



POLISH CHAMBER OF NATIONAL DEFENCE MANUFACTURERS

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POLISH DEFENCE INDUSTRY

➤ **26** SIKORSKY S-701
BLACK HAWK HELICOPTER

➤ **10** DEPUTY PRIME MINISTER AND MINISTER
OF ECONOMY JANUSZ PIECHOCIŃSKI



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CONTENTS

POLAND	4
Poland is the largest of the East European countries which joined the EU in May 2004. It is a stable democracy with a truly fascinating history, great cultural heritage and several areas of outstanding natural beauty.	
NEWS	8
The latest news from the polish defence industry.	
INTERVIEW	10
We actively support the defense industry interview with deputy prime minister and minister of economy JANUSZ PIECHOCIŃSKI	
SUCCESS OF ARMY MODERNIZATION - AN OPPORTUNITY FOR THE INDUSTRY	12
The debate over the technical modernization of the Polish armed forces by 2022, the implementation of new technologies in the Polish army and the shape of Polish Armaments Group (PGZ) - are the main topics of the conference "Success of Army modernization - an opportunity for the industry	
AFIT IN THE ORLIK MPT PROGRAM	14
Orlik MPT aircraft demonstrator was presented in the Airbus Defence and Space facilities in Warsaw. The rollout took place on March 7, 2014.	
WB GROUP - INNOVATION SYNERGY	20
WB Electronics is the first company in the Polish defense industry that improved its offer for the Polish army, decided to acquire specialist skills and expertise by joining forces with others in the industry.	
PASSION CREATES PROFESSIONALISM - PROFESSIONALISM ENSURES QUALITY	24
Szczęśniak Pojazdy Specjalne Sp. z o.o. is heavily involved in the production of equipment for the Armed Forces, in particular for the Military Fire Protection.	
SIKORSKY S-70I BLACK HAWK HELICOPTER	26
The modern S-70i™ BLACK HAWK helicopter incorporates advancements that connect this remarkable aircraft into the fast-pace, digital information world that exists today.	
KTO ROSOMAK SIMULATORS IN THE USER TRAINING PROCESS	30
Technological developments and modern military equipment currently in use is forcing manufacturers to develop teaching aids which enable the implementation of high-level training.	
COMPANIES	34



Sławomir Kułakowski

Born on May 31st, 1952 in Jelenia Góra. Graduated from the Faculty of Law and Administration of the Nicolaus Copernicus University (1975), Reserve Officers School (1976) and Postgraduate Studies at the General Staff Academy (1989). Reserve colonel. Held many important functions in the institutions of the Ministry of National Defence (1976-1992 and 1996-98). Between 1992-1996 served as adviser of the head of the National Security Bureau at the President of Poland Office for Economy and Defence Affairs. President of the Polish Chamber of National Defence since 2001.

Ladies and Gentlemen

Every company, especially operating in the armaments sector, is trying to cope with the dynamic changes and challenges brought by today's constant development.

One of the areas that the defence equipment manufacturers are currently focused on are new technologies allowing not only to cut costs, but also increase productivity. In a wider perspective, Polish producers create innovative solutions through research and new technologies – they introduce new products, services or even business collaboration models.

The wide range of possibilities offered by Polish manufacturers and the highest quality of their products provides customers with a full range of solutions and services tailored to the current and future needs of the dynamically growing army.

Polish defence industry products are still actively used. They meet the needs of our troops, not only in the country but also in different parts of the world where they serve. This is the best proof that the quality of equipment produced in Poland is very high.

In this edition of our Polish Chamber of National Defence Magazine, we wish to share examples of first-class solutions, characterized by excellent quality and durability.

I wish you an enjoyable read,

Sławomir Kułakowski

President of the Polish Chamber of National

Polish Chamber of National Defence Manufacturers

On the 11th September of 1995 a constituent meeting was held, at which, a resolution to establish the chamber, initiated by the representatives of the Polish defence industry, has been adopted. A temporary management and an auditing committee has been elected by the representatives of the 67 founders, in the presence of General Henryk Mika from the Ministry of Defence and the Colonel. Sławomir Kułakowski from the National Security Bureau.

During the past 10 years, the Chamber has been initiating activities to advance the technical level and product quality for the national defence, promoted the cooperative relations, inspired projects which led to an increase in the production for the domestic and foreign markets, as well as has inspired and supported the restructuring and modernization of the Polish industry while preparing its integration with the European structures.

