start-ups in this system, as that's where the skill and creativity can be found, and they can be another good driving force for the sector as a whole. The main goal should be to set up a line of motivation for young people, running from education, through work experience, to actual jobs.

LOM Praha is currently targeting secondary and higher technical schools, offering

presentations of our professional portfolio, work experience at our specialised sites, and various excursions. The use of social networks forms a part of our recruitment activity. We get the feedback we need from all these events.

**My last question is about the near and more distant outlook for LOM Praha. If I'm not mistaken, the company will be celebrating its 110<sup>th</sup> anniversary in 2024. So that's the near-term perspective. Can you also outline some of your visions for the longer term, to 2030, let's say?**

LOM Praha is at a professional crossroads, as it were, and what motivates us are several tangible and promising projects that will enable us to move forward. Therefore, our ambition should and must be to be involved in these projects and to adapt the way that LOM is set up and works accordingly. We don't want our future to centre solely around repair activities; we're also looking for other opportunities to expand our portfolio.

*Thank you for the interview  
Miloš Soukup  
photo by Adriana Jesenská*





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MOLPIR GROUP CZ a.s. has been operating on the market since 1993 as a major manufacturer and supplier for microclimate treatment equipment in mobile devices. It deals with the development and implementation of special air-conditioning and heating units for logistic and defence vehicles of NATO armies. It offers cooperation in solving complex air-conditioning systems of vehicles. It carries out the development, production and supply of equipment for collective protection of persons, especially in the field of CBRN protection.

### Product Portfolio:

- Equipment for collective (CBRN) and personal protection;
- Air conditioning units;
- Ventilation equipment;
- Heating units



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Commanding armies has always been regarded as a kind of art, and the only chance to improve in it was waging war itself. But what if it would be possible to gain this kind of experience without the need to fire a single shot? The systems of constructive simulation that have pushed the fidelity and educational potential of war games and simulations to the next level are every bit as revolutionary as the Prussian tabletop Kriegsspiel once used to be. Moreover, their utility is not strictly limited to military use. Thanks to the cutting-edge simulation systems, also civilian stakeholders and all kinds of security and emergency corps can use them to exercise and prepare themselves to face emergencies. All with maximum respect to the complex real-world information environment, in modern conditions,

and with a broad spectrum of tools and forces. The WASP simulation system for advanced personnel training offers precisely this kind of experience. WASP is the software of Czech origin that can be utilized in many ways, intentions, scenarios, and activities. Support of the Czech team of experts from VR Group, a.s. with more than 20 years of experience in military and civilian staff training is always guaranteed. From a tactical exercise at a platoon level up to the complex crisis, WASP helps its users prepare any training audience efficiently for situations that are impossible to mimic in reality, costing a fraction of what it would otherwise require. Furthermore, command and control cannot be isolated from other interconnected duties and tasks, like real communication

with lower and higher echelons and other subjects, intelligence feed, or the overview of the status and activity of friendly forces. The innate flexibility and connectivity of WASP allow users to craft the desired outlook of the exercise precisely according to their particular needs and intentions: from the lay-down of the Day 0 situation and its development, through customization of the simulated entities' characteristics, specification of terrain and weather conditions up to the plug-in use of one's ICT systems. No plan survives first contact with the enemy. In this regard, the secondary benefit of simulation technology and exercises, besides personnel training, is the ability to test and verify keystone documents such as emergency plans. The scope of reality is limited. The scope of WASP is up to you.

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# Current and Future Challenges of OPTOKON, a.s. in the Field of Security

OPTOKON, a.s. is a long-term supplier of ruggedized products for the construction of communication and information systems in the military environment. However, the goal of the product portfolio is not only the hardware and software functionality of individual products but also the comprehensive and safe reliability of the resulting solutions. "According to the customer's requirements, we implement security elements into our products that will ensure reliable and secure functionality of the supplied customer solutions", says Ing. Jiří Štefl, director of OPTOKON, a.s., who adds "Over the last several years, our company has entered into a number of strategic partnerships that complement our product portfolio with elements of physical, operational and cyber security".

The basic functions of the LMCP mobile platform include a central monitoring and diagnostics system. This is intended for use with its own platform and monitoring and diagnosing all other ICT components in the network. The system can also be used by those who are not experts in the field of communication and information systems so they can check the functionality of the network at any time and potentially solve errors using the described procedures.

"The basic view of the system shows the floor plan of the asset in



which the system is installed, for example, a military vehicle. The operator is thus informed not only about the error condition but also about the location of the given component in the vehicle. This speeds up the resolution of the error" says Ing. Pavel Pospíchal, the technical director of OPTOKON.

In addition to operational safety, OPTOKON deals with cyber security where the company has been professionally cooperating over the long-term with Fidelis CyberSecurity including using their software elements. The security functions of LMCP thus optionally include effective tools for the detection of cyber incidents. In addition, they also implement functions for generating security reports, which can be effectively used during the planning and evaluation of the relevant military operation.

The common denominator of the secure solutions built on the OP-

TOKON platform is automation or early detection of operational or cyber incidents and automatic and immediate response. "This is how we move our systems to the maximum level of maintenance-free," adds Ing. Pavel Pospíchal.

Since 2022, OPTOKON has been a partner of INFODAS, which supplies security gates to modular ICT systems. These are intended for stationary networks and field systems. "We are responding to the increasing needs of customers for the transfer of information between different security domains and thus creating an environment for the transfer of information of different types of security across different networks", says Ing. Jiří Štefl. The INFODAS products were supplied to the OPTOKON portfolio in their final form.

The current security challenges of OPTOKON are further directed into efficient and smart solutions. An example is the FOTAS system, which, based on the detection of acoustic disturbances in the optical cable installed around the guarded perimeter, records all anomalies and disturbances. The fundamental advantage of this system is that, unlike a camera system, no power supply of active elements is needed around the entire perimeter, it is only necessary to install an optical cable, which does not emit anything and therefore cannot even be detected. This solution is ideal for the protection of perimeters with dimensions of up to tens of kilometers.







In recent years, OPTOKON years has incorporated machine learning hardware support into its product portfolio. "LMCP products can thus run applications and services using artificial intelligence elements. In addition, we have increased the operating temperature, resistance, and connectivity of these devices, which increases the future use of our portfolio", says Ing. Jiří Štefl, who adds "Since last year, our portfolio has also included the OPTTA product, which is designed for machine learning directly in the field environment. This will enable the introduction of completely new, not just security, applications and services in the future".

Dipl. Eng. Tomáš Müller, director of ITC Division OPTOKON, a.s.



## Tactical fiber optic cables

The term "tactical" is the designation of a special category of cables intended for demanding operating conditions and very high requirements are placed on them in terms of durability and reliability. They are primarily intended for military data and communication applications. However, it is also possible to use these cables in civil applications, for example in camera systems. The high flexibility of these cables allows them to be used multiple times in the sense of repeated unwinding and rewinding.

Therefore, for these cables to meet the demanding requirements, special materials and specific production processes must be used in their production. The load when testing these cables is significantly higher compared to commonly used optical cables.

The cable sheath is made of thermoplastic polyurethane. A typical feature of this material is its high resistance to water, UV radiation, chemicals, microorganisms, and mold. It also significantly exceeds commonly used materials in terms of mechanical resistance and is tough, being especially resistant to being cut by a sharp object or punctured. The most striking feature is its high flexibility, which remains unchanged even at very low temperatures

The secondary protection of the fiber is made of highly mechanically, chemically, and thermally resistant Polyamide 12, which protects the

optical fiber from mechanical damage.

Kevlar tensile elements give the cable high tensile strength and protect optical fibers from damage during unwinding and winding.

The durability of the "Military" cable is visible when comparing the properties with a standard optical cable of similar construction:

	Military cable	Standard cable
Operating temperature range	-55 °C až +85 °C	-20 °C až +60 °C
Compressive strength without change in attenuation	5000 N	~1500 N
Compressive strength with reversible damping	9500 N	~2000 N
Impact resistance	20 Nm	~5 Nm
Flexibility	100 N, >15 000 cycles	20 N, 100 cycles

In addition to the standard cable construction, a variant with a second sheath is also available to further increase cable resistance.

Cable variant with one jacket



Cable variant with two jackets

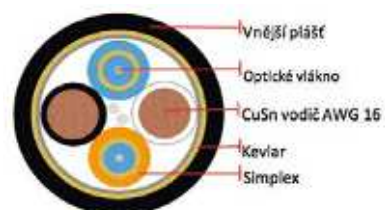


OPTOKON provides the complete solution for applications where optical fiber is brought to the antenna (FTTA) and for security CCTV applications. The systems enable data communication via optical fibers and by using copper wires, power can be used in places where it is not usually available or where installation is too expensive. Two cables are thus combined in one - for data transmission and powering various devices. This means that savings on material and installation time can be achieved by installing one cable instead of two.

