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AGAINST COVID-19

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**HAVE  
CZECH IFV'S HIT  
A DEAD-END?**

**POLISH LEOPARD 2 PL**  
MODERNIZATION DELAYED

**SPIKE**  
IS A CHANCE  
FOR POLAND





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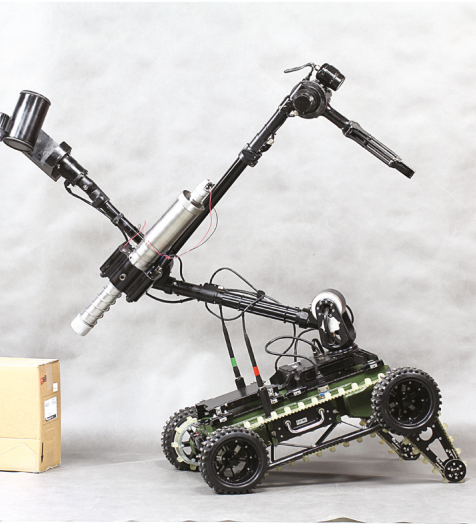
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Cena: 1300 zł Dostępne w: Smęk


### BATON ENERGETYCZNY THIS 1



A gdyby tak zamiast siedzieć podczas świąt przed telewizorem i kłócić się o politykę z wujem spożytkować dzień wolny na dług spacer? Na przykład w góry lub do lasu? Każdy docenia karpia czy pierogi z grzybami i kapustą. Ale trudno je traktować jako doraźne wspomnienie spożywcze podczas długiego marszu. Warto na taką okazję wrzucić do plecaka czekoladowy baton energetyczny, który pozwoli dotrzeć do kalacji złożonej z babcinych przysmaków.


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Uzbrojenie

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Uzbrojenie

GRECIA zainteresowana F-35A

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# SPIKE





# IS A CHANCE FOR POLAND



*Gal Papier, Head of Marketing & Business Development, Precision Tactical Weapon Systems Directorate in Rafael's Land & Naval Division, talks with MILMAG Defense&Space about the various roles and applications, which the family of Spike precision guided tactical missile systems could play in technical modernization of the Polish Armed Forces and enhancing country's security. He also explains, how the Israeli company would like to boost cooperation with the local defence industry.*

Poland is in the midst of developing new anti-tank capabilities. In regards to the use of rotary-wing platforms this refers to the planned procurement of a series of modern attack helicopters under the ongoing Kruk programme, as well as modernization of currently operated Mi-24 D/W helicopters, which is considered to be an interim solution. Rafael is perceived as a possible industry partner of the Polish MoD in regards to both these projects. What would be your company's



**response to the requirement of upgrading of obsolete Mi-24s by equipping them with new anti-tank weapon systems (Spike LR2 missile etc.) and auxiliary equipment, such as observation, navigation and/or fire control systems?**

Thank you for this question, first off I would like to say that Rafael is committed to supporting the 34 Spike User nations during these challenging times of the COVID-19. We are in contact with all of our users and are trying to support any requirement. As you are aware, the Spike missile family is in service all around the world in

multiple nations, including 19 NATO/EU user nations.

Regarding your question, for the last few years Rafael has been in deep technical dialogue with different partners in Poland, including signing of a memorandum of understandings (MOU) for co-operation regarding the upgrade of the Mi-24 Squadrons, as was presented in the last MSPO exhibition. In this effort, in addition to Rafael, multiple Polish stakeholders are involved, with PGZ in the lead, such as Mesko, which will naturally be involved in production of the 5th generation Spike ER2 missiles, and WZL & ITWL, which will naturally be involved in the integration process.

Rafael's legacy in helicopter integration will allow to upgrade the Mi-24 both in lethality, with the 5th generation Spike ER2 missiles (with their 16km range) but also in survivability with the advanced Toplite EOS in its latest advanced version (with commonality in maintenance to the existing Toplite EOS, already operational in Poland, mounted on the Sokol helicopter fleet). Recently Rafael even signed a MoU with PCO for transfer of technology and common production of the Toplite EOS for the Mi-24 upgrade program. This cooperation will enhance the industrial base of this program and we're sure will benefit



additional programs in which we can offer our advanced EOS.

Regarding your comment of the Mi-24 upgrade as an interim solution, the advantage with this interim solution of the Mi-24 upgrade is mainly in the short integration time, allowing initial operational capability within around a year. If the future Kruk program does materialize the armed Mi-24s will for sure be still relevant as armed rotary assets.

Regarding the Kruk program, Rafael has integrated the Spike missile to multiple different types of modern attack helicopters and is in contact with all helicopter OEMs for multiple international programs. We will be happy to support any OEM chosen by the Polish MoD with our lethality package, allowing both tactical capabilities as well as an extensive industrial package, creating work for multiple Polish vendors, as

was already proven in similar programs such as the Spike LR program for the Army.

**Would Rafael be able to integrate its anti-tank missile systems with the future Polish attack helicopters, such as the AH-64E Guardian and AH-1Z Viper, which are considered as one of most possible platforms of choice?**

As was mentioned before, Rafael has vast experience in the integration of Spike missiles to attack helicopters. To date, we have integrated the Spike missiles (mainly Spike ER/ER2 & Spike NLOS) to multiple attack and utility helicopters such as the AW129 Mangusta for the Italian army aviation, the UH-60 Black Hawk for the Colombian air force, the Romanian air force Super PUMA, the Korean & Philippine AW159 Naval ASW





Helicopter, the light and capable H145 and many more.

The AH-64E has already been integrated with the Spike NLOS missile as part of the evaluation by the US army aviation for long range precision missiles, allowing them to successfully engage moving targets at 32 km in pitch dark night with no line of sight, quite a demanding scenario. Rafael is also in contact with Bell regarding the AH-1Z Viper helicopter. Let me remind you that the Spike missile is integrated on Bell's Cobra for many years.



**Rafael has already left its footprint in the Polish defense industry by transferring the technology to locally manufacture selected versions of Spike anti-tank missile systems. Do you consider enhancing cooperation with your Polish partners in this regard, assuming that Poland will eventually decide to procure more of the combat proven Spike family of missiles?**

Definitely, the Spike LR (Long Range) program with MESKO (of the PGZ Group) has been a huge success. Mesko, as a

Polish vendor, was the prime in the manufacturing of 4th generation missiles, eventually supplying thousands of missiles and hundreds of Spike launchers to the Polish army in very high quality and on time. The Polish industry has enjoyed extensive transfer of technology and is producing today a significant percentage of the missile. We see great potential in copying this successful model to other Polish anti-tank programs, such as the Pustelnik, in which we are offering the Spike SR (Short Range) tactical

shoulder-launched missile. We are in contact with PGZ and we will involve Mesko as part of the Spike SR global supply chain.

The commonality of Spike Missiles also come into play in a natural transition to the Spike LR2 5th generation missile, which is already compatible to the Polish army launchers (both grounds as well as vehicle-mounted). The production of LR2 is very similar to LR1 and the conversion of the production lines to the new generation can be done in relatively low

investment. We are also looking to leverage these existing production capabilities for long range ATGMs for the Tank Destroyer program (Ottokar - Brzoza), offering the Spike ER2 in ground deployment (10 km) as well as the Spike NLOS (30km) which we believe is the most capable and mature solution offered today to the Polish army. The Spike NLOS was developed exactly for the purpose of being a tank destroyer and was the backbone of the IDF long range anti-tank deterrence for many years, deployed on mechanized platforms, ready to launch a mass of precision standoff guided EO missiles to 30 km, engaging the enemy tanks formations well before they reach the border, precisely the reference threat the Polish army is facing today.

To summarize, we truly believe that the Spike family offers multiple solutions which suit the different Polish ATGM tenders and we can tailor an overall holistic solution to all programs, together leveraging the industrial cooperation already in place for a very cost-effective program, while implementing significant advanced combat proven anti-tank capabilities into the different Polish army corps.