During that period, the organization of trainings for the representatives of the Polish industry and the facilitation of foreign contacts has been a significant element of the Chamber's activity. Besides the above, it has organized experience exchange within the areas of technical, organizational and trade solutions.

Since 1998, the Chamber has been a co-organizer of the BALT MILITARY EXPO exhibition in Gdansk, and has co-organized the "Cło i Granica" (Border and Customs) Fair in Warsaw since 2004. In 2000, the Chamber has initiated and coordinated the Polish Defence Industry Days in Lithuania, during which, the associated companies have handed over equipment worth approximately 4 million Zloty, including the Chamber's contribution of 700 000 Zloty, to the Lithuanian part of the LITPOLBAT battalion. In 1998, the Chamber has been assigned to represent the Polish defence industry at the NATO Industrial Advisory Group (NIAG), and since December of 2000 it has actively taken part in the meetings of the Group.

In 1999, the Chamber initiated an industrial cooperation within the Visegrad Group. Two editions of the Polish and Czech defence industries were organized (1999 and 2001), I Visegrad Group Defence Industries Forum (2001) in Warsaw, II Forum (2002) in Trenczyn and III Forum (2004) in Warsaw.

In Poland, in addition to the agreement on cooperation with the Ministry of National Defence (12.08.1999), the Chamber signed cooperation agreements with the Army Workers Trade Union (1997), "Solidarity" National Section of Defence Industry (1998), Polish-Arab Chamber of Commerce (2004), National Association of Equipment Manufacturers (1999) and the Employers' Association of Defence and Aviation Industry Enterprises (2003).

In 1999, the Chamber issued the only catalogue of the Polish defence industry. In 1996 the Chamber started issuing the BULLETIN OF THE CHAMBER. In 2003 the Chamber started publishing a bimonthly POLISH DEFENCE INDUSTRY (in English), and a quarterly ECONOMIC – DEFENCE REVIEW in 2005.

Currently, the Chamber associates 147 public and private enterprises. These include market leaders such as BUMAR Sp. z o.o., the Polskie Zakłady Lotnicze Sp. z o.o. (Polish Aviation Works), Stalowa Wola S.A., MESKO S.A. and RADWAR as well as small businesses and private companies.



DURING THE PAST 10 YEARS, THE CHAMBER HAS BEEN INITIATING ACTIVITIES TO ADVANCE THE TECHNICAL LEVEL AND PRODUCT QUALITY FOR THE NATIONAL DEFENCE

POLAND

POLAND IS THE LARGEST OF THE EAST EUROPEAN COUNTRIES WHICH JOINED THE EU IN MAY 2004. POLAND IS COMPARABLE IN SIZE TO ITALY OR GERMANY (IN USA LARGER THAN NEW MEXICO) AND WITH A POPULATION OF APPROXIMATELY 39 MILLION (E.G. MORE THAN CALIFORNIA) IT RANKS AMONG THE MOST INFLUENTIAL AND REMARKABLE COUNTRIES IN CENTRAL AND EASTERN EUROPE. POLAND IS A STABLE DEMOCRACY WITH A TRULY FASCINATING HISTORY, GREAT CULTURAL HERITAGE AND SEVERAL AREAS OF OUTSTANDING NATURAL BEAUTY.

PARTICIPATION IN PEACEKEEPING MISSIONS

From the initiative of the United Nations and other international organizations, activities are carried out to maintain peace and prevent armed conflicts in the world. Poland has been participating in peacekeeping missions and operations since 1953.

Between 1953 and 2009, Polish soldiers and civilian employees of the army participated in 83 peacekeeping missions and operations, 35 of them were organized under the auspices of the United Nations. The total number of professional soldiers, compulsory military service soldiers, extended military service soldiers, and civilian employees of the army that took part in the missions and operations amounted to 90,234 thousand.

In 2009, Poland took part in 9 (continuing and new) peacekeeping missions and operations.

Of the 7,138 people delegated in 2009 to serve in peacekeeping missions, 6,606 professional soldiers, 362 – compulsory military service and extended military service soldiers and 170 – civilian employees of the army.

In addition, from 2003 to 31 October 2008, Poland was part of the International Stabilisation Force in Iraq. During this period, the Polish Military Contingent (a total of 10 shifts) amounted to 15,839 people, including 13,260 professional soldiers and 2,154 compulsory military service and extended military service soldiers and 425 civilian workers.