The cable can be used for permanent and temporary installation; the structure is designed for multiple unfolding and coiling.

The hybrid cable contains two simplex with SM or MM optical fiber in a tight secondary shield and 2 x 16 AWG tinned copper wires with FEP (Fluoroethylene Propylene) insulation. The inside of the cable is protected against penetration of moisture by water-swelling materials. The cable sheath is made of polyurethane, which gives the cable high flexibility and mechanical resistance.

Cable tensile strength	500 N
Operating temperature range	-40°C to +70°C
Compressive strength	1500 N/10 cm
Test voltage of conductors underwater	2000 V for 1 hour at 20°C



Michal Velc  
Head of Fiber Optic Cable R&D Center  
OPTOKON Kable Co., Ltd., s.r.o.



## **PRAMACOM-HT, spol. s r.o.**

**Na pískách 1667/36, 160 00 Praha 6,  
Czech Republic  
Phone: +420 588 188 401**

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- ◆ PRAMACOM-HT is involved into development, integration, delivery and service of opto-electronics and C4ISTAR systems for dismantled deployment. Development is primarily devoted to multi-spectral fusion in NIR, SWIR and LWIR bands.
  - ◆ The company supplies systems integrating key technologies of C4ISTAR including unmanned aerial vehicles (UAV). Main customer of the company is Army of the Czech Republic.
  - ◆ PRAMACOM-HT company is ISO 9001/14001 certified and also AQAP-2110 (Edition D) certified.
- 

**infrared@infrared.cz  
www.infrared.cz**



## **Pramacom Prague spol. s r.o.**

**Na pískách 1667/36,  
160 00 Praha 6,  
Czech Republic  
Phone: +420 226 238 200**

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Design, construction and service of the national digital network PEGAS for Czech Ministry of Interior, Czech Police and other members of integrated rescue system (IZS). The company is involved in digital radio systems, satellite communication devices, IoT and cybersecurity.

Pramacom Prague in ISO 9001/14001 certified.

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**pramacom@pramacom.cz  
www.pramacom.cz**



## **SP Sigma Solutions, s.r.o.**

**Bořivojova 29/824, 130 00 Praha 3,  
Czech Republic  
Phone: +420 603 549 817  
cap@spsigma.eu**

• • • • •

The company SP Sigma Solutions, s.r.o. is an independent consulting company that provides services for ICT and business projects.

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  - Information system design
  - ICT project management
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# **STERCH®**

## **STERCH - International s.r.o.**

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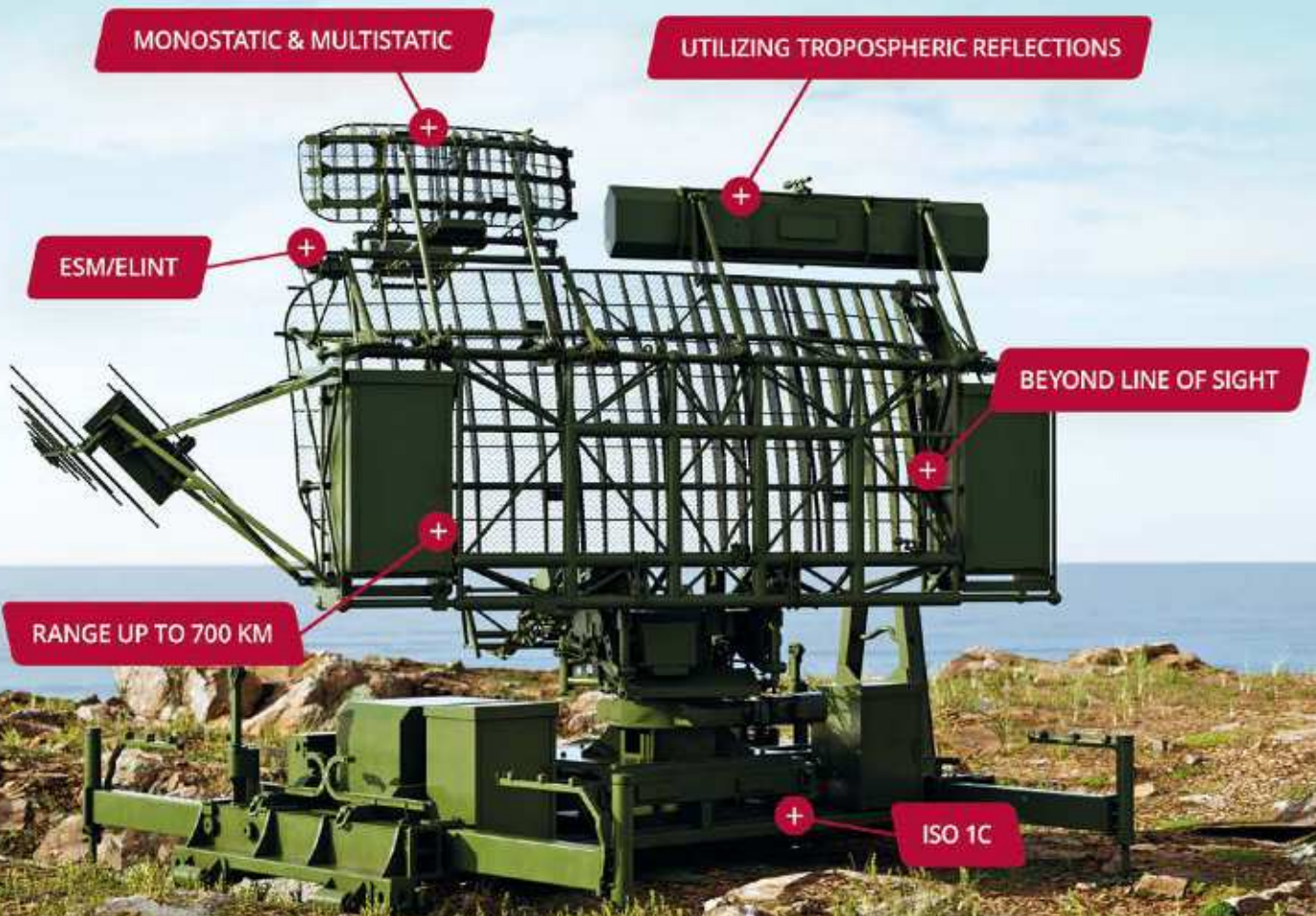
**www.sterch.com**

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- STERCH Company Ltd. was founded in 1996.
- The company specializes in research and development and production of components and assemblies for aerospace, space and nuclear industries.
- All production processes and procedures are accredited according to ISO 9001, AS 9100 Rev.D and NADCAP.

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## TENEEO 3000 s.r.o.

Hlavní 986, 468 41 Smržovka, Czech Republic  
Phone: +420 483 394 902  
info@teneo.cz

TENEEO 3000 s.r.o. is an independent medium-sized business based in the Czech Republic, focusing on mass production of cable harnesses, connectors and connector parts.

We design and manufacture our own product range – cable harnesses, electric connectors featuring high mechanical resilience and reliability essential e.g. for military orders. Individual types and their detailed characteristics can be found in the e-catalogue on our site.

Additionally, we supply individual components according to the technical description and requirements by our clients, the majority of who also operate in the electrical engineering industry. We are able to cover very broad scope of machined parts orders, ranging from small series of complex workpieces to millions of parts produced by automated lines.

Recently, the range of our services was bolstered by complete deliveries of cable harnesses, offering added value to our customers.

TENEEO 3000 s.r.o. is a global business with clients in Europe, America and Asia. Our occupation encompasses primarily production, but also business activities. We are predominantly export-oriented, utilizing the talent, potential and ingenuity of our Czech team.

[www.teneo.cz](http://www.teneo.cz)



## TeskaLabs Ltd, branch plant

Kodaňská 1441/46, Praha 10,  
Czech Republic  
info@teskalabs.com

TeskaLabs is a long-standing recognized expert in the field of cyber security. We are a leading Czech manufacturer of modern log management and SIEM solutions with customers across various areas such as state organizations, telecommunications, banking, insurance, healthcare, and many entities from the private sector. Our products help to meet all norms and security standards as well as regulations and obligations based on the Cyber Security Act or the newly introduced European Union Directive NIS 2. In TeskaLabs, we believe that the digital world should be a safe place. Our goal is to create products that provide businesses with the most secure and advanced cybersecurity technologies.

[www.teskalabs.com](http://www.teskalabs.com)

## VAKUFORM s.r.o.

U Tescomy 198, 760 01 Zlín,  
Czech Republic  
Phone: +420 577 211 676,  
+420 605 832 042



**VAKUFORM s.r.o. (Ltd.) is a Czech company, which is active in:**

- development, production and marketing of medical devices for urgent prehospital care;
- development, production and marketing of devices for both civil and military sections of the Rescue System in the Czech Republic and abroad;
- development, production and marketing of high frequency welded products;
- development, production and marketing of sewing products.