**Looking into the future, Poland could very likely become one of the biggest operators of Rafael's Spike family of anti-tank missile systems in the CEE. Could that in any way lead to launching in Poland of a local service and maintenance center for Spike-operators all across the region?**



As we have demonstrated, we are open for any ideas of industrial cooperation. The Spike User club organized and run by NSPA (National Support & Procurement Agency) is an excellent opportunity for Spike User nations to offer support to each other. Definitely Poland as a main large user of the Spike Family with a large industrial base and high maintenance capabilities

would be able to leverage this for cross-nation services.

**What is the perspective of including your local (Polish) industry partners in Rafael's global supply and service chain? What requirements would such companies/manufactures have to meet in order to become your partners in this regard?**



As was mentioned before, we are already in process to involve Mesko in our GSC (Global Supply Chain) of the Spike SR (Short Range) missile. The requirements Polish vendors will have to meet are of course, like always, to have a competitive offer, to present a relevant past record and high standards of production. The Polish industries we are

interacting with today meet these requirements.

During the last 15 years, as part of the existing Spike LR program, we learned that the Polish industry has an excellent industrial base and produces at a high quality and on time. We are open for dialogue and believe the proven capabilities of the Spike Family, which is operational today in

34 nations and mounted on 45 platforms (air, sea and land) with a proven record of more than 33,000 missiles already supplied, combined with the excellent industrial capabilities of the Polish defense industry, is truly a win-win set up.

**Michał Jarocki,  
Jakub Link-Lenczowski**

## New Poprad systems for Poland

The Polish Army took delivery of another Poprad self-propelled anti-aircraft missile system – the first one to be handed over in 2020.

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PIT-RADWAR

## COVID-19: Polish Army will support police force

The Polish Army will use its resources in order to support Polish police force in keeping the country and society safe during the coronavirus crisis.

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## Polish F-35s overpriced?

F-35A multirole fighter aircraft ordered for Poland might turn out to be more costly than the same fighters delivered to the US Air Force.

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## Assembly of Hungarian Leopard 2A4 MBTs

The German manufacturer KMW began assembly of the first of a dozen Leopard 2A4 MBTs, which will be delivered to Hungary by year's end.

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# Beagle radars for Poland

The Polish Army will receive a number of PGSR-3i Beagle lightweight man-portable radar systems from Hungary.

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PRO PATRIA ELECTRONICS

# Javelin for Poland

The U.S. State Department approved the sale of Javelin anti-tank missile systems to Poland.

[CZYTAJ WIĘCEJ](#)



USMC

# PGZ and Raytheon strengthen cooperation

Polish Armaments Group and Raytheon will strengthen their cooperation. A number of subsidiaries of the Polish Armaments Groups (Polska Grupa Zbrojeniowa, PGZ), such as Ośrodek Badawczo-Rozwojowy Centrum Techniki Morskiej (CTM) and Zakłady Mechaniczne Tarnów (ZMT), signed agreements with Raytheon Company.

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# First Pantsir-S1 for Serbia

Serbian Armed Forces took delivery of the first batch of Russian-manufactured Pantsir-S1 anti-aircraft missile and gun systems.

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## Royal Marines train in Belarus

Royal Marines traveled to Belarus for winter warfare exercise. Thirty members of 42 Commando conducted cold weather training during the two-weeks long exercise.

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## Patria and SIA Unitruck established a new JV

Patria and SIA Unitruck have established a jointly owned company in Latvia.

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## Slovakia chooses Spike LR2 ATGM

On 5th of March in Tel Aviv, the Slovak Ministry of Defence has signed a contract with Eurospike (a European Joint Venture between Rafael Advanced Defence Systems Ltd., Diehl Defence, and Rheinmetall Electronics) for the supply of the 5th generation SPIKE LR2 ATGM and dismounted advanced ICLU launchers (Integrated Control Launch Units).

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# Russian Bumerang vehicle for export

Russian Bumerang 8x8 armoured combat vehicle will be offered on export markets in the future.

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# Open Skies over Russia and Belarus

The US, Estonia and Lithuania monitored the development of Russian and Belarusian military infrastructure through observation flights.

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## The first RPP delivered to the Polish Army

The Warsaw-based Lukasiewicz – PIAP (Industrial Institute for Automatics and Measurements) Institute announced delivery of the first Portable Patrol Robot (RPP) to the Polish Army.

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## Nissan Navara for Poland

The Polish Ministry of Defense has announced its decision to procure several hundred Nissan Navara 4x4 all-terrain, tactical vehicles.

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## Spike LR will defend the Suwalki Gap area

The 14th anti-tank regiment in Suwalki was armed with Spike LR precision guided tactical missiles.

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# Estonian MoD approves new Development Plan

Minister of Defence of Estonia, Jüri Luik has approved the new Development Plan for 2021-2024.

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ESTONIAN MOD

# Polish SF in Flintlock 2020

Polish Special Forces participated in the Flintlock 2020 exercise, which took place in Mauritania and Senegal

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U.S. ARMY PHOTO BY STAFF SGT. SIDNEY SALE

# Oshkosh' L-ATV for European customers

The U.S. Department of Defense contracted Oshkosh Defense with production and delivery of a number of L-ATV 4x4 tactical, armoured vehicles for the U.S. Armed Forces and export customers, such as Lithuania and Slovenia.

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MILMAG THE MILITARY MAGAZINE

# Aegis Ashore in Poland delayed

The construction of the Aegis Ashore Missile Defense System (AAMDS) in Poland will be delayed due to budgetary constraints.

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# Lithuania and Germany strengthen cooperation

Armed force of Lithuania and Germany work together towards a more efficient cooperation.

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LITHUANIAN MOD

# First test flight of PERUN rocket demonstrator

The Polish company SpaceForest conducted a first test flight of PERUN rocket demonstrator.

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SPACEFOREST

# Polish EOD robots for Vietnam

Mariusz Kremplewski, Export Manager at the Lukaszewicz - PIAP Institute talks with MILMAG Defense & Space about latest deliveries of pyrotechnic sets, including EOD robots Expert-S, to Vietnam.

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## First upgraded Hamina delivered

Patria delivered the first upgraded Hamina-class missile boat, Tornio (81), during a ceremony, which took place at Finnish Navy's base in Upinniemi. Upgrade of the Tornio missile boat commenced in early 2018.

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## Liftoff for Solar Orbiter, ESA's mission to face the Sun up close

ESA's Solar Orbiter mission lifted off on an Atlas V 411 from Cape Canaveral, Florida on 10 February.