POPULATION IN COMPARISON

RANK (IN THE WORLD)	EUROPEAN COUNTRY	POPULATION (mln)
1 [12]	Germany	82.1
2 [20]	France	58.9
3 [21]	Great Britain	58.7
4 [22]	Italy	57.3
5 [23]	Ukraine	50.7
6 [29]	Spain	39.6
7 [30]	Poland	38.7
8 [44]	Romania	22.4
9 [56]	Netherlands	15.7
10 [70]	Greece	10.4

MEMBERSHIP IN MAJOR INTERNATIONAL ORGANIZATIONS

- European Union
- United Nations
- Council of Baltic Sea States
- Central European Free Trade Agreement
- International Monetary Fund
- United Nations Educational, Scientific and Cultural Organization
- United Nations Children's Fund
- World Health Organization
- World Trade Organization
- Central European Initiative
- Organisation for Economic Co-operation and Development
- North Atlantic Treaty Organization

SIZE IN COMPARISON

RANK (IN THE WORLD)	EUROPEAN COUNTRY	POPULATION (km ²)
1 [43]	Ukraine	603 700
2 [47]	France	543 958
3 [50]	Spain	505 992
4 [54]	Sweden	446 964
5 [61]	Germany	357 022
6 [63]	Finland	338 145
7 [66]	Norway	323 877
8 [67]	Poland	312 658
9 [69]	Italy	301 268
10 [76]	Great Britain	244 100

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POLAND

THE BATTLE OF GRUNWALD

The Battle of Grunwald is one of the greatest battles in the history of medieval Europe. It was fought on the 15th of July, 1410. The battle was a part of the great war between the forces of the Teutonic Knights, assisted by West European knights, under the command of the Grand Master Ulrich von Jungingen, and the combined Polish and Lithuanian forces, under the command of the Polish king Wladyslaw II Jagiello. The battle ended with the victory of the Polish-Lithuanian army and a crushing defeat of the Teutonic forces. The outcome of this battle had a major impact on political relations in Europe of that time. Not only did it break the power of the Teutonic Order, but also elevated Poland and the Jagiellonian dynasty to the rank of the most important ones in the continent.

THE BATTLE OF VIENNA

The battle was fought at Vienna on the 12th of September, 1683 between joint Polish, Austrian and German forces under the command of king John III Sobieski, and the army of the Ottoman Empire under the leadership of Vizier Kara Mustafa. The Turkish army numbered close to 140 thousand people. It was the largest army that was mobilized in the seventeenth century. Austria has managed to gather 32 thousand soldiers. Jan III Sobieski called up about 27 thousand Crown troops, including 25 hussar regiments, and marched to the relief of Vienna. The battle ended with the defeat of the Ottomans. This battle is considered to be one of twenty groundbreaking battles in the history of the world.

THE ROAD TO INDEPENDENCE

The Treaty of Versailles that ended World War I sanctioned Polish independence – before that Poland disappeared from the map of the world for 123 years as a result of partitions. The official date of the foundation of the Second Republic of Poland is the 11th of November, 1918, when Jozef Pilsudski took over the military authority in Warsaw. As a result of his actions the German troops withdrew from the city, and the Polish state institutions that were being formed conferred to him the title of the Chief of State.

INDEPENDENT SELF-GOVERNING TRADE UNION "SOLIDARITY"

"Solidarity" was a national trade union formed in 1980 to defend the rights of workers. Until 1989 it was also one of the main centers of mass resistance against the rule of the Polish People's Republic. One of the leaders of the workers' strikes that led to changes in the whole Europe was Lech Walesa, who later became a Nobel Peace Prize laureate. He was elected President in a two-round general election held in November and December of 1990.

THE POLISH POPE

John Paul II was the first Polish pope, as well as the first non-Italian Bishop of Rome in 455 years. The election of a person from a communist country for the head of the church had a significant influence on the events in Eastern Europe and Asia in the 80s of the 20th century.

PEOPLE

ARMED FORCES

The Polish Armed Forces are divided into: the Army, the Air Force, the Special Forces and the Navy. Their main task is the defence of the Polish borders against outside attacks and cooperation with NATO. The armed forces are an essential element of the national defence system, designed for the effective implementation of the security and defence policy. The Polish armed forces number nearly 100 000 troops. They have taken and are taking part in a number of foreign missions of the UN, NATO and the EU.

LEGISLATURE

In Poland the legislature is a bicameral parliament consisting of the lower house – the Sejm and the upper house – the Senat. In direct, universal and secret elections, Polish citizens elect 460 members of the Parliament and 100 senators. Both MPs and senators are elected for a four-year term.