VAKUFORM® products has been using by eight NATO armies since 1997 and the total number of products with NSN is currently 41.



[vakuform@vakuform.cz](mailto:vakuform@vakuform.cz)  
[www.vakuform.cz](http://www.vakuform.cz)



střežíme podstatné

## VIAVIS a.s.

Obránců míru 237/35, 703 00 Ostrava,  
Czech Republic  
Phone: +420 595 174 250, +420 604 297 782  
Fax: +420 595 174 251  
obchod@viavis.cz

### Cyber security

We help with finding solutions to fulfil the requirements of the Cyber Security Act. We provide outsourcing of the role of architect, manager, and auditor of cyber security. We design the architecture of cyber security systems. We identify and quickly resolve cyber incidents. We conduct a cyber security audit.

### Physical security

We help with a systematic solution to physical security and protection of soft targets. We propose measures and a mode for object security. We provide advice on the selection of security guards, camera systems, and other measures.

### Education

We provide a range of professional seminars and workshops aimed at increasing awareness and skills in the field of security. In all seminars, we place great emphasis on practical experience and illustrative practical examples.

[www.viavis.cz](http://www.viavis.cz)

# Czech Electro-Optical Systems for Infantry Fighting Vehicles

EVPÚ Defence a.s., manufacturer of electro-optical systems for the security and defence industries, is known not only as a reliable supplier of the world's largest system integrators, but also as a stable partner of the Czech police and army. What can the company offer to the Czech army with regards to the ongoing modernisation programme? Their portfolio includes gunner and commander sights, remote controlled weapon stations, pan tilts and other systems designed for tracked and wheeled armoured vehicles. A good example is the CMS-1 commander sight, which meets the strict requirements of STANAG 4569 and AEP-55 standards for Level II ballistic protection and has already successfully passed a number of tests on the CV90 and AMVXP vehicles. The combination of a zoom camera, cooled thermal imaging camera and laser rangefinder provides the vehicle commander with a complete overview of the situation on the battlefield, regardless of where the vehicle is



heading or where the gunner sight is aimed at.

The MANTIS remote controlled weapon station for medium to heavy machine guns and the MANTIS MINI for light machine guns are also worth mentioning. Both of these gyro-stabilized systems offer a high level of firing precision and a weight that is among the lowest on the market, allowing their installation on a wide range of reconnaissance

and combat vehicles. MANTIS's predecessor GLADIUS has been part of the Czech Army equipment since 2021.

The advantages of cooperation between the army and a local manufacturer are obvious. EVPÚ Defence's specialists design tailor-made solutions that reflect the needs of users to the maximum extent possible. Thorough operator training, readily available servicing of the supplied systems including accessories and support for reliable functionality, which EVPÚ Defence ensures throughout the product's lifetime, are a matter of course. The EVPÚ Defence team's efforts are supported by the company's excellent facilities, which include its own modern CNC centre, paint shop and "clean rooms" - special laboratories for measuring optical properties and maintenance of electro-optical systems.

More information is available at [www.evpudefence.com](http://www.evpudefence.com)



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For as many as 25 years, our traditional Koutný family firm has been manufacturing and supplying uniforms for the armed forces and administrative bodies of European as well as non-European countries. The high quality of products and materials used, the flexibility of deliveries, including personal approach, are self-evident.

Thanks to that, we have become one of the most reliable suppliers of field and dress uniforms, special emergency clothing, overalls, vests, suits, jackets and many other products. All orders are implemented with the utmost care, both in small and large amounts. We are holders of the ISO 9001:2009 and AQAP 2110 quality certificates. Besides the quality of workmanship, the continuous innovation of materials, manufacturing processes, technological procedures and cuts used are fundamental to us. The functionality of materials has been proven throughout climatic conditions or environmental extremes, in which they are used day by day. The use of the following materials is definitely worth mentioning: softshell, knitwear with antistatic fibres, flameproof fabric, two- and three-layer laminates with the sealed seam technology or waterproof zippers. We sew festive and modern dress uniforms, which are crease-resistant, as well as pleasant to the touch, which requires use of high-quality materials from Italy, France and Spain.

Our distinctive feature is the application of recycled polyester, which means fibres made from recycled PET bottles. This mostly includes linings and main fabrics in which the mixture of wool and polyester is used most frequently.

Our customers include, for instance, the Czech Armed Forces, Royal Netherlands Army, Austrian Armed Forces, the Castle Guard, the Police of the Czech Republic, the Forestry of the Czech Republic, the Fire Rescue Service of the Czech Republic, the Prison Service of the Czech Republic, the Customs Administration of the Czech Republic, Prague Airport, ČSA etc.

In addition, we are engaged in the manufacture of classic men's clothing. In the Czech Republic, we sell men's suits through our own company stores.

# South Moravian Police Officers were the First to Take over the Modern Agados Field Kitchen

Even the Police of the Czech Republic can be proud of a modern field kitchen from Agados. Mobile field kitchens, along with other specials from the largest Czech trailer manufacturer, have been a part of the equipment of the Castle Guard of the Czech Republic, armies around the world and units of the Integrated Rescue System for some time now. These special trailers from the Czech manufacturer can be seen on foreign missions under the flag of the NATO or the UN. The modern field kitchen has now also been taken over by the South Moravian Police of the Czech Republic.



When Ukrainian volunteers took care of war refugees in Lviv this year, they were able to prepare up to 1,200 portions of warm meals a day thanks to the field kitchen. Field kitchens are not only an integral part of the equipment of armies, but also find use in the event of humanitarian or natural disasters, such as last year's tornado in the Hodonín region and Břeclav region or this year's extensive forest fire in Czech Switzerland. The first tests of the use of field kitchens took place in the Austro-Hun-

garian army one hundred and thirty years ago. That has provided enough time for various deployments around the world to confirm their absolute necessity.

The South Moravian Police has now taken over a modern field kitchen and is thus the first police force in the Czech Republic to have the new AGA FK2013 model from Agados at its disposal. Agados has, until now, supplied field kitchens and other special trailers such as mobile water treatment

plants, tanks, or chassis for power plants mainly to other components of the Integrated Rescue System of the Czech Republic and to armies abroad.

Until now, the police of the Czech Republic could mainly take pride in the historical PK-26 field kitchen from the 1950s, which was still in service in 2000 and is now part of the museum collections. Now it can present itself through a modern model with extreme mobility, which can handle even



challenging terrain. "It is a proven solution. The kitchen is light and compact, yet complex. There is a wide range of components that can be used in gastronomy, this allows for the comfortable preparation of a large number of portions of a whole range of dishes in the field," Petr Ostrý, co-owner and managing director of Agados, describes the handed over model.

The mobile kitchen AGA FK2013 has its own power plant, it is possible to use diesel, gas or wood for heating, depending on the specific modification of the model. Needless to say, that all current hygiene requirements are met, all work surfaces are made of stainless steel with easy maintenance. The cooks are then protected under a shelter

and the work area is equipped with effective lighting. The new field kitchen is thus ready for deployment at any time of the year or day and in any terrain.

Field kitchens are just one part of Agados' production portfolio. The company gained its popularity not only in the Czech Republic, but also among NATO member armies with its special projects, such as tanks, mobile water treatment plants or amphibious terrain trailers, thanks to which cargo can be transported across water and is used by army units in Austria and Sweden.

Agados is the largest manufacturer of trailers in the Czech Republic and at the same time one of the largest European manu-

facturers of trailers in the O1 and O2 categories (total weight of trailers up to 750 kg and up to 3500 kg). Agados sells around 30,000 trailers annually. The company is represented in most European countries and on the territory of the Czech Republic. Half of the production is exported. Agados offers trailers from a wide range of manufactured braked and non-braked types of different uses, dimensions, materials used and rich accessories. Agados also provides complete service and the sale of spare parts even for older types of trailers. It has been producing trailers since 1992. It is based in Velké Meziříčí.

[www.agados.cz](http://www.agados.cz)



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## VOP Dolní Bousov, spol. s r.o.



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294 04 Dolní Bousov,  
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Phone: +420 326 396 250  
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In the area of security the main focus of the production programme is on flood protection. The company VOP Dolní Bousov offers a comprehensive solution in flood protection, be it in the area of planning (flood plans, digital flood plans, monitoring and warning, and notifying the population) or in its specific means of flood protection by using composite mobile flood protection barriers. The company offers original solutions for the protection of the population and their settlements, as well as solutions for the protection of entire territorial units and industrial compounds.