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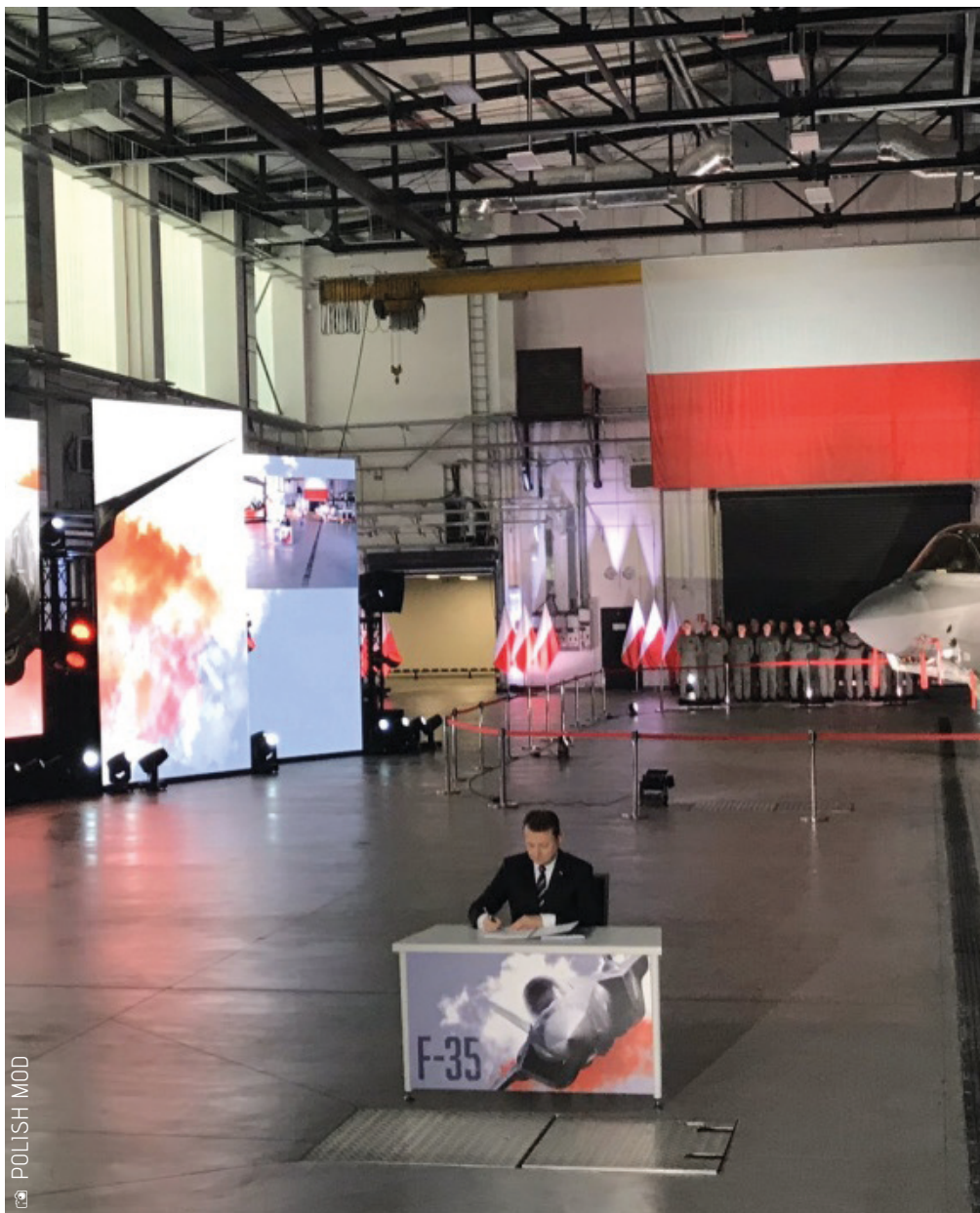


## Contract for Polish F-35s signed

The contract for delivery of 32 F-35 Lightning II 5th generation multirole fighter aircraft was signed at the premises of the 4th Training Aviation Wing in Deblin.

The ceremony was presided by the President of Poland, Andrzej Duda, Prime Minister, Mateusz Morawiecki and Minister of Defense, Mariusz Blaszczak. Contract's value is \$4,6 billion (£3,5 billion).

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# Bell and PGZ declare next step of the cooperation

At Wojskowe Zakłady Lotnicze nr 1 S.A. in Łódź, Polska Grupa Zbrojeniowa (PGZ) and Bell Textron Inc. have officially announced the signing of a letter of intent (LoI) regarding a potential cooperation. Both partners plans to jointly develop an offer of the attack helicopter as a part of Kruk program.

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# Czech Republic will launch own satellites

The plan to launch a series of its own satellites into space is another step on Czech governments and the Ministry of Defence' (MoD) strategy to enhance country's security by gaining new capabilities to gather, analyse and use imagery and telemetry data.

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## Norway is testing K9 howitzers

The field trials of the first batch of K9 Vidar (Versatile Indirect Artillery) 155mm self-propelled howitzers were conducted in Norway by the country's armed forces and in cooperation with the OEM, South Korean Hanwha Land Systems. The test scenario included live fire exercises.

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## Will Poland join the MGCS project?

The president of Poland, Andrzej Duda, announced during a press conference with his French counterpart, Emmanuel Macron, that his country would like to become a partner in the MGCS project, which will lead to the development of the next generation European main battle tank (MBT).

# Additional F-16s for Romania

The contract was signed on 27th January, during a visit of Romania Minister of Defense, Nicolae-Ionel Ciuca to Portugal. The agreement signed with his Portuguese counterpart, João Gomes Cravinho, has a value of €130 million and calls for delivery of additional 5 F-16 multirole fighter aircraft, which until lately were operated by the Air Force of Portugal.

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ROMANIAN MOD



POLISH NAVY



## Nine companies in the Polish ASW helicopter programme

The Armaments Inspectorate, acting on behalf of the Polish Ministry of Defense (MoD) informed that it received inquiries from nine manufacturers, which confirmed their interest in the future tender for next generation naval helicopters.

The list of potential participants in the future tender includes: Polish Armaments Group (Polska Grupa Zbrojeniowa, PGZ), Kaman Aerospace Corporation, Bell Textron Inc., General Dynamics Mission Systems – Canada Inc., WSK PZL-Świdnik, Enamor, Airbus Helicopters SAS, Polish Aviation Works Mielec (Polskie Zakłady Lotnicze Mielec) and Elbit Systems Ltd.

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# WB GROUP

## Participating In Fight Against COVID-19

A meeting of representatives from multiple services, state institutions, and Polish manufacturers of Unmanned Aerial Vehicles (UAV) took place on 26th of March, led by Małgorzata Darowska, the Ministry Of Infrastructure's plenipotentiary for UAV and Central European Drone Demonstrator (CEDD) project. They gathered to discuss issues surrounding implementation of UAVs in the fight against the spread of COVID-19.





One of the most suitable tools for that task seems to be the FlyEye UAV system designed and manufactured by Flytronic, a subsidiary of the WB Group, which is already operated by Polish Land Forces, Special Forces, Territorial Defense Forces and Border Guard in their everyday tasks.

*Taking into account our extensive experience, we responded without hesitation to the appeal from the Ministry Of Infrastructure. Flytronic, being a part of WB Group, is the leading designer and manufacturer of unmanned aerial vehicles in Poland – said Jarosław Zając, CEO of Flytronic company. Our UAVs are ready to support uniformed services in fighting against the epidemics. The WB Group offers not only reliable systems, but can also provide experienced operators who will help law enforcement officers in supervision of maintaining the quarantine.*

On 27th of March, UAVs controlled by Flytronic operators performed a series of flights over the Silesia region, testing the ability of WB Group's unmanned systems to track large groupings of people. Areas with high concentration of people are considered to be subject to particularly high risk of the uncontrolled spread of the SARS CoV-2 virus.

What is worth mentioning, in addition to the observation version, Flytronic offers a modified FlyEye MED variant, which replaces the standard surveillance module with a cargo space capable of carrying up to 2.8 kg (6 lbs.) of medical supplies on distances reaching 50 km

The light, compact-sized unmanned aerial system designed for intelligence, reconnaissance, surveillance of sensitive areas, national borders, natural disasters or large public events. The FLYEYE has been combat tested and battle proven over the years by the armed forces worldwide. Hand-launched from any location, the system transmits real-time data and image directly to one or more recipients at the same time. FLYEYE is ready to cooperate with battle and crisis management systems.