CONSTITUTION

The Constitution of the Republic of Poland is the most important Polish legal act and the foundation of the Polish state. It guarantees the rights and freedoms of citizens, determines the relationships between the legislative, executive and judicial branches, decides on the form and way of appointing key national institutions such as the Parliament, the Senate, the President and the Council of Ministers. The Constitution has a direct influence on the form of the judicial system, local governments and state control bodies.

SOCIETY

According to data from 2014, the territory of the Republic of Poland is inhabited by 38.5 million people. In terms of population Poland occupies the 29th place in the world and the 8th in Europe. The Polish population represents 5.3% of the European population and 0.65% of the population of the world.

COUNTRY HISTORY



NEWS

VISIT OF THE SECRETARY OF STATE FOR DEFENSE IN WZM S.A.

In late April, the Secretary of State in the Ministry of Defense Czesław Mroczek visited the Military Mechanical Works (Wojskowe Zakłady Mechaniczne SA) in Siemianowice Śląskie.

During a visit, Deputy Minister Czesław Mroczek talked with representatives of WZM SA about the production capabilities for KTO Rosomak and about the provision of services and support throughout the life cycle of the wheeled armored transporters.

According to his announcement, the army should get more specialized versions of the KTO Rosomak next year. Increasing the combat potential and the purchase of new transporters of this type are the priorities in the program of technical modernization that is already being implemented. According to the plans, by the year 2019 about 900 Rosomak vehicles should be available for service in various versions.

- Through the program we have implemented two important goals. We have built significant capacity of the armed forces and attained high level of the industry. Siemianowice city is developing thanks to this product and has the chance to develop even further in the next few years - said Deputy Minister Czesław Mroczek in the summary of the visit.

MODERN INDUSTRY - A STRONG ARMY

Armament Policy Department of the Ministry of Defense organized the VI Industry Days Conference under the theme "Modern industry - a strong army", which is a continuation of the exchange of information and views on the expectations and capabilities to meet the needs of the Polish Armed Forces between the military and the defense industry.

During the conference opening panel, secretary of state Czesław Mroczek said that the main pillars of technical modernization of the army are operational programs established in the Ministry of National Defense and the resulting armament programs.

- Ministry of Defense puts great emphasis on making the Polish industry the executor of those programs, and whenever it is possible, tries to ensure the maximum degree of polonization of products - said Deputy Minister Mroczek.

As stressed by the Secretary of State responsible for arms purchases for the Polish army, the Polish Armed Forces expect that weapons systems offered within the programs will use the latest available technology and meet the established tactical and technical requirements.

In order to create proper industry - armed forces relations, organizational and procedural improvements have been introduced to meet the challenges of technological modernization in the years 2014-2022. Deputy Minister stressed that the interests of the Armed Forces of the Republic of Poland and the Polish defense industry intertwine, and the strength of the army is derived from the condition of the industry and vice versa.

- The military needs a strong partner that will manage to implement major programs and projects planned to start as part of multiannual plan for the technical modernization of the Polish Armed Forces established by the Government in 2013. Thus, last year a decision was made to consolidate the defense industry and establish the Polish Armaments Group - said Czesław Mroczek.

Aside from the representatives of the Ministry of Defense, General Staff and Armed Forces, the conference was also attended by representatives of the Sejm and the Senate, the National Security Bureau,

Ministry of Economy, Ministry of the Treasury, Ministry of Infrastructure and Development and Ministry of Foreign Affairs.

DEVELOPMENT OF DRONES - FUTURE OF POLAND'S SECURITY

Development of Polish unmanned systems is a necessity for the Poland's security - said the head of the National Security Bureau, gen. Stanisław Koziej, during the seminar "Why unmanned systems are a showcase of Polish science and economy."

According to the head of the National Security Bureau, Poland with its human resources and technology potential can be found in the world's top manufacturers of unmanned systems and produce a full range of such systems.

Having its own technology in this area is crucial for safety - Because these systems are highly computerized, their use requires national cryptographic control. The condition for this is national production. Without its own source code we can not be sure about the use in the most critical moments - general Koziej stressed.

For years the experts have been arguing that it is very important from the point of view of security to have your own source code for advanced information systems. As a crowning example, they present a risk which came from Israel, which sells drones to both Russia and Georgia. According to the Georgians, Israeli producers gave the source code for the Georgian drones to Russians, so that they can take control on Georgian drones.