The company produces also special security multipurpose barriers (de-fending barbs) for the security of buildings (military and civilian) within rendition of services.

vop@vop-db.cz  
www.vop-db.cz



## VOP GROUP, s.r.o. Český Těšín

Member of Defence And Security Industry Association of Czech Republic  
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Lipová 1128, 737 01 Český Těšín  
CZECH REPUBLIC

Phone: +420 558 765 200, 230

E-mail: vopgroup@vopgroup.cz

Website: www.vopgroup.cz

GPS: 49°44'28.3"N 18°36'11.1"E

Manufactures and repairs charging sets series NS 28xx/D with diesel engine with 28 V / 40A -100 A parameters, or higher, or 60 V / 50 A. Accomplishment as profitable or determined for development in to a car. Charging sets are determined for operational charging accumulators, military special and armored vehicles, communication sets and other special equipment used in military, police or commercial sector.



Preparing delivery:  
small profitable diesel  
powerplants 230 V / 400 V for  
needs Army of the Czech Republic.



# SOKOL™

The SOKOL™ Parachute Training simulator provided by e.sigma s.r.o. is a game-changer for parachutist training with worldwide reputation among Special Forces tasked with vertical insertion. The system provides positions for both trainees and instructors and can be used as a refresh exercise for pre-jump training or as an airborne instructor course.

SOKOL™ can be installed by two persons in a few hours with no other prerequisites than an office environment with one phase power outlet. After provision of the training curriculum and operator and maintenance training the system is ready for self-sufficient use by instructors in less than two days.

SOKOL™ can be used to train for dozens of jump scenarios. Whether simulating different weather conditions, landscapes and terrains or practising for night or group jumps, the system enhances muscle memory through multiple, fast repetition of jumps which are impossible to do with live jumps. The ratio of simulation jumps compared to live jumps are orders of magnitude apart with regard to cost and time saving. Training with SOKOL™ ensures parachutists are prepared to handle high-risk situations and execute precision landings safely and effectively in real-time.

Preventive maintenance and a long-term warranty options ensure a durable and reliable product with continuous software upgrades for many years of operation. With the remote support ticketing system, users will get instant troubleshooting worldwide.

[www.esigma.cz](http://www.esigma.cz)



## AVEC CHEM Protects its Customers from Tip to Toe

AVEC CHEM designs, develops and manufactures personal and collective protective equipment against chemical, biological and radioactive substances. AVEC CHEM's products protect soldiers, police officers, first responders, medical staff, fire-fighters and industry workers in 5 continents.

Family business coming from east Bohemia region started manufacturing personal protective equipment of upper air-ways in 1994, since 1997 as AVEC CHEM. Originally seated in Starý Mateřov in Pardubice district, the company built new factory in Přelouč in 2018 and now it has 20 employees. AVEC CHEM has available, as a part of its production premises, a fully equipped laboratory for researching and testing all types of personal protective equipment. In total, AVEC CHEM produces over 1 million filters a year.

Years of experience, close contact with users, innovative approach, use of the most modern technologies and materials, this all have helped AVEC CHEM to develop a new generation of light, comfort and highly reliable PPE, which are unflinching even in the most exacting situations. AVEC CHEM produces particle, gas, combined and spe-



cial filters protecting its users from a wide range of toxic industrial chemicals and CBRN substances.

The high quality of the filters is proven by demands which come all over the world. In the Czech Republic AVEC's filters and tactical masks are used by the 4.3 Parachute Regiment in Chrudim or Czech police special operation force (URNA). "Considering URNA is a special police unit which is called into action when terrorism, kidna-

pping or very dangerous organised crime occurs, it is obviously very important for the officers to have highly reliable protective equipment. Specially for them we have developed a half mask for special operations. It is called TAPR (Tactical Air Purifying Respirator). It provides protection against a wide range of harmful substance, toxic gases, dangerous bacteria and viruses with the efficiency of 99,99%," explains the executive director of AVEC CHEM, Michal Filipi. AVEC CHEM has developed special permeable protective suits used by the military professionals, civil defence and first responders as optimal solution for protection against CBRN threats. The garments are produced in design of coveralls or two-piece suits. The suits are very comfortable to wear due to their light weight and permeability. Several designs and sandwich materials are available. Therefore, a tailor-made product can be offered for the most demanding users.

Apart from filters, half masks and filtrating protective suits AVEC CHEM also offers full face masks, mouth pieces, escape hoods and collective filters for shelters and armoured vehicles.

## Katalog bezpečnostních a obranných technologií (KBOT ČR)

Již na veletrhu IDET 1999 byl premiérově představen Katalog bezpečnostních a obranných technologií České republiky, který se stal první publikací tohoto druhu v novodobé historii našeho státu. Osobně ho zde převzali v té době premiér Miloš Zeman, ministr průmyslu a obchodu Miroslav Grégr, ministr vnitra Václav Grulich a ministr obrany Vladimír Věchý.

Od té doby vychází každé dva roky aktualizovaná verze. Jeho význam dále výrazně vzrostl v době, kdy se na jeho distribuci do svých mezinárodních struktur začaly podílet Ministerstvo zahraničních věcí, Ministerstvo obrany a AOBP ČR.

Česko-anglický Katalog bezpečnostních a obranných technologií ČR, prezentující český obranný a bezpečnostní průmysl, vychází v tištěné a online verzi na [www.msline.cz](http://www.msline.cz) a sociální síti LinkedIn.



## The Catalogue of Security and Defence Technologies (KBOT CR)

The Catalogue of Security and Defence Technologies of the Czech Republic was presented for the first time at the IDET 1999 Trade Fair and became the first publication of this kind in the modern history of our country. It was personally received here by then Prime Minister – Mr. Miloš Zeman, the Minister of Industry and Trade of the Czech Republic – Mr. Miroslav Grégr, the Minister of the Interior of the Czech Republic – Mr. Václav Grulich, and the Minister of Defence of the Czech Republic – Mr. Vladimír Věchý.

Since then, an updated version has been released every two years. Its importance further increased significantly at the time when the Ministry of Foreign Affairs, the Ministry of Defence, and the DSIA of the Czech Republic began to participate in its distribution to their international structures.

The Czech-English Catalogue of Security and Defence Technologies of the Czech Republic, presenting the Czech Defence and Security Industry, is being published in printed and online versions at [www.msline.cz](http://www.msline.cz) and the LinkedIn social network.

# CV90: Strong Armoured for Crew Survivability

## Agile: excel in all terrain. Evolutionary: designed for scalable upgrades.

The fifth generation of the combat proven leading IFV champion CV90 offers greater agility and higher terrain-speed as well as improved mobility across all types of terrain, from a European theatre to high altitude arid conditions and tropical environments.

With the latest digital architecture that supports the integration of cutting-edge technologies, the vehicle has unmatched flexibility and is fully able to handle complex situations on the modern battlefield. There is substantial growth potential through a combination of open electronic architecture and extensive available payload to meet future needs.

The CV90 MkIV, the latest version, is a significant evolution of the successful and combat-proven CV90 platform and draws on its exceptional firepower, mobility and survivability of the vehicle development. With seven



user nations in use, and already nine countries selected CV90, welcoming the Czech Republic, the platform is under constant development to meet new and existing customer needs.

The CV90 MkIV, the latest version, is a significant evolution of the successful and combat-proven CV90 platform and draws on its exceptional firepower, mobility and survivability of the vehicle development. With seven user nations, the platform is under constant development to meet new and existing

customer needs.

The CV90 is the proven, modern solution to meet the future requirements of the Czech Army.

## Key Facts:

- Offers best-in-class capabilities across the performance spectrum including mobility, firepower and survivability
- Operationally proven in Afghanistan and Liberia
- Over 70,000 days in combat with more than 3 million kilometres covered by the fleet
- More than 45 million hours of R&D invested
- Over 1,280 CV90s sold worldwide
- 15 variants currently in use; 16th variant, the twin-barrel 120 mm mortar Mjölner, under introduction with the Swedish Army
- Choosing the CV90, the Czech Republic, and as well the Slovak will benefit from the vast combat and user experience of seven European user nations



# NATO Codification System

## NCS College 2023 in Brno

### NCS Course for Managers & Logisticians

28 August – 1 September 2023

This course is designed for logisticians at a managerial level dealing with codification and its interrelations at national and international levels.

### NCS Course for Codifiers

4 – 15 September 2023

This course is designed for personnel who are or will be dealing with practical issues of codification and who have already acquired basic knowledge of codification processes.

#### Venue

University of Defence  
Brno, Czechia

#### Language

English

#### Contact information

W: [ncscollege.cz](http://ncscollege.cz)  
E: [info@ncscollege.cz](mailto:info@ncscollege.cz)  
T: +420 544 508 111  
F: +420 544 508 112  
M: +420 602 613 306

#### Registration

will be closed on 15 July 2023 according to the "first come, first served" principle.