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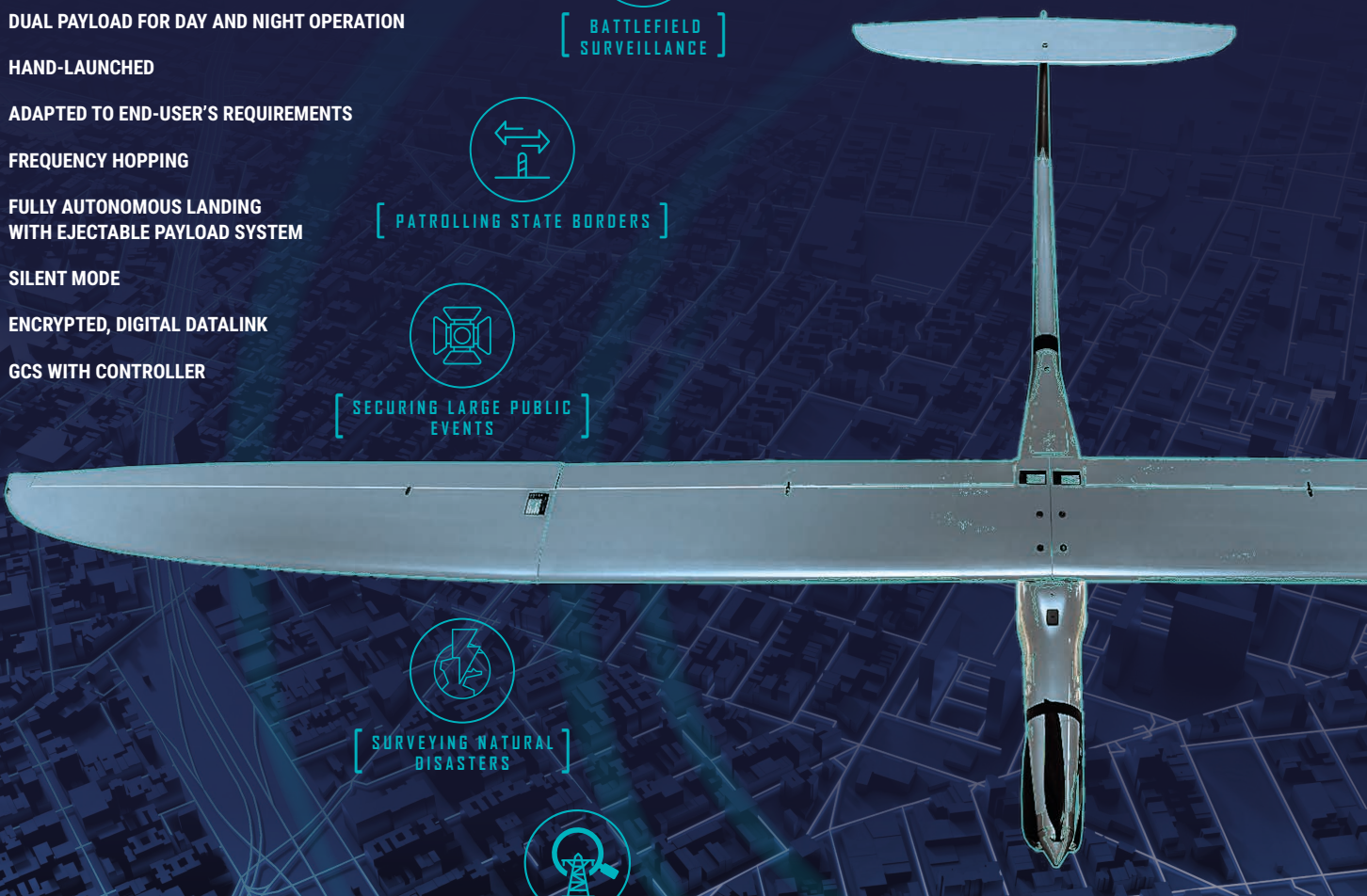
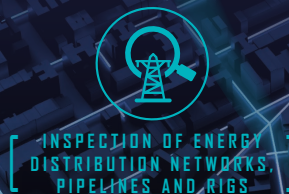
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(30 miles). The cargo can be delivered within 15 meters (50 feet) of the intended spot even without using a camera module. FlyEye MED UAVs can be used to help medical services in emergencies and dangerous situations. If such a need arises, they can be sent into action immediately.

FlyEye UAV in the basic configuration can be stored within backpacks carried by two operators. They can be launched from any place that the operators can reach to, being manually thrown into the air if needed. The launch process is fully automated.

MED is a civilian version of FlyEye 3.0 developed by the WB Group for

an undisclosed customer. Modular system was designed not only as a surveillance platform. It can also work as a flying radio signal relay or, as already mentioned, to deliver cargo.

Mini-UAV FlyEye is equipped with WB Group-designed GS4 optoelectronic module. It can operate both in daylight, giving





a Full HD image with 30x optical zoom, and at night, utilizing infrared camera. Target Lock system supports continuous focus on a set target, regardless of position. Operators can also fully control the surveillance module remotely from the ground.

FlyEye can operate with a relative ceiling of 1000 m (3280 feet)

above the launch height and flies at 60-120 km/h (37-75 mph) with a maximum ceiling of 3500 meters (11500 feet) above sea level. Maximum flight time is limited to 2.5 hours (flight range of FlyEye 3.0 should be slightly longer than in previous models). The FlyEye unmanned vehicle is used by Polish Land Forces,

Special Forces, Territorial Defense Forces, and Border Guard. It was also used in combat operations by Ukrainian armed forces.



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# P O L I S H LEOPARD 2PL



# MODERNIZATION DELAYED

Despite great expectations regarding the modernization of a fleet of 142 Leopard 2A4 main battle tanks (MBT) to the 2PL standard, the programme has counted significant delay. According to the Armament Inspectorate, which acts on behalf of the Polish Ministry of Defense (MoD), manufacturers responsible for the upgrade of Polish MBTs still haven't reached all significant milestones of the project.





The ongoing modernization of the fleet of 142 Leopard 2A4 MBTs to the 2PL standard is one of the most important investments that the Polish Armed Forces have made in recent years. Its successful finalization might change the posture of country's Land Forces and significantly enhance Poland's security and defense capabilities. The project is run by a consortium composed of the subsidiaries of the Polish Armament Group (PGZ, Polska Grupa Zbrojeniowa), with ZM Bumar-Labedy acting as the leader.

The original contract for modernization of Leopard 2A4 MBTs was signed at the end of

2015. It called for an upgrade of 128 vehicles by late 2020. In 2018 the MoD and industry reached a following agreement, which added an optional batch of 14 upgraded MBTs to the project, with delivery scheduled for 2021.

In early 2016 Rheinmetall Landsysteme GmbH (RLS), a subsidiary of Rheinmetall Defence, became a strategic partner of the programme. According to an agreement signed at that time with PGZ and a number of its companies, the German manufacturer was responsible for designing the Leopard 2PL upgrade and preparing technical documentation.

The fleet of 142 Leopard 2A4 main battle tanks, which the Polish MoD wants to modernize to the 2PL standard, was originally acquired from German Bundeswehr's stocks and delivered to Poland in 2002-2004 and 2013

#### FAILED DELIVERY MILESTONES

On 24th December 2019 the original agreement for modernization of Leopard 2A4s was amended by the Armament Inspectorate and the local industry. The new deal that was reached, allowing for additional works and services to be carried out in order to move the whole process forward at the desired pace. In result, the

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- Listen to technical briefings from industry experts including BAE Hagglands and Lockheed Martin – as well as a dedicated exhibition area, showcasing the latest technologies in weapon and ammunition systems
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-  **Lieutenant Colonel Simon Routledge**, SO1 Land Systems, Platforms Division, Dstl, **UK MoD**
-  **Lieutenant Colonel Martin French**, SO1 Lethality and 40mm CTCA Programme Manager, **British Army**
-  **Captain Tom Quant**, Regimental Intelligence Officer and Project Streetfighter Lead, Royal Tank Regiment, **British Army**
-  **WO2 John McAllister**, SASC QMSI IFV, Armoured Trials and Development Unit (ATDU), **British Army**

**INTERNATIONAL MILITARY AND INDUSTRY SPEAKERS INCLUDE:**

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-  **Lieutenant Colonel Michael Cherry**, Product Manager, Large Caliber Ammunition, Product Manager Maneuver Ammunition Systems, **US Army**
-  **Lieutenant Colonel, Israeli Defence Forces\***
-  **Mr Sebastian Strecker**, Branch Chief, Branch 520 – Optics/ Optoelectronics, Laser Technology, Battlefield Reconnaissance, Technical Center for Weapons and Ammunition (WTD 91), **Bundeswehr**
-  **Mr Wim de Ruijter**, Senior Scientist, **TNO**
-  **Mr Edvard Kleberg**, Sub System Manager, Weapons, **BAE Systems Hägglunds AB**
-  **Mr Mike Dalzell**, Future Concepts Lead, **Lockheed Martin**

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On 28th December 2015 the Armament Inspectorate signed a contract with the Polish Armament Group and ZM Bumar-Łabędy. The agreement was worth 2,4 billion Polish Zloty (€528 million) and called for modernization of the initial batch of 128 Leopard 2A4 MBTs to the 2PL standard. Shortly after Rheinmetall Landsysteme became the strategic partner of the project. In May 2018 the original contract was amended and the option for the upgrade of an additional batch of 14 Leopard 2A4s was added to the programme

project's budget grew by additional PLN569 million (€125 million), bringing the total cost of Leopard 2PL modernization to PLN3.2 billion (€704 million).