However, to achieve effective results in the development of Polish unmanned systems, it is necessary to establish a National Drone Program. With this program, it will be possible to use the potential of all institutions interested in the development of this kind of systems - military, industry and research centers.

Readiness to develop unmanned systems in Poland was confirmed by the Director of the Institute of Radioelectronics of the Military University of Technology - Piotr Kaniewsk - who assured that the solutions produced in the country are documented, give access to the source code and are thus easier to modify in the future.

The readiness and advancement level of the Polish industry when it comes to the manufacture of unmanned systems was also brought up by the director of the unmanned systems program director in WB Electronics - Wojciech Komorniczak. He emphasized that the Polish army already has 62 unmanned systems which were manufactured in Poland, and which were successfully tested in combat and all climate zones. He also stressed that further types of drones are now being developed in cooperation with the military.

Director Komorniczak also informed the audience that the BS9 consortium appointed in August last year, composed of Polish companies and research centers producing unmanned systems was joined by two more companies: PHO (former Bumar Group) and Wojskowe Zakłady Lotnicze. Thus, the BS9 consortium is the only Polish entity holding research and production capabilities to produce entirely Polish unmanned systems.

During the discussion, General Leszek Cwojdziański noted however, that with the development of any system in the domestic industry, it is necessary to increase the budgetary research funds.

DSA 2014 EXHIBITION IN MALAYSIA

It is one of the most significant and the most important regional defense exhibition in Asia. Defence Services Asia is an event combining exhibitions, thematic conferences, B2B meetings and dynamic demonstrations.

Polish Defense Holding, along with the Polish Chamber of National Defense Manufacturers, presented an offer of the Polish defense sector companies in a shared national booth.

In addition to representatives of the Holding, whose products are well known in the market of Southeast Asia, namely ZM Bumar Łabędy i Elektronika, PCO SA is also present with its CKD-1 "Szafran" daytime scope, as well as the Fabryka Broni Radom with its MSBS 5.56mm rifle.

Polish National Pavilion brought together a wide range of representatives of the domestic industry, including: Huta Stali Jakościowych, WZM Siemianowice, Radiotechnika, Wojskowe Zakłady Inżynieryjne and many more.

For years, the organizers of DSA have been boasting a growing number of high-level delegations. This year's exhibition was visited by: King of Malaysia - Tuanku Abdul Halim, Prime Minister - Najib Tun Razak and Minister of National Defense - Hishammuddin Hussein. The event that accompanied the event was the MALAYSIA EU BUSINESS TALK conference, which was attended by the representatives of European countries including Poland, Czech Republic and Slovakia. The conference dealt with the relations of the above mentioned countries with Malaysia, the offset policy and business prospects.

THE NEW PARLIAMENTARY COMMITTEE FOR POLISH DEFENSE INDUSTRY

Topics regarding the participation of domestic firms in the modernization of the Armed Forces and defense industry consolidation will dominate the work of the new Polish Parliamentary Group for Polish Defense Industry.

- Our aim is to increase parliamentary control over these processes, in order to effectively build strength of the national defense sector - emphasizes Mr Bartłomiej Bodio, chairman of the newly formed committee.

A group of twelve MPs and senators representing all parties will establish a team responsible for supporting the development of the Polish defense industry. The initiator of the project is deputy Bartłomiej Bodio from PSL, author of an important amendment that guarantees financing of the missile defense system, which obliges the constructors of this component to use the services of national defense industry to the maximum extent. The presidium also includes Małgorzata Sekula-Szmajdzinska from SLD and Senator Michał Wojtczak from PO.

MPs agree that the program of massive investments in the Polish army, which will cost 100 billion PLN, should be a flywheel for the domestic arms industry - What's more, this amount is not complete - the purchase of arms and equipment accounts for about 30-40% of the costs incurred during the whole the life cycle of the equipment. Operating costs and subsequent modernization should also be included. Therefore, spending on military equipment in the next decade will be many times greater than the declared 100 billion PLN - emphasized Bartłomiej Bodio during the first meeting of the committee. In his view, the planned modernization brings enormous opportunities, but also a great challenge for the entire Polish defense industry.

Members of the parliamentary committee want to control and ensure the proper technology transfer in case of equipment purchased from foreign companies. - As a result, domestic industry will have a chance to catch up with the competition, strengthen its position on the Polish market and increase the chance for success abroad. In the past, mistakes were made, which we can not repeat now - said Bodio, who argues that political support for the industry is one of the key factors for its development. This is particularly important in the case of increasing opportunities for export of armaments produced by the Polish companies.