Register at:  
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The Media Partner of the Defence and Security Industry Association of the Czech Republic



## REVIEW pro obranný a bezpečnostní průmysl

REVIEW je čtvrtletník v českém jazyce reprezentující český obranný a bezpečnostní průmysl a prezentující zahraniční partnery, kteří poskytují nebo nabízejí služby AČR, Policii ČR, HZS ČR a dalším. Prioritou časopisu je přispívat k lepší komunikaci mezi veřejnou a státní správou a českým průmyslem ve sféře bezpečnostní komunity.

REVIEW Czech Defence Industry and Security (CDIS REVIEW) je pololetník nebo občasník v anglickém jazyce reprezentující český obranný a bezpečnostní průmysl v zahraničí a na významných mezinárodních veletrzích nebo dalších reprezentativních akcích. Reprezentativní redakční rada časopisů REVIEW má cca 60 členů z řad čelních představitelů veřejné a státní správy, zejména z bezpečnostních složek a TOP managementu obranného a bezpečnostního průmyslu.

V současné době MS Line vydává a distribuuje exkluzivní čtvrtletníky Review pro obranný a bezpečnostní průmysl v českém jazyce, dále Czech Defence Industry & Security Review v anglickém jazyce, to vše v tištěné a online verzi na [www](http://www) a sociální síti LinkedIn.



## REVIEW for the Defence and Security Industry

REVIEW is a quarterly magazine in the Czech language representing the Czech Defence and Security Industry and presenting foreign partners who provide or offer services to the Army of the Czech Republic, the Police of the Czech Republic, the Fire Rescue Service of the Czech Republic, and others. The magazine's priority is to contribute to better communication between public and state administration and the Czech Industry in the sphere of the security community.

Czech Defence Industry and Security REVIEW (CDIS REVIEW) is a biannual or occasional magazine in English representing the Czech Defence and Security Industry abroad and at major international trade fairs or other representative events. The representative editorial board of REVIEW magazines has approx. 60 members from among the leading representatives of public and state administration, especially from the Security Forces and top management of the Defence and Security Industry.

Currently, MS Line s.r.o. publishes and distributes the exclusive quarterly Review for the Defence and Security Industry in Czech, as well as the Czech Defence Industry & Security Review in English, all in printed and online versions on [www](http://www) and the LinkedIn social network.

# MOBILE SOLUTION OF MEDICAL GAS DISTRIBUTION (FROM MZ LIBEREC)

The joint-stock company MZ Liberec, among others a member of AOBP and AVDZP associations, has been designing, manufacturing, supplying, installing and commissioning medical & technical gas distribution systems since 1957. Its production scope includes gas consumption units, such as bed head units, medical beams, rotary ceiling pendants, and other medical devices that are used in operating theaters, intensive care units, anaesthesiology & resuscitation departments and standard patient's wards worldwide. The company is also able to supply and to commission medical gas sources, i.e. oxygen generators, compressors, vacuum, reduction & evaporation stations.



MZ Liberec responds to specific requirements focused on field / containerized hospitals as well as their medical gas distribution fed from mobile oxygen generators that ensure the production and distribution of oxygen throughout the medical facility. Furthermore, mobile intensive care units incl. source columns are serving as a mobile carrier of gas cylinders and/or operating lights, including UPS backup sources. Thanks to the above-mentioned technologies, it is possible to secure the production and distribution of medical gases even outside stationary medical facilities, to bring medical care closer to the patients and thus to contribute to a higher level of care provided in extreme conditions.

## ALEXANDER ELECTRIC s.r.o.



**ALEXANDER ELECTRIC s.r.o. in Prague (AEPS-group)** designs and produces custom power supply units and blocks for **specialized mission-critical equipment**, with factors of pollution, salt mist, strong vibrations and impacts.

1. Operating case temperature **from -50 (-60) °C to +100 (+125) °C** makes possible functioning in compartments with loss of sealing on land, in mountains and deserts, at low and high altitudes, up to near space.

2. **Low profile power supply construction** allows minimization of space occupied by the power supply in the whole device, thereby saving up space **for main part of the device (ie. the warhead)**. Our units reach power density of **205 W/in<sup>3</sup>** for DC/DC units and up to **47 W/in<sup>3</sup>** for AC/DC units.

3. The units and power blocks offer adaptation ("flexibility") of its geometric dimensions, including changing the location of mounting points which is essential **when replacing or modernizing** a product of other manufacturers.

4. Our products are designed to be **cooled conductively** and therefore don't contain any fans which (having moving parts) are an element of unreliability. The ability to use conduction cooling is crucial **in airtight spaces** where air extraction not possible.

5. Compared to similarly sized units of leading world producers, our units offer **10-20% higher output power** at increased efficiency.

6. Resistance to mechanical shocks and heavy vibrations due to special potting makes possible application in **artillery shots with overload of up to 16000 G**.

7. Our units compete with products of well-known American companies like VPT, INTERPOINT, SYNQOR, VICOR.

**ALEXANDER ELECTRIC s.r.o.** looks to the future. The construction of our building with an area of 1800 m<sup>2</sup> in Prague is being finished. Future planned company composition: research and development of new products, marketing and sales, production, warehouses of electronic components and materials. Numbers of employees in 2023 is 60-100 people.

**Our core competencies** are in the development and production of power supply units and systems for use in the areas of:

1. Flying objects - artillery shells, rockets, planes, helicopters, drones.
2. Different types of radar (including APAR and long-distance radars)
3. Armored vehicles - transporters, tanks, launchers, etc.
4. Equipment for communication and radio-electronics warfare.
5. Repairs and modernization of power supply systems for obsolete specialized equipment.



# Future Forces International Exhibition in the Pictures of DSIA CR

On 19<sup>th</sup>-21<sup>st</sup> October 2022, the Future Forces International Exhibition took place at the PVA EXPO Praha Exhibition Centre in Prague - Letňany. It is an exhibition presenting the latest technologies and approaches for ensuring defence and security at the national and international levels. The Exhibition offers both static and dynamic demonstrations, presentations of the current and future needs of the Armed and Security Forces, the latest technologies, and scientific research programs to involve all relevant entities so that cooperation is as effective as possible.



Traditionally, DSIA had a common stand together with MS Line, s.r.o.

The last time this event took place was in 2018, and the 2020 trade fair was postponed to 2022 due to the covid pandemic. After such a long break, we could obviously expect great interest in participating both with own stand or just as visitors. And our assumption was proven right. The trade fair was visited by almost four dozen official delegations from all over the world. The Association of the Defence and Security Industry of the Czech Republic together with the main organizer of the trade fair, the member company Progres Partners Advertising, spol. s.r.o., were in charge of their coordination. It was mainly about coordinating the interests in meetings and negotiations between these foreign delegations and Czech companies. DSIA representatives also met with a number of these delegations at the DSIA's stand – these were delegations of Croatia, Portugal, Spain, Pakistan, South Korea, Tanzania, Canada, Saudi Arabia, Indonesia, and even Bosnia and Herzegovina. Visits of military delegations and negotiations with them were supported by the incoming mission of the Ministry of Industry and Trade of the Czech Republic within export promotion activities.

A significant moment for DSIA was the signing of the Memorandum of Understanding (MoU) with the Spanish association AESMIDE (Asociación de Empresas Contratistas de las Administraciones Públicas de España y Otros Estados), which they were intensively working on for several months. The original initiative arose



The DSIA's stand at the International Defence Technology Trade Fair FUTURE FORCES FORUM 2022 in Prague was also visited by the Vice-Chairman of the Chamber of Deputies of the Parliament of the Czech Republic, Olga Richterová, and the Political Deputy of the Ministry of Defence of the Czech Republic, Daniel Blažkovec

during the presentation of the Czech Defence and Security Industry at the Industry Day in Madrid in March 2022, where representatives of both associations met for the first time. RNDr. Jiří Hynek, the President and Executive Director, signed the MoU on behalf of DSIA, and Gerardo Sánchez Revenga, the President, signed the MoU on behalf of AESMIDE. The act of signing took place at the stand of the Ukrainian association provided by DSIA. The President of the Ukrainian association, Yevheniy Krupa, also participated in the signing ceremony. There were present also Michal Rendla, the Head of the Foreign Cooperation Department of the Industrial Cooperation Section of the Ministry of Defence of the Czech Republic, and Joaquín Manrique Escudero, the Honorary Consul of the Kingdom of Spain in Prague. The very signing of the MoU with the Spanish association AESMIDE will support the cooperation of Czech and Spanish companies, help international defence cooperation within the EU countries and try to facilitate as much as possible the penetration of new Czech companies into the Spanish market and strengthen the position of existing ones that have been operating in it for a shorter or longer time.