However, the Armament Inspectorate has recently informed



that the consortium responsible for the modernization of Leopard 2A4/2PL MBTs failed to achieve a number of significant milestones of the project. Therefore, the original deadline for delivery of upgraded Leopard tanks will most

likely not be met. At the moment the Polish MoD estimates that the modernization programme will conclude by 31st July 2023, when the final batch of upgraded MBTs should be handed over to the Polish Army.

## WHILE WAITING FOR THE 1ST BATCH...

Despite over a year long tests and trials of prototype vehicles, conducted by the industry and military, the initial batch of Leopard





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According to the revised timeline for delivery of Leopard 2PL MBTs, all modernized tanks should be handed over to the Army by 2023, which means a 2-3 year delay in relation to the original schedule

2PL MBTs has still to be delivered to the Army. Only after they are handed over, the Polish Army will be able to commence the final assessment, which will confirm (or not) if all modifications and enhancements implemented on the platform meet technical and operational requirements of its future user.

At the beginning of the year, the spokesman of the Armament Inspectorate, major Krzysztof Platek, announced that final

tests of Leopard 2PL prototype vehicles should conclude by the end of March. This would allow to finalize their delivery to the Army in Q1/Q2 2020. However, until today the Polish MoD or the Armament Inspectorate has failed to confirm that milestone.

The one reason is simply that the whole testing process currently has to continue at a slower pace than normal due to the ongoing COVID-19 pandemic, which affects some or all aspects of the project. However, it's also probable that during these tests, the MoD or the Army identified a number of additional technical issues, which had to be dealt with before prototype vehicles could be formally handed over.

PGZ issued a statement exclusively to MILMAG, in which it states that *the manufacturer and its foreign partner, Rheinmetall Landsysteme already implemented all technical modifications on the 1st batch of 10 MBT's upgraded to Leopard 2PL standard. Two of these vehicles remain stored at Rheinmetall's facilities, while remaining eight are ready to be delivered to the Army, following approval of its final configuration by the Armament Inspectorate.*

A few months earlier the Armament Inspectorate stated that the testing process of Leopard 2PL MBTs required some additional work, due to



a number of flaws and shortcomings in the technical documentation of the vehicle.

The tests of the Leopard 2PL prototype have not yet concluded due to a number of areas, which still need to be confirmed in terms of their compliance with several dozen requirements included in the Technical Specification, Maj. Platek informed in February.

Maj. Platek added that despite continued problems with testing of Leopard 2PL prototype vehicle, the whole programme is well under way. It has been confirmed that several dozen of serial-production Leopard 2A4 MBTs were already delivered to ZM Bumar-Labedy, where they are currently stored and overhauled, while awaiting upgrade.

The contractor verified the technical condition of stored vehicles and is currently upgrading them in parallel to ongoing trials, said Platek. Particular MBTs are in different stages of the modernisation process, he added.

Major Platek's statements correspond with the position taken by PGZ on the matter. The Group confirmed that for the deadline for delivery of serial production Leopard 2PLs in 2020 to be met, it would depend on when prototype vehicles are handed over. In order to minimize the risk of potential delay, ZM Bumar-Łabędy has already commenced work on 30 serial production Leopard 2A4 MBTs.

The Group added that in February 2020 we succeeded to integrate the 120mm tank ammunition,

manufactured by our Mesko subsidiary, with Leopard 2PL MBTs. All required tests have already been concluded and currently we're

The Leopard 2PL modernization programme calls for integration of a number of new onboard systems and equipment with the legacy platform, such as: new/upgraded observation and aiming sites for the commander and gunner, improved ballistic protection of the turret, new electronic system for turret traverse and cannon elevation, installation of more effective fire/explosion prevention system, new command and control system, additional APU generator, additional cargo carrying equipment and upgraded evacuation/towing system adjusted to the higher weight of the platform, new fire control system, new ammunition (DM63 antitank and DM11 multipurpose) and day/night reverse



waiting for the final configuration of the vehicle and its technical documentation to be approved by the Armament Inspectorate.

According to PGZ the deadline for the conclusion of the contract is an important factor, but not the only determinant of its proper

**Leopard 2PL MBTs will be equipped with: K LW-1 ASTERIA thermal cameras and KDN-1 NYKS observation cameras, both manufactured by the local PCO company**

finalization, which has to be taken into consideration by both sides of the agreement. (...) Our priority is to deliver a product, which complies with the requirements of the MoD. We work hand in hand with representatives of the department to assure that upgraded MBTs will be handed over to the Polish Army at the nearest possible date.

PGZ added that irrespective of the ongoing trials of the Leopard 2PL prototype, ZM Bumar-Labedy continuously engages in the overhaul and repair of a number of

Leopard 2A4 MBTs, which were delivered to the manufacturer prior to the awaited upgrade. It will allow us to speed up the modernization and delivery of upgraded MBTs, once the final configuration of the Leopard 2PL vehicle is accepted by the Army.

## MODERNIZATION REQUIRED

In general, the Leopard 2PL modernization programme calls for integration of a number of new





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142 modernized Leopard 2PLs will constitute the core of the Polish Army's MBT fleet along with 105 Leopard 2A5s, 233 PT-91s and approx. 270 T-72M1s

onboard systems and equipment with the legacy platform, such as: new/upgraded observation and aiming sites for the commander and gunner, improved ballistic protection of the turret, new electronic system for turret traverse and cannon elevation, installation of more effective fire/explosion prevention system, new command and control system, additional APU generator, additional cargo carrying equipment and upgraded evacuation/

towing system adjusted to the higher weight of the platform, new fire control system, new ammunition (DM63 antitank and DM11 multipurpose) and day/night reverse camera for the driver.

Following the modernization programme the Polish Army will operate a fleet of 142 relatively modern Leopard 2PL MBTs along with 105 Leopard 2A5s – both platforms originally coming from German Bundeswehr's stocks. They will be supplemented by 233 PT-91s and approx. 270 T-72M1s, with the latter currently undergoing a limited upgrade.

However, neither PT-91s nor T-72M1s meet the requirements

of the modern battlefield, mostly due to their obsolescence and bad technical condition. Therefore, both platforms are planned to be phased out and replaced by a next generation MBT, which the Polish MoD intends to procure in the future under the 'Wilk' programme.



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# HAS THE CZECH programme just reached a dead-end?



# IFV

In the face of an unprecedented economic crisis, which shortly might follow the ongoing COVID-19 pandemic, the Czech Ministry of Defense (MoD) has found itself in a difficult situation, when it has to reevaluate its investment plans, putting a hold to or definitely cancelling a number of procurement and modernization programmes. One of the projects, which might be affected by the expected spending cuts is the long awaited acquisition of 210 tracked infantry fighting vehicles (IFVs).



It was in mid-March, when the Czech Prime Minister, Andrej Babiš, announced that due to the COVID-19 pandemic his country might be forced to revise a number of investments, including a series of technical modernization programmes of the country's armed forces.

'The army can wait. We probably do not need infantry fighting vehicles immediately, but we need other things for this coronavirus war', Babiš said during a press conference held in March.