MINISTRY OF DEFENSE WANTS TO BUY 64 5TH GENERATION MULTIROLE AIRCRAFTS BY 2030

In 2012, the Ministry of Defense decided to replace the Su-22 aircrafts with 16 F-16 aircrafts. Since 6 February 2014, the plans include the replacement of used equipment with 64 (!) 5th generation aircrafts. It is not clear where the Ministry wants to get more than 10 billion USD for this purpose. Deliveries are to be realized in the years 2022-2030.

In connection with the emergence of new modernization programs (technical modernization of the Navy program was indicated here), Minister of Defense signed a new technical modernization plan on February 6, in which the item: "purchase of 16 multi-role aircrafts" was replaced by "64 5th generation multirole aircrafts." General Drewniak did not confirm whether this applies to F-35.

The plan assumes 170 million PLN in 2020 at the beginning of the program and 330 million PLN in the first year and consecutive years (2021-2022), which provides the opportunity to buy two aircrafts per year. This estimate is a little strange because one of F-35 aircraft in the cheapest "Alpha" version is expected to cost 96.8 million USD; with logistics package it will cost twice as much. These purchases are to last until 2030 (in the next few years, the number of machines delivered every year is planned to increase to 4 and then to 8).

MORE THAN 32 BILLION PLN FOR DEFENSE IN THE DRAFT BUDGET OF THE MINISTRY OF DEFENSE FOR 2014

Parliamentary committee for Defense issued a positive opinion on the draft of next year's budget for the Ministry of Defense. It assumes spending more than 32 billion PLN for defense. That's about 4 billion more than in the current year. The project was supported by the coalition, and the opposition MPs abstained from voting or voted against it.

According to the draft of the defense budget, exactly 32 billion, 36.5 million PLN will be spent next year. About 28 billion will constitute a part of the budget described as "national defense".

In the "capital expenditure" category, encompassing the purchase and modernization of equipment, there is a total of 8.17 billion PLN, which represents 25.5% of defense spending. Percentage-wise, this is less than in the last year's budget (over 26%).

New element of the next year's budget is the creation of a special reserve for the financing of priority programs of technical modernization of the army, valued at more than 3.48 billion. These are funds allocated for the 14 priorities of the multiannual modernization plan, adopted by the government in September this year. According to the plan, in the years 2014-2016 we will assign 15.9 billion PLN for these purposes. By 2022, the total amount of these expenses is expected to reach 91.5 billion PLN.

4.7 billion PLN will be allocated to the technical modernization not associated with the priority program. Construction investments and infrastructure repairs will take 1.9 billion, and the research will absorb only 168 million PLN. A bit less - about 160 million - is expected to be spent on the reform of the armed forces command and control system. 100 million PLN is personnel costs, and the rest is associated with the preparation of the infrastructure.



We actively support the defense industry

**INTERVIEW WITH DEPUTY PRIME MINISTER
AND MINISTER OF ECONOMY
JANUSZ PIECHOCIŃSKI**

For over a year, a promotion program for the defense industry has been implemented. How do you assess its effects?

The program is targeted at businesses operating in the defense industry. It also promotes the Polish economy and the whole defense sector. It is a long-term program, and it is difficult to assess it now. In addition, most of the promotional activities are planned for 2014. Taking into account the number of companies that have reported so far as the beneficiaries of the grant, it enjoys great popularity. So far, the Ministry of Economy has taken a number of initiatives that are designed to promote the Polish economy, including the defense industry and entrepreneurs that operate in this area. Thanks to those, Polish companies participated in fairs such as Indo Defence in Jakarta in November 2012, IDET in Brno in May 2013, as well as Arms and Security in Kiev in September 2013. We also organized five trade missions for our businesses to Egypt, Armenia, Jordan, Kazakhstan and Indonesia. Such events are organized whenever there are defense industry forums, conferences and fairs in the given country.

Ministry of Economy also undertakes actions as part of Brand of the Polish Economy project. How do the Polish promotion activities on foreign markets look like?