*Text and photos: Bc. Alice Štysová, MPA*



Representatives of DSIA and the Spanish association AESMIDE signing the MoU



Negotiation of DSIA with the military delegation of Saudi Arabia



Negotiation of DSIA with the delegation of Indonesia

# Day with the Defence Industry

On Tuesday, 13<sup>th</sup> September 2022, the Industrial Cooperation Division of the Ministry of Defence of the Czech Republic, in cooperation with the Association of the Defence and Security Industry of the Czech Republic (hereinafter DSIA CR), organized a conference on the topic "European Defence Fund and support for export activities of the Czech Defence and Security Industry 2023". The event took place at the CTU (Czech Technical University) in Prague and was attended by 70 representatives of Czech companies and state institutions. The conference was divided into two blocks: the morning program was devoted to the European Defence Fund, and the afternoon program was devoted to export activities for 2023, and its support.



## European Defence Fund (EDF)

The morning program and thus the whole conference was opened by Dipl. Eng. Kristýna Helm, Ph.D., the Deputy Director of ADSI CR, and also the National Focal Point for the European Defence Fund for the Czech Republic. In her presentation to the parti-

cipants, she briefly outlined, among other things, how they can get involved in EDF. There are a total of 4 important steps, the first of which, and the most essential one, is obtaining information. These are available on the DSIA CR website. This is the official Czech website for the European Defence

Fund: <https://aobp.cz/evropsky-obranny-fond/> and therefore the information is being regularly updated there.

The next step is the identification of thematic areas, of which there were a total of 33 for the call 2022. Among them, you could find, for example, the sphere of sensors,



space technologies, materials and components, air or ground combat, or the so-called emerging and disruptive technologies. If your project does not fall into any of the categories, it is possible to use the category of any topic.

The third step is searching for partners. Here Dipl. Eng. Kristýna Helm, Ph.D. mentions two possibilities. First of all, it is possible to create your own consortium, in which at least 3 entities from at least 3 countries must be involved. However, we recommend this option only to those companies that already have experience with EDIDP, or it is possible to connect with such a company to create your own consortium. The second option is to join another, already created consortium. But how to find partners for these consortia? The first way is to search through your own supply chain and then create a consortium with these companies. But any company from your supply chain may already be a part of a consortium. It is thus possible to try to join such a consortium. Another way to find partners is through DSIA. To do this, you need to fill in the table you can also find on the above-mentioned website. Fill in the information here about your company and the area of challenges you are interested in, send it to [edf@aobp.cz](mailto:edf@aobp.cz) and DSIA will then share these tables with other foreign social points, partner associations with which ADSI closely cooperates, and other partners who then forward these tables to their companies. Of course, it also works the other way around. Thus, ADSI forwards the tables of foreign companies to potential Czech partners, who fill out the aforementioned table. Finally, you need to fill in the application form, whereas just the EU tendering portal will guide you through this process. Another of the conditions is that the consortium has at least 2 so-called Letters of Intent. It is a document issued by the Ministry of Defence of the given state and declares that the Ministry of Defence is interested in this project in the future. This statement is non-binding. The request for a Letter of Intent MD can also be found on the official Czech website of EDF, while Dipl. Eng. Petr Hakl ([haklp@army.cz](mailto:haklp@army.cz)) is in charge of this matter. It is necessary to take into account that the whole process takes at least 6 weeks since the application is being assessed by both the Ministry of Defence of the Czech Republic and the General Staff of the Army of the Czech Republic.

In conclusion, Ing. Kristýna Helm, Ph.D. also outlined the time frame and future outlook. Various networking seminars and training



for submitting applications are being planned in the future to make participation in projects as successful as possible. The goal of the DSIA team is to involve as many Czech entities as possible in as many consortia and projects as possible. You can find out about all these events on the official Czech website of EDF.

As the second in line in this morning block, Dipl. Eng. Petr Hakl from the Ministry of Defence of the Czech Republic entered the stage. His topic was a summary of the evaluated EDF 2021 projects and information to support the calls for 2022 from the MD's point of view.

In 2021, the European Commission selected 61 projects with the support of EUR 1.2 billion. There are fifteen projects with the participation of 17 Czech entities, of which 9 are research and 6 development ones. So 2021 is more than 50 % more successful than

2020 with the EDIDP program in terms of engagement and drawing money from the fund. Dipl. Eng. Petr Hakl further followed up on the information given in the previous presentation to the Letter of Intent.

At the end of the morning block, a panel discussion took place, when the panellists Dipl. Eng. Richard Sysala, the Managing Director of evolving systems consulting s.r.o., Dipl. Eng. Michael Písařík, Ph.D. from the HiLase Center of the Institute of Physics of the Academy of Sciences of the Czech Republic and doc. Dipl. Eng. Milan Šnajder, the Expert Consultant for EDF, shared their experience with the audience.

#### **Support of export activities of the Czech Defence Industry in 2023**

After a short break, the afternoon block was opened by PhDr. Tomáš Kopečný, the Deputy of the Industrial Cooperation Section of the Ministry of Defence of the Czech Re-



public. He mentioned the Economic Diplomacy Projects (PROPEDs), which are divided into 3 pillars: Business missions, Incoming missions and Trade Fairs. The last mentioned ones are organized in cooperation with the Ministry of Industry and Trade of the Czech Republic and coordinated with the DSIA of the Czech Republic. As an example, the Deputy mentioned the EUROSATORY Trade Fair, which took place in June 2022. He described the new graphics and design, which brought the participation of the Czech Republic on par with other national stands. In conclusion, he mentioned the expected record export of military equipment, especially on the territory of Ukraine in connection with the Ukrainian-Russian War, and gave the floor to Mgr. Lukáš Prokeš, the Deputy of the European Union and Foreign Trade Section on behalf of the Ministry of Foreign Affairs of the Czech Republic, who presented the priorities of foreign trade from the perspective of the Ministry of Foreign Affairs of the Czech Republic.

Mgr. Lukáš Prokeš thanked Deputy Mr. Kopečný for successful cooperation in the areas of Czech official participation and Economic Diplomacy Projects at foreign trade fairs. He talked about the economy of the Czech Defence Industry, which is stable on a long-term basis and represents average exports of 16-17 billion per year. Among the most important export destinations, he named Poland, Slovakia, Italy, and Bulgaria, and from non-European countries, the USA, India, Morocco, and Israel. He also mentioned cooperation with affiliated agencies

and institutions towards companies, namely with the Licensing Administration through export and then also with Czech Invest and CzechTrade in the sense of supporting the participation of Czech companies at foreign trade fairs. Among events they organize, he also mentioned Incoming events and business missions in cooperation with the Ministry of Defence of the Czech Republic. In connection with this, he mentioned specific business examples, which include, for example, the successes of TATRA in Jordan or Excalibur Army in Indonesia. In conclusion, he mentioned the planned Czech official

participation, namely at the IDEX in Abu Dhabi 2023, AirShow in Dubai 2023, and EDEX in Cairo 2023. He also mentioned several planned foreign trips by the Minister of Industry and Trade of the Czech Republic with planned business delegations. In the end, he briefly outlined the new export strategy of the MPO CR.

Another speaker was Dipl. Eng. Mgr. David Konecký, Ph.D., the Foreign Policy Director of the Department of Common Foreign and Security Policy and special representative of the Ministry of Foreign Affairs of the Czech Republic. Dipl. Eng. Mgr. David Konecký, Ph.D., just at the beginning, explained his interest in participating in this seminar. Above all, he wanted to underline the systemic view of the Department of Common Foreign and Security Policy on the question of the general situation of the Czech Defence and Security Industry, the question of its exports, and the sensitivity of these exports. All this is against the background of fundamental changes in the international situation. He mentioned that while they are not yet sure in which direction these changes will specifically develop, they are already able to identify certain sensitivities. Of course, we all perceive that many things are changing within international relations. The first change is, of course, Russian aggression in Ukraine. This aggression is also a security threat for Europe, which entails many other negative phenomena.

For example, the perception of who is and who is not our ally is deepening. For exam-



ple, several African countries, where the Czech Republic has invested development and investment funds for many years, where the Czech Republic acts as their largest business partner, did not sufficiently support us in helping Ukraine. Suddenly, we cannot be sure whether we can rely on the functioning of the local authorities so that the product supplied by us is not exported further where we do not want it, i.e. to Russia.

Another sensitivity mentioned by Dipl. Eng. Mgr. David Konecký, Ph.D. was the issue of China, the issue of the so-called systemic rivalry, which appeared already about 3-4 years ago. Since then, this aspect has been steadily deepening. It showed itself mainly on the topic of Covid, where it turned out that it is very easy for China to cut off all supply chains and thus cause a sufficiently large crisis for countries. This situation should be warning enough for us to be vigilant about what our supply chains look like, where they are going, who controls them, and what companies are involved in them. However, this problem does not only apply to the Defence Industry, but also to dual technologies. This is a so-called civil-military fusion, when any technology, including civilian technology, can be used for military purposes. It is therefore very important to be vigilant.