As the country faces mass economic shakedown in result of the pandemic, the Czech government will have to make some tough choices and decide to cut down



The German Rheinmetall Landsysteme GmbH has offered the Czech Republic its KF41 Lynx platform in the ongoing IFV tender. The company agreed to move the production of new armoured vehicles to the Czech Republic under the Transfer-of-Technology agreement



BAE Systems Haegglund AB has been actively promoting its family of CV90 armoured vehicles on the Czech market for many years. The picture presents one of the Dutch CV90s during NATO Days 2019 held in Ostrava



GDELS offers its ASCOD armoured vehicle, which has already been selected by the armed forces of Austria, Great Britain and Spain in their Ulan, Ajax and Pizarro programs. The vehicle on the picture, taken during IDET 2019 exhibition in Brno, is fitted with an unmanned UT30MK2 turret from Israeli Elbit Systems

federal spending and investments. As usual, military modernization programmes might become one of the first to be affected by the new savings policy.

It seems quite probable that the long awaited and highly anticipated procurement of 210 modern, tracked infantry fighting vehicles (IFV) might become one of the first programmes to be slashed. New IFVs were to replace the currently operated, legacy BVP-2s, which due to their obsolescence and technical condition do not meet the requirements of the modern battlefield.

Until lately, the procurement of new IFVs is described by the Czech government as one of the most important technical modernization programmes in the recent history of the Czech armed forces. The project, which has an estimated value of CZK53 billion (€2 billion) is an important element of a more profound plan to enhance operational and combat capabilities of the Czech Army and Air Force, making it capable of acting as an important deterrence on NATO's Eastern flank.

### Three bids received

In mid-October 2019 the Czech MoD announced that three companies decided to submit initial bids in the tender for new IFVs. The list of bidders included: BAE Systems Haegglund AB with its CV90 Mk IV vehicle, GDELS - Santa Barbara Sistemas SA offering the ASCOD platform and Rheinmetall Landsysteme GmbH with KF41 Lynx.

GDELS, a major European manufacturer of armoured vehicles, decided to offer its ASCOD vehicle in the Czech IFV tender, as the

platform has already been selected by the armed forces of Austria, Great Britain and Spain in their Ulan, Ajax and Pizarro programs.

According to GDELS, the ASCOD offered for the Czech Republic was customized to meet the requirements of the Czech armed forces. It was achieved thanks to modification of ASCOD's design and enhancement of its operational capabilities.

During the IDET 2019 exhibition in Brno GDELS presented the ASCOD 2 vehicle, fitted with an unmanned UT30MK2 turret from Israeli Elbit Systems. According to the manufacturer, the same vehicle could be easily integrated with a manned MT30 system, if the Czech Army had such requirements.

The single manufacturer which decided not to make a bid in the ongoing tender was Projekt System & Management GmbH (PSM), a *joint-venture* between Rheinmetall Landsysteme and Krauss-Maffei Wegmann. Initially, the company planned to offer its Puma IFV, which is already operated by the German land forces. Presumably, PSM decided to drop from the race due to the fact that the Puma vehicle did not meet a number of technical requirements set by the Czech MoD for the IFV programme.

According to the program's original schedule, through the next couple of months the Czech MoD would engage in a series of discussions with selected bidders, improving their offers and making them more adjusted to Czech Army's technical and operational requirements. Subsequently, both sides of the tender would enter negotiations about vehicle's price and delivery timeline, which would lead to the

selection of the preferred bidder and contract signing. However, under current circumstances, this plan might not be able to succeed.

### New IFVs are an absolute must

The number of new IFV's, which the Czech MoD intends to procure, simply refers to the country's long-term plan for development of the Czech armed forces (KVAČR 2025), as well as commitments to international alliances, such as NATO. Under the KVAČR project the Czech armed forces are obligated to deploy a heavy brigade-size unit capable of operating on the modern battlefield and confronting similarly equipped enemy forces in defensive operations.

Such a brigade would have to be composed of three mechanized battalions and a tank battalion, as well as combat support, combat security and training units. Each of mechanized battalions could be equipped with 56 armoured combat vehicles in 7 different variants, such as: IFV, reconnaissance, observation, mine clearance, armoured recovery, command and medical evacuation. Under the Czech MoD's, the future 'heavy brigade' would be based on the current 7th Mechanized Brigade of the Czech Land Forces

### To protect and to withstand

According to the Czech MoD, new IFVs should provide the highest possible level of protection for



The single manufacturer, which decided not to make a bid in the ongoing tender, was the Projekt System & Management GmbH. The company planned to offer its Puma IFV. Presumably, PSM decided to drop from the race due to the fact that the Puma vehicle did not meet a number of technical requirements set by the Czech MoD for the IFV programme

crews and dismounts, something the currently operated BVP-2s aren't capable of. Therefore, new armoured combat vehicles are expected to feature a basic level of protection according to STANAG 4569, as well as a number of supplementary protection systems, such as additional modular ballistic panels (according to STANAG 4569), soft-kill and hard-kill self-defense systems, counter-IED protection system, and collective automated CBRN (Chemical, Biological, Radiological and Nuclear) protection.

The future IFVs will be able to complement 11 soldiers, including a crew of 3 + 8 dismounts. They should be equipped with a manned turret with a 30mm main gun, a coaxial 7.62mm machine gun, as well as an anti-tank missile system with a 3rd generation (or higher) ATGM. Supplementary equipment should include smoke grenade launchers, providing 360° coverage.

Highly efficient observation systems for the gunner and

commander, such as day/night cameras and a laser range finder, should provide detection and identification of enemy's MBTs and other armoured combat vehicles at distances of 4 km by day and 3,5 km by night.

All IFV variants should feature the same high level of mobility, including minimum road speed of 65 km/h, minimum off-road speed of 40 km/h, minimum range of 500 km. They should also be fitted with a number of supplementary equipment, such as intercom, VHF/UHF radio stations for voice and data communication as well as GPS, TACSAT and covert communication systems.

### Local defense industry at stake

The possible delay or even cancellation of the IFV programme would not only mean, that the anticipated technical modernization of the Czech land forces





could be prolonged for years. It could also have a devastating influence on the condition of the local defense industry, which was expected to play a significant role in the project and benefit from the production of new armoured vehicles. The Czech government had a strict requirement that the future IFVs would be manufactured locally, with the biggest possible involvement of the Czech companies.

All three bidders have already declared, that they are ready

to move the production of new IFVs directly to the Czech Republic under the Transfer-of-Technology agreement. A number of partnership agreements were also signed with local defense manufacturers.

It was also expected that a Czech defense companies would become partners in global production and supply chains of BAE Systems, GDELS or Rheinmetall, allowing them to promote their products and services on export markets.



✉ MICHAŁ JAROCKI

The new Czech IFVs were to replace the currently operated, legacy BVP-2s, which due to their obsolescence and technical condition do not meet the requirements of the modern battlefield



# „SHORT” GROT AVAILABLE IN RETAIL

## Semi-automatic Grot S10 FB-M1 in stores



Short version of Grot first appeared on websites of internet shops belonging to the main distributor: Colt Krotoszyn and Colt Wrocław. The rifle can also be found in stock of other gun dealers in Poland.

Grot S10 entered the open market without the publicity that accompanied the previous model. FB Radom didn't send press information, nor did they announce their intent to begin sales of the rifle before. Military Magazine MILMAG is the first to break the news about availability of the new model.

Besides the gun itself, FB Radom also started sales of the original knife bayonet, initially designed for the military variant

of the rifle. It is sold together with a scabbard, mounted on a belt or MOLLE webbing.

### Purchases In The Time Of Epidemics

It is likely that lack of publicity is caused by the current situation. At the moment Poland is under lockdown invoked by the epidemiological threat. Still, the weapon shops are operating and the rifle can be bought without problems. What's more, it can be registered at Administrative

Departments of appropriate Voivodeship Police Headquarters by mail as currently police functionaries are not meeting interested parties in person. To do so, you need to send as a registered mail your firearm owner card, original weapon invoice (keeping yourself a copy) and a written request for the weapon registration. This procedure operates without issues for years now, the lockdown only saw its greater use.

At the end of march 2020 a semi-automatic rifle Grot S10 FB-M1 was added to the stock of the main distributor of Fabryka Broni Łucznik-Radom (FB Radom). It is a long awaited variant with a 10.5 inch (267 mm) barrel. The shorter model is more handy and handles better in some practical shooting competitions. Until now, the stores only offered a Grot S16 FB-M1 model with a 16 inch (406 mm) long barrel.