Wise internationalization of Polish economy, especially through exports, is one of the conditions for growth and prosperity. Therefore, the Ministry of Economy has developed specific instruments that help companies operating on foreign markets. These are, among others, trade promotion programs that are implemented within the Innovative Economy Operational Programme system project. As part of the project we supported 15 industries, including furniture, yacht and pleasure craft production, construction, cosmetics, defense and food industries. This way we want to create a dozen Polish export specialties. Implementation of the project is planned for 3 years until 2015 and includes training for entrepreneurs in economic missions, organization of study visits to Poland for industry journalists and the preparation of a campaign to promote a particular industry in a particular country. As part of the OPIE, 7 prospective markets were selected, where generic promotion program is implemented. These are Canada, Brazil, Algeria, Kazakhstan, Turkey, United Arab Emirates and Mexico. Our export offer is promoted at such events as fairs, exhibitions and trade missions. Generic promotion programs also encompass national industry exhibitions. As an example, I will mention the ILA Berlin Air Show organized in 2012 and CeBIT held in Hanover in 2013.

Foreign agencies of the Minister of Economy operating within the embassies and consulates of the Republic of Poland, i.e. Departments Promotion, Trade and Investment, are also a great support for entrepreneurs. 48 agencies are currently operating in 43 countries. Their main task is to promote the Polish economy and Polish products, as well as to facilitate access to access goods and services market in the host country. In addition, they are protecting the interests of our businesses in dealing with the administration and companies, attracting foreign investors to Poland and advising Polish exporters. I would also like to mention that in 2013 the management of the Ministry of Economy held more than 200 meetings with foreign partners from 68 countries. Moreover, every year there are about 70 permanent international events held in which we are involved, such as the Economic Forum in Krynica or the European Economic Congress in Katowice. In the past year we also participated in 10 major missions accompanying foreign visits of the President and Prime Minister of Poland.

Export expansion is further supported by two programs: GO CHINA, initiated in 2012, and GO AFRICA, which started in 2013. Both programs facilitate access of Polish companies to the Chinese and African markets and I can already say that they were very successful. Polish exports of goods to China increased in 2013 by more than 17 percent. Contracts were signed for the purchase of URSUS tractors by Ethiopia and for the purchase of phosphate rock deposits in Senegal by Zakłady Chemiczne „Police” S.A. Group.

Arms manufacturers believe that it is possible to find new markets only through national lobbying. Does this mean that it's not enough to offer modern technologies and innovative solutions?

We should remember that even the most attractive product cannot sell itself. It is the same with the offer. It is not enough for it to be good and innovative. In the defense industry what counts is the recommendation for hardware, that is, the fact of its use in the armed forces of a given country. This is more effective than the best marketing. If the Polish army uses some equipment, it is easier to convince another potential buyer about its merits.

Export and import of military equipment is strongly associated with long-term security interests of the country, therefore the political support is important for the trade of these products. However, the activity of the producers themselves is also important. This is because it depends on the entrepreneur whether the product will be competitive and attractive enough to attract foreign customers, as well as whether he is able to provide adequate security of supply in the future. Therefore, skills and degree of involvement of business play an important role here. And we, as the Ministry of Economy, provide them with the best conditions to carry out this operation.

Measures to promote the defense industry organized as part of the program are implemented particularly in the Asia and Africa. Does this mean that Polish products are not well known in those regions in particular?

Currently the main recipients of Polish exports are countries of the European Union. They get 76 percent of our products. This is due to geographical and cultural proximity and as well as diverse economic dependencies.

The economic downturn that has also affected our European neighbors caused us to intensify cooperation with other markets. We want to diversify our geographical structure of our trade and increase the share of Eastern and non-European in the Polish exports.

Asia and Africa were chosen from purely economic reasons. China is now one of the economic leaders. It maintains high growth rate and is not only the largest exporter, but also a powerful outlet. Countries such as Thailand, Malaysia, Indonesia and Singapore are developing quickly as well. African continent has a great potential and the countries of the region are seeking trade and investment partners. We want to help Polish companies in entering these markets, which is why we take a broad action involving numerous institutions and government agencies.

Are foreign investors interested in cooperation with Poland?

Poland is an attractive country for entrepreneurs. This is evidenced by international rankings. According to Ernst & Young, our country is the second best location for investment in Europe, just after Germany. In the FDI Benchmark ranking, Poland was right behind China and the U.S. as the third most attractive country for manufacture in the world. Similar result was achieved in the "2013 Global Manufacturing Competitiveness Index" ranking prepared by Deloitte. Poland was second in Europe and fourteenth in the world.