In conclusion, Ing. Mgr. David Konecký, Ph.D. mentioned 3 valid premises. The Ministry of Foreign Affairs is interested in having a viable and technologically developed industry in the Czech Republic, he is also interested in products being exported as much as possible to trustworthy territories and at the same time that none of the steps taken by the Czech Defence Industry reduce our credibility as a member of the European Union and NATO. With these words, he gave the floor to the Director of the Department of Control Policies of the Ministry of Foreign Affairs, Mgr. Veronika Stromšíková, and she informed the audience about the situation in individual regions and territories, especially concerning the restrictions that must be taken into account when exporting military equipment.

Mgr. Veronika Stromšíková reminded from the very beginning of her speech that, under standard circumstances, the Czech Republic follows EU regulations when assessing licenses, which contain several criteria, starting with respect for human rights in the given territory, whether there is a risk of misuse of the exported material for terrorist purposes, up to the overall stability and economic situation of this territory. However, this was

true a year ago. However, we are now in a completely different situation from a political and security point of view.

Mgr. Veronika Stromšíková thus confirmed the words of the Director Dipl. Eng. Mgr. David Konecký, Ph.D. about the sensitivities of Russia and China, and mentioned the specific implications of these "sensitivities". Territories that would otherwise be perceived as problem-free must be evaluated very carefully in terms of possible re-export, especially to Russia. Subsequently, specific territories were named where the current security situation is being examined very carefully.

Europe: There is a ban on both export and import to Russia and Belarus; Armenia and Azerbaijan – a ban on exporting material that could be exploited for long-range attack; Turkey – a partner of the Czech Republic for NATO, a highly increased number of exports of military equipment was identified here. In principle, the Turkish government does not ignore sanctions against Russia, but if there is an opportunity to move the material to a third party, they have no problem with it. So there is a risk that the material will reach Russia through this third party, which is why we need to be extra careful here.

Asia: export to the DPRK, North Korea, Myanmar, and Afghanistan is not possible due to the imposition of international embargoes; as to the situation with China, information was added about the possible risk of misuse of material as part of internal repression against Taiwan; on the one hand, Kazakhstan is trying to free itself from dependence on Russia, but on the other hand, it participated in the Russian military exercises VOSTOK. It is therefore possible to export to this country, however, each application will be assessed individually in detail.

Middle East: cannot be exported to Palestine and Iraq; Yemen and Libya are subject to an international arms embargo. These are also countries where the export of material through third countries is undesirable. Exports to Egypt, Iran, and Lebanon, as well as to Bahrain, Qatar, Saudi Arabia, and the United Arab Emirates, are being assessed individually. Applications are also assessed, for example, from the point of view of whether the material of interest fits into the character of the local armed forces. This can be a very good indicator of whether this material will not be re-exported. Tunisia is a negotiable territory for export, however, its domestic situation is deteriorating and there is a risk of misuse of material for internal repression. Export to Algeria is also fine. They also have commodities that are of great interest to us.

Unfortunately, like Kazakhstan, Algeria participated in the VOSTOK military exercises.

Asia: an embargo is imposed on Sudan, South Sudan, the Central African Republic, Burundi, the Democratic Republic of the Congo, Zimbabwe, Somalia, and Eritrea, and therefore exports from the Czech Republic and imports to the Czech Republic are completely excluded. Exports to Uganda and Nigeria are carefully assessed on an individual basis.

Latin and Central America: ban on exports to Cuba and Venezuela, the domestic situation in Bolivia worsens. There is a risk of misuse of the material for internal repression.

In conclusion, Mgr. Veronika Stromšíková advised companies, if they do not know or are not sure what the situation looks like in a specific territory where the company would like to export the material, to contact the Department of Control Policies of the Ministry of Foreign Affairs with questions, where they are ready to help and advise companies as much as possible.

Before the final discussion, Benjamin Žiga, the Deputy Director of the Agency for Intergovernmental Defence Cooperation of the Ministry of Defence of the Czech Republic (AMOS), provided up-to-date information on the possibilities of supporting government-to-government trade. First of all, he apologized for the absence of the Director of AMOS, Mgr. Aleš Vytečka, PhD., whom he represents at the seminar and who ultimately could not participate in the event. Subsequently, he briefly introduced the AMOS Agency and described what the Agency can do for a company at the moment when such company has already reached the territory of interest and has a request to close a deal in the form of government-government. He also mentioned 3 aspects on which the Agency is based. This is an economic, security, and above all political aspect. He also described the tools with which the Agency can help companies in their negotiations.

In conclusion, the Deputy of MD CR, PhDr. Tomáš Kopečný thanked all the speakers and opened the discussion. Based on the number of questions raised and the subsequent negotiations, we evaluated this seminar as very successful and we believe that it brought many important insights to companies.

*Text and photo Bc. Alice Štysová, MPA*

# "Drones Rule the Czech Sky" Conference



On Wednesday, 7<sup>th</sup> December 2022, the "Drones rule the Czech sky" Conference took place in the conference hall of the CTU Rectorate. Its organizer was the Prague Security Conference, z.s. in cooperation with the Association of the Defence and Security Industry of the Czech Republic, the Chamber of Commerce of the Czech Republic (Transportation Section, working group for unmanned aviation), the Alliance for Unmanned Aviation Industry (UAVA) and the Faculty of Mechanical Engineering of the Czech Technical University Prague.

The main partner of the Conference was the Israeli company Elbit Systems. Other partners were První Brněnská strojírna (PBS Group) and RETIA, Pramacom – HT, Geotronics Praha and LIAZ. The participants of the Conference were representatives of the state administration from the ministries of defence and the ministries of interior, air traffic control, representatives of companies engaged in the research, production and operation of drones, critical infrastructure enterprises and also experts from CTU. The First Deputy Minister of Defence, Mr. František Šulc spoke at the Conference.

The Conference theme was very topical concerning the dynamics of the development of drones as well as their current and future use in the sphere of security and defence of the state. In this context, we can recall the important role of drones in the war in Ukraine, but also their deployment when fighting the largest forest fire in the history of the Czech Republic in Bohemian-Saxon Switzerland.

The Conference was not only about drones as such and the whole range of areas in which they are beginning to

be used, but mainly about the challenges and opportunities arising from the application of unmanned systems in the sphere of security and defence of the state. The Conference was divided into two panels: What is the stage of using drones for solving the security needs of the Czech Republic and Drones in the Army of the Czech Republic, their role and future.

Individual performances and discussions confirmed that the role of drones is clearly growing and that in some applications they are already displacing traditional manned aircraft. The fact that the clear demarcation of military and civilian systems is blurring is also significant, as we can see in the current War in Ukraine.

The Conference also clearly showed that the Czech Republic belongs to the technological top in the field of drones: Czech technologies are of a high level. It is far from just the machines themselves, but it is also about driving mechanisms (motors, propellers, control electronics), various software and identification tools. In this context, the

presentation of the leading drone manufacturer from Israel - the Israeli company Elbit Systems - was also of great benefit.

One of the key conclusions of the Conference was the statement that the ongoing large-scale acquisition of drones by the state and the building of a universal, integrated and smart airspace will require further coordination, cooperation and dialogue. It would be a shame not to take advantage of the current opportunities for the Czech Republic to maintain, and especially to strengthen, its very good position among countries that are pioneers in unmanned aviation.

*PhDr. Miloš Balabán, Ph.D.  
Chairman of the Prague Security  
Conference, z.s.*



## esc Defence s.r.o.

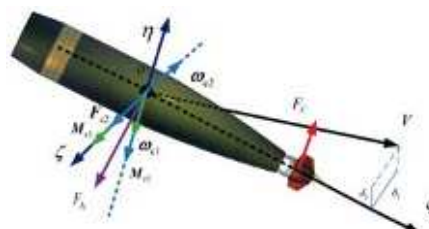


esc Defence s.r.o. (a company within ESC AEROSPACE Group, further „ESC“) is a company engaged in the development of technologies in the field of defence and in the civil sector. In the R&T area it collaborates on projects with various companies (e.g. NEXTER, MBDA-FR, GMV, ISL, LEONARDO, Thales-FR, Indra-ES, OMNIPOL a.s., VZLÚ s.a., LOM Praha s.p.) and with Czech research organizations (e.g. ČVUT in Prague and Academy od Science CZ).

In the FIRES project (Future Indirect fire Res European Solution, EDIDP 2020), ESC participates in the development of the GNC system of smart ammunition and in the JEY-CUAS project (Joint European System for Countering Unmanned Aerial Systems, EDIDP 2020), ESC cooperates in the development of the communication part of the anti-drone system for the protection of the internal EU territory with a high-level security.