### Grot in Service

Currently Polish Armed Forces and other uniform services use two models belonging to the 5.56 mm modular firearm system (MSBS-5,56). First to see service was a representative MSBS-20R (Grot R20)

rifle with a 20-inch (508 mm) barrel, restricted to blank 5.56 x 45 mm NATO ammo. Polish Army purchased a total of 640 (150 in March 2016 and 490 in September 2017), Police received 115 units ordered in June 2018, Border Guard bought 54 in September 2018, and a contract for 40 was

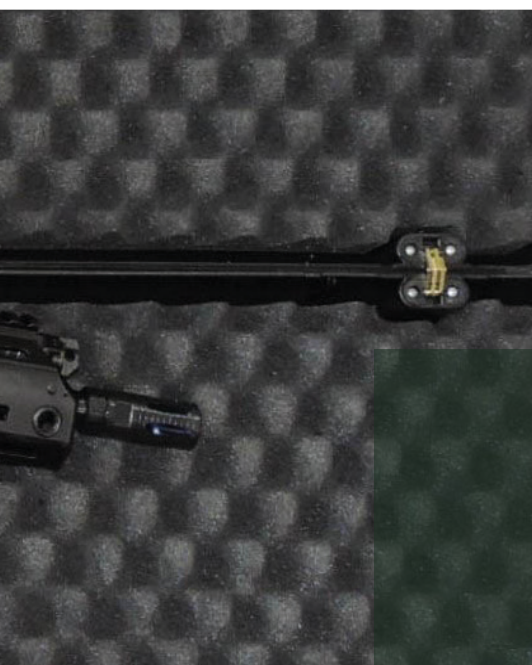
signed by Prison Service in September 2016.

On 5th of September 2017, a contract was signed for delivery of 32 thousands of Grot C16 FB-M1 assault rifles. That model uses live 5.56 x 45 mm NATO and has a 406 mm barrel with a shorter twist rate of 178 mm (1:7 inches). After finalization of

the previous delivery, another 18 thousands assault rifles were ordered in September 2019, being successively delivered on a timeline extending into 2022. Part of the new order includes the newer Grot C16 FB-M2 model, with modified handguard. Majority of those ended in the hands of Territorial Defense Force (in November 2019, 24 thousand of TDF soldiers were equipped with Grots), they are also delivered to selected units of Land Forces and military academies (in November four thousands were in hands of Communication And Informatics Training Center, Military University Of Technology, and Tadeusz Kościuszko Land Forces Military Academy).

In November 2019 the army ordered 2000 conversion kits that will adapt Grots for training marker rounds—composed of a properly marked replacement blowback system with two blue-colored magazines for UTM MMR ammo.





Long awaited sport version of MSBS-5.56K with short, 10.5-inch barrel entered the distributor's offer without much publicity. The new model is shorter and easier to handle during certain practical shooting competitions

Since the end of 2017, Polish Armed Forces have received over 30 thousand Grot C16 FB-M1/M2 (MSBS-5.56KA0/A1) units. Majority was delivered to Territorial Defense Forces.



Military Institute Of Armament Technology ordered forty Grot C16 in January 2020 to convert them into dummies for training simulator “Śnieżnik”.

### **MSBS in hands of the Border Guard**

Other services are ordering Grot rifles as well, especially

the Border Guard. This is a particularly interesting case because without Border Guard's purchase requirements there would be no civilian short-barreled version. The Border Guard signed four contracts on delivery of modular rifles from Radom.

The first batch was composed of the already mentioned

representative R20 version. Second contract, signed on 5th of December, 2018 and delivered on 21st, listed 122 Grot C16 FB-M1. Third contract was signed on 8th July 2019 for 228 more C16.

The most interesting was fourth order, when the Border Guard voiced interest in a short barreled version, also awaited



by military forces. The producer offered a non-standard solution.

Out of 228 ordered units, 93 were standard C16 and the remaining 135 were provided with two sets of barrels. The standard length of 16 inches with twist rate of 178 mm that was used in military version and shorter 10.5 inch barrels with

twist rate of 228 mm. The latter were designed with the civilian market in mind.

Grot rifles will reach well-trained users from active units. Border guards will be taking advantage of the MSBS's namesake modularity. The firearm uses the same receiver for classical version and bullpup configuration, and it has easily

Semi-automatic carbine Grot S16 FB-M1 hit the shops at the end of 2018. It is a variant with a 16-inch (406 mm) barrel without bayonet lug and a different muzzle device than the military version



replaced barrel. Using the attached key, the barrel can be exchanged in less than a minute. Depending on current tasks, Border Guard functionaries will be able to adjust the length for the circumstances at hand by themselves. In practice, most of them will be using shorter configuration, more handy in urban environment.

### Titan Subcarbine

Development of the Modular Firearm Systems 5.56 mm is tightly connected to Polish future soldier project—Individual Warfare System Titan. The weapon subsystem was developed as a part of the first phase of the programme (delayed because

of multiple changes to the guidelines for the communication gear). Within its frames were researched, designed, and produced 5.56 mm assault rifle (Grot C16 FB-M1), 40-mm underbarrel grenade launcher (GP), knife bayonet, and 9 mm military pistol (Vis 100, also known as PR-15 Ragun). Except for one-shot low velocity 40 x 46 mm grenade launcher, all other designs are currently in production and supplied to military forces.

For the next phase of the Titan project, FB Radom prepared technical and production documentation, and now finalizes tests of a B16 FB-M1, a bullpup variant of MSBS-5.56 mm, and a short-barreled classical variant C10

FB-M1. Additionally, to reduce costs, additional variants are tested: bullpup versions of carbine, light machine gun, and marksman rifle, and classical versions of light machine gun and marksman rifle. According to the schedule, tests will end later this year. FB Radom will produce and deliver the new weapons once they are formally accepted by the Armed Forces.

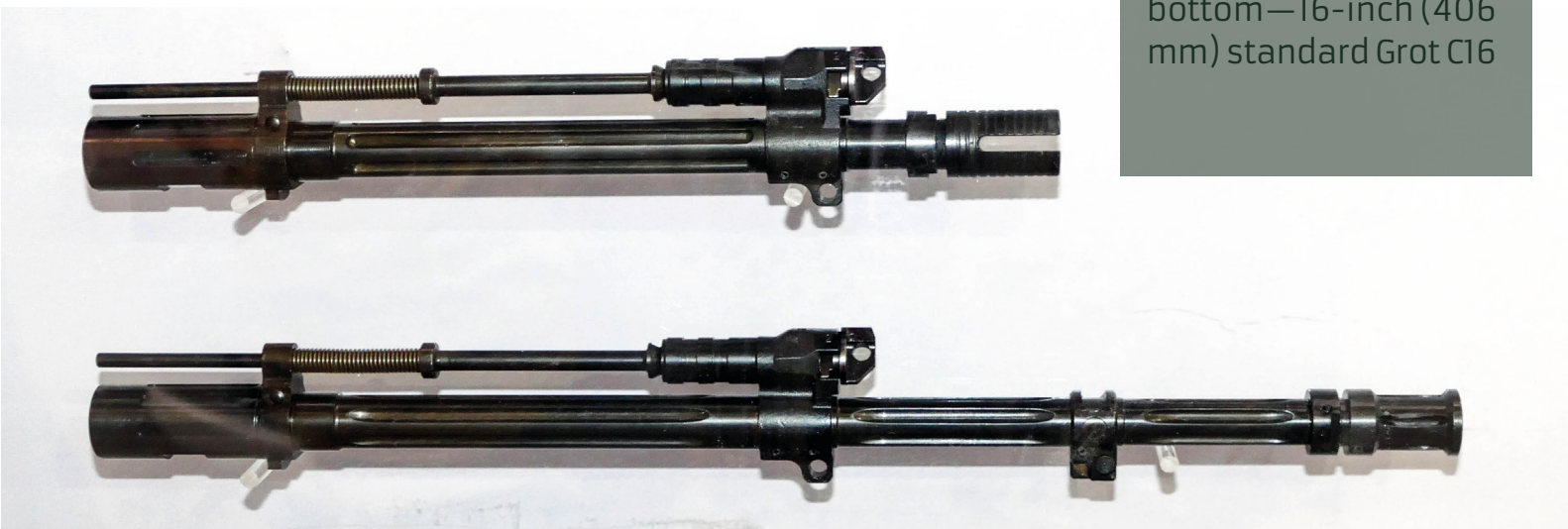
### Different Barrels

Because of the delays of the Titan project and unfinished formal quality tests, the Border Guard could not order the 10-inch (254 mm) barrel variant, instead having to rely on the 10.5-inch model. That half of an





The newest version of Grot C10 FB-M2 carbine, the new handguard includes attachment points for the sling on the sides and the Magpul M-LOK rail interface system



Comparison barrel modules of military variants: top—10-inch (254 mm) carbine Grot C10, currently in qualification testing bottom—16-inch (406 mm) standard Grot C16

inch of difference is caused by restrictions on the development of the military version. The Ministry of National Defense is the owner of the documentation of standard models with 16-inch (406 mm) and 10-inch

(254 mm) barrels. While Grot C10 passed all the in-company tests with positive results, at the time of purchase by the Border Guard the formal quality tests required by the Titan project were not yet finished.

To avoid being limited by external delays, the producer decided to design alternate variants for uniform services and the civilian market. In the first order, the producer tested 10.5-inch (267 mm) and 18-inch



Grot S10 and Grot S16 are offered in Colt Krotoszyn and Colt Wrocław shops for the same price of 6900 Polish Zloty. The set includes a plastic case, 30-round magazine, user manual, and warranty card

(457 mm) barrel versions. FB Radom also plans to introduce 13-inch (330 mm) and 14.5 inch (368 mm) barrels. All those variants utilize a universal twist rate of 228 mm, used earlier in Beryl and Mini-Beryl.

### Short Grot

Grot S10 FB-M1 with 10.5 inch barrel introduced on the market by Colt Krotoszyn and Colt Wrocław, is a semiautomatic carbine using 5.56 mm x 45/.223 Remington ammo. It follows Grot S16 FB-M1 with 16-inch (406 mm) barrel sold since December 2018. Both variants conform to the civilian firearm regulations applicable in Poland and European Union. They are semi-automatic weapons limited to single fire. Because of legal restrictions, their receiver installed in civilian

variants is incompatible with bolts from select-fire weapons. Civilian 16-inch barrel lacks the bayonet lug present in the military version. Neither civilian or military versions of short barrel have bayonet lugs either.

Grot S10 and Grot S16 carbines are sold by the distributor for 6,900 Polish Zloty (approximately \$1,700). Weapon is covered with a four year manufacturer's warranty. The buyer receives the weapon with a single AR-15/M16 style 30-round magazine made of semi-transparent plastic. Everything is stashed inside a foam-lined polymer case, together



with a user manual and warranty card. The weapon weighs 3.2 kg (7 pounds) and has a width of 89 mm (3.5 inch).

### Technical Details

Grot S10 FB-M1 carbine has a 10.5 inch barrel. Its rifling is made of six grooves with a twist rate of 1:9 inches (228 mm). It is important to note that each barrel variant uses its own gas regulator model, fitted to the gas operation at a specific barrel's length. Replacing the correct gas regulator with one taken

from a Grot barrel of different length may lead to weapon malfunctions. It was pointed out by special operations and uniform services users testing the gun in 2017.

The muzzle ends with an external ½-28 inch thread with a flash suppressor screwed on. It can be removed to attach another muzzle device using that size of thread. The barrel has external grooves increasing its rigidity and thus improving accuracy. Additionally, such rifling reduces weight and helps disperse heat during continuous fire.

Grot S10 FB-M1 has a receiver made of aluminum alloy and a trigger mechanism made of plastic. A long STANAG 4694/ NATO Accessory Rail (military variant of Picatinny rail) is mounted above the receiver.

The handguard features an M-LOK rail interface system that allows attachment of additional accessories – flashlight, foregrip, or bipod. The carbine's stock is folded to the side, and it can be extended to four different extension lengths allowing the user to adjust it to the circumstances, such as arms' length or clothing worn.

1. Grot S16 barrel module. Generally, the sole difference between both civilian variants. The barrel module will be available for sale in the future
2. Semi-automatic Grot S10 has a 12.5 mm longer barrel than the military Grot C10. It also uses a different flash suppressor, the same as in civilian Grot S16
3. Worth remembering: gas regulators in Grot S10 and Grot S16 are not interchangeable, having different diameter of openings. Accidental mix up can lead to malfunctions





The stock also has a cheek rest with regulated height and angle allowing the shooter better comfort while aiming using mechanical or electro-optical weapon sights.

## Knife Bayonet

Colt Krotoszyn also started selling knife bayonets recently developed by FB Radom. Regretfully, they can't be attached to civilian Grot S16 FB-M1, which misses bayonet lug and has incompatible muzzle device. The military variant has requisite indent for the knife bayonet. The design itself, previously described by MILMAG is one of the most interesting models entering the market. The set, sold for 499 Polish Zloty (approximately \$120), is composed of the knife itself, scabbard, and a scabbard base that can be attached to a belt or a harness.

The drop point style blade is made out of NCV-1 tool grade steel and has a partly serrated edge for cutting nylon ropes and tapes. The handguard was made with an injection molding method. Backside of the knife can be used to break windows. It also has a hole for a strap. Knife bayonet can be combined with the scabbard and used together as wire cutters. The scabbard can be

The original knife bayonet for military Grot reached the shops. It is provided with a scabbard (with which it forms wire cutters) and base that can be attached on belt or MOLLE





attached to a polymer base which can be fixed to a belt or any piece of gear that uses MOLLE webbing. Additional strap with a fastener prevents the knife from falling out when sheathed. The blade is 152 mm long and 3.8 mm thick. The edge is partly serrated and made of NCV-1 steel. Scabbard is made of plastic and nylon. Knife's total length is 280 mm and it weighs 200 g. The whole set weighs 390 g.

### Łucznik News 2020

Grot S16 FB-M1 was sold in two configurations. *Basic* for 6900

Polish Złoty and *full* costing 8700 Polish Złoty (which also included additional military-grade mechanical sight, three short Picatinny accessory rails, foreguard, and military weapon cleaning kit). Shorter Grot S10 FB-M1 is currently sold in simple version only.

As of yet, the producer hasn't started selling short barrel modules alone, though it was announced they will be offered to customers who bought Grot S16 for a price not exceeding 2000 Polish Złoty in the future. It is also possible that in the future buyers will be able to purchase sets including the carbine with both barrel modules.

New modules are supposed to reach the market in 2020: stock adapter suitable for M4 folded stock, and extended handguard covering the gas regulator from accidental bumps and offering better grip with the weaker hand. FB Radom hasn't revealed the release dates or pricing yet.

If the Territorial Defense Force will decide to order SKBW/MSBS-7.62N designated marksman rifles, 2020 may also see the release of a semi-automatic variant using 7.62 mm x 51 NATO (/308 Winchester). FB Radom manufactured the first batch of fifty prototypes with 20-inch (508 mm) barrels, currently subject to intensive testing,





involving, among the others, selected civilian long-distance shooters. Additionally, barring disruptions caused by the epidemics, 9mm semi-automatic PxR pistol (civilian version of military Vis 100/PR-15 Ragn model) should reach the market in the second quarter of 2020.

*Author would like to express his thanks to Remigiusz Wilk for help with the article*



JAKUB LINK-LENCZOWSKI  
COLT KROTOSZYŃ,  
JAROSŁAW LIS,  
PAWEŁ ŚCIBIOREK,  
REMIGIUSZ WILK



Prototype of extended handguard covering the gas regulator. Final variant will be a few millimeters longer, reaching the bayonet lug

Later this year, a stock adapter for M4 stocks should be available. On the photo prototype presented on MSPO 2019





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