In the civil sector, ESC focuses on the de-

velopment of "On Board" control systems or payload subsystems (e.g. SpacePix® radiation sensor) in the area of SPACE as well as in the area of UAV/RPAS applications. ESC is one of the leading companies in the Czech Republic with knowledge and experience in the design of electro-



nic circuits and HW units, development of algorithmization for GNC, the use of artificial intelligence for the development of "safety-critical" software and SW applications. An example is the project GADIOD (GNSS Accuracy in Dependence on Ionospheric Dynamics and Presence of Disturbances) where ESC, in cooperation with

Academy of Sciences of the Czech Republic, Taiwan National Central University, and National Space Organization, studies mid-scale traveling ionosphere disturbances caused by acoustic gravitational waves coming from the Earth and their effect on ionosphere and thus affecting the accuracy of GNSS PNT (Position-Navigation-Timing) systems. The task of the project is also to correct these influences.

ESC belongs to the leading companies in the Czech Republic with extensive knowledge and practical experience in the development of flight control software for SPACE missions. This includes, for example, the STIX spectrometer software (part of the ESA Solar Orbiter mission) or software and hardware solutions for MetOp-SG, SWARM, Sentinel-4, MTG, SpaceRider, Triton-X or QKDSat.

The ESC company is based in Prague, Munich, Hamburg and Orlando, and has ISO 9001 and NATO certificates with the level of Confidential.

# Lockheed Martin and Rafael Advanced Defense Systems to Collaborate on High-Energy Laser System

Lockheed Martin and Rafael Advanced Defense Systems, Ltd., of Israel, have signed a teaming agreement that includes jointly developing, testing and manufacturing a High Energy Laser Weapon Systems (HELWS) in the U.S. and Israel. The future joint-development will be based on the assets that have been developed independently by RAFAEL and the Ministry of Defense's Directorate of Defense Research and Development (DDR&D) within the framework of the IRON BEAM project. The cooperation will be geared towards developing a variant of the system for the American market as well as others.

After years of joint development by the Ministry of Defense's Directorate of Defense Research and Development (DDR&D) and RAFAEL, the IRON BEAM project was initiated by the DDR&D. In the last year, a series of tests on the system was carried out that proved the operational capability of the system. IRON BEAM is a 100kW-class HELWS, expected to be the first-ever operational system for ground-based air defense against threats such as rockets, mortars and UAVs, delivering engagement at the speed of light.

"This strategic teaming agreement serves as a force multiplier for RAFAEL and the Israeli market. We are working to ensure our customers receive the most advanced, effective, and best in class systems. This agreement will expand and diversify the capabilities we can offer to a variety of customers," said RAFAEL CEO and President Maj. Gen. (Ret.) Yoav Har-Even. "Over the last three decades, alongside the DDR&D and the Israeli Ministry of Defense, RAFAEL has invested in laser research and development, resulting in IRON BEAM and we expect to become the first operational laser defense system of its kind. This serves as a clear example of Israeli-made capabilities leading to strategic cooperation which will greatly benefit both sides." IRON BEAM is set to be integrated into

Israel's multi-layered air defense array. The cost-effective and operationally efficient solution will be able to counter emerging threats, while also defending critical infrastructure, strategic sites, maneuvering forces, and population centers.

"Lockheed Martin's mission is to deliver the best security solutions that help our customers stay ahead of their adversaries. Working with Rafael, our joint team will help bring this new, life-saving capability to our customers," said Lockheed Martin Chief Operating Officer, Frank St. John. "This unique capability will enhance Israel's vital air and missile defense system with state-of-the-art laser technology, and we are honored by the opportunity to expand Lockheed Martin's role as a security teammate for the State of Israel."

"We see the capability of IRON BEAM which was developed alongside the DDR&D as a technological breakthrough, with its proven effectiveness against some of the most sophisticated threats including rockets, mortars, drones and UAVs, including in swarms. The system is designed to provide defense against emerging threats in today's complex battlefield, bolstering the strength of the Israeli Homefront, and is a catalyst for forging bilateral collaborations said Executive Vice President Dr. Ran Gozali, Head of the Land and Naval Systems Directorate at Rafael.

"Lockheed Martin is entering a new area of operations in Israel. As a leader of technology, our aerial platforms, such as F-35, F-16, C-130 and more, have been operational in Israel for many years and including CH-53K, these will continue to be into the future. Now, we step into the high-energy laser era and look forward to fielding operational, reliable, and highly-effective systems with teammates such as Rafael," said Joshua (Shiki) Shani, Chief Executive, Lockheed Martin Israel.

Lockheed Martin has decades of experience designing, developing, and successfully tes-

ting of systems and critical subsystems that have executed the entire threat engagement from detection to defeat. Lockheed Martin's expertise is the product of decades of investment in prototype systems, that have demonstrated effectiveness against a variety of targets. The companies will develop and field this High Energy Laser Weapon system and explore additional opportunities to provide this critical capability to the United States and potentially elsewhere.

For additional information, visit [www.rafael.co.il](http://www.rafael.co.il) and [www.lockheedmartin.com](http://www.lockheedmartin.com).



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LINE s.r.o.

**IDET NEWS**

**We are preparing IDET NEWS**

IDET NEWS is a purpose-built publication in Czech and English intended for the presentation of exhibiting companies and their exhibits on the occasion of the IDET, ISET, and PYROS Trade Fairs.

At the end of the first decade of the 21<sup>st</sup> century, MS Line Publishing House became the main media partner, and IDET NEWS became the main media of these trade fairs.

At IDET 2009, MS Line Publishing House organized, for the first time in the world, a rather unique event – awarding of the IDET NEWS journalistic prizes to the best exhibits and expositions by an international journalistic jury. The jury consisted of prominent professional journalists from Great Britain, Germany, Italy, Norway, Poland, Austria, the Czech Republic, and other countries. The announcement of the results of the prestigious journalistic competition "Gold IDET NEWS" will be part of the announcement of the "Gold IDET NEWS Prize" as part of the gala evening for the third time in history.



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- Development and production of digital night vision devices for outdoor and tactical applications
- Providing complete solutions for military, police and law enforcement units all over the world

### Foreign relations

- Strong contacts with major producers of thermal sensors (both VOx and A-Si)
- Strong contacts with major producers of image intensifier tubes
- NSPA registered supplier

### Key advantages

- Wide range of products and options for the most demanding customers
- Field proven high-quality products for ensuring tactical advantage in the most challenging conditions

### Business offer

- Supplying thermal and night vision equipment for security and law enforcement operations
- Supplying of integrated and customized Unattended Ground Sensor (UGS)
- Repairing and upgrading night vision and thermal devices in service

www.nightpearl.shop



## CHEMSTR-ŠAFAŘÍK s.r.o.

Modlanská 1886, 415 01 Teplice, Czech Republic  
Phone: +420 417 562 000, e-mail: info@chemstr.cz

The company CHEMSTR - ŠAFARIK s.r.o. is a Czech manufacturing and distribution company of chemical products for production, renovation, repair and maintenance. We supply products mainly to the engineering and automotive industries. Our products are suitable for every industry segment. We sell products under our own brand CHEMSTR.

**Anti-Seize assembly pastes** for lubrication, against rusting of threads and pins, seizing of various materials. Suitable for extreme conditions, they can withstand high pressures and temperatures up to +1400 °C.

### 1-component adhesives and sealants:

- Anaerobic adhesives for securing threads, bearings, pins and flanges
- Instant adhesives
- RTW silicones for high temperatures
- MS polymers that are silicone-free and repaintable
- Flange seal Maston

### 2-component adhesives:

- Plastic steel for cold renovations
- Repair sticks for small repairs
- Epoxy, PU and MMA adhesives

### Technical liquids, biodegradable cleaning agents and others

- Technical spray for plating, cleaning, lubrication and more

**Another division** deals with renovations and construction of industrial floors, traffic signs, Research and development activities.

www.chemstr.cz

# Pavilion of the Czech Republic



MINISTRY OF INDUSTRY AND TRADE  
OF THE CZECH REPUBLIC



MINISTRY OF DEFENCE  
OF THE CZECH REPUBLIC



DEFENCE AND SECURITY INDUSTRY ASSOCIATION OF THE CR

## INDEX 2023

Abu Dhabi National Exhibition Centre – ADNEC,  
Abu Dhabi, UAE

**20 – 24 February 2023**

AERO Vodochody AEROSPACE a.s.

Aircraft Industries, a.s.

AURA, s.r.o.

AVEC CHEM, s.r.o.

Česká Zbrojovka, s. r. o.

ERA a.s.

EVPU Defence, a.s.

Explosia, a.s.

Gumarny Zubri, a.s.

JISR Institute, a.s.

MESIT holding a.s.

OMNIPOL a.s.

ORITEST, s. r. o.

PBS Velka Bites, s. r. o.

Prototypa-ZM, s.r.o.

Sellier & Bellot, a. s.

Spaceknow, INC.

STV Group a.s.

SVOS, spol. s r.o.

Tatra Export, s. r. o.

**Stand: 10-B20, 10-B40, 10-B50, 10-A06, 10-C33, 11-C04**





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**<https://nen.nipez.cz/profil/SSHR>**

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