Our high position is the result of activities of the Ministry of Economy that supports the development of investments in Poland. Entrepreneurs can obtain financial support in the form of grants, training of staff and funding of innovative investments. Furthermore we prepared regulations that facilitate economic activity in Poland. We simplify the law and break down unnecessary barriers.

Through our efforts, we have extended the operation of special economic zones. Investors who run their business in those zones can benefit from the tax reliefs, ready sites for construction of facilities, efficient regional Investor and Exporter Service Centers. Our brand and position are also built by professional and qualified staff. This makes us increasingly competitive in terms of quality, not just the cost of production or work.



"Success of army modernization – an opportunity for the industry"

The debate over the technical modernization of the Polish armed forces by 2022, the implementation of new technologies in the Polish army and the shape of Polish Armaments Group (PGZ) - are the main topics of the conference "Success of Army modernization - an opportunity for the industry".

Military Mechanical Works in Siemianowice were a place of debate, which was attended, among others, by Minister of National Defense Tomasz Siemoniak, Treasury Minister Włodzimierz Karpiński, and Prime Minister Jerzy Buzek. The meeting of representatives of government, industrial sector and scientific communities was an opportunity to debate, among others, about the cooperation of industry and the military.

The conference took place in a specially adapted hall where the conference participants were welcomed by Jerzy Buzek, who was a co-host and originator of the meeting.

- Cooperation between the industry, academia and the military is the cornerstone of business of every manufacturer of defense equipment. The process of designing new versions of military vehicles always involves representatives from each party. In recent years, as a result of the opinions and experiences of Polish soldiers in Afghanistan, we have introduced hundreds of design changes. At each stage of the production of the vehicle, the representatives of the District Military Delegation have insight into the scope of work, and above all, into its quality - says Adam Janik, Director of Wojskowe Zakłady Mechaniczne SA.

Defense Minister Tomasz Siemoniak, who opened the conference stressed that in order to succeed, the army needs to be a partner for the defense industry.

- Ministry of Defense will prefer the Polish defense industry, but will also be a demanding partner - said the Minister. An important moment was the information about the creation of a new name and logo of the company. Director Janik said that by changing

the name, the company wants to take advantage of the success achieved Rosomak vehicle, so appreciated by the soldiers. The name is simple and clearly associated with Siemianowice factory.

- We believe that this way we will get a better reach to our potential customers, especially foreign. While not distancing ourselves from tradition, we want to take advantage of the modern forms of impact on the markets through effective promotion - said the Adam Janik.

Among other topics, the meeting involved the discussion about advanced work on the development of the Polish Armaments Group (PGZ), aimed at consolidating government-funded companies working in the defense industry.

One of the main topics discussed at the conference was the issue of the modernization of the armed forces. The main premise of the program of technical modernization of the armed forces of Poland is to ensure a higher level of modernization of armament and military equipment.

- We have developed a ten-year program of technical modernization of the army, which assumes investments worth about 130 billion PLN. We must make good use of this opportunity, not only for the Polish army, but also for the competitiveness of the Polish defense industry and its development - we read in the letter from the President.

Modernization is directly related to the need for implementation by manufacturers of new technologies. An excellent example of such activities is the modern construction of vehicle crew simulators. They are part of the logistical support of customers, which includes: service, training and spare parts. The Jaskier driver training simulator and Tasznik turret simulator, for which the company received the President's award for the product that best serves the purpose of increasing the level of safety of the soldiers in the Polish armed forces, are the most modern teaching devices designed to train crews of Rosomak wheeled APCs. Their full capabilities were presented during the conference.



AFIT in the Orlik MPT program

Orlik MPT aircraft demonstrator was presented in the Airbus Defence and Space facilities in Warsaw.



Air Force Institute of Technology



Military Aviation Works No.1 J.S.C.



Fot. Wójtowicz



Fot. Wójtowicz

In 2011, EADS PZL and the Air Force Institute of Technology initiated a joint program of modernization of the PZL-130 TCII to the Glass Cockpit standard. The agreement stipulated that AFIT will equip the plane with digital avionics, based on original solutions used during the modernization of the W-3PL Głuszec helicopter. The end result of this work is the PZL-130 Orlik MPT.

The integrated avionics system developed by AFIT for PZL-130 Orlik aircraft includes the following systems: navigation, communication and exchange of data, mission planning, recording, debriefing and (virtual) armaments (virtual) system integrated through a management system with mission computer as well as a dialogue system in the "Glass Cockpit" standard.

Design of the system, its software, integration and validation were implemented by AFIT Avionics Department.

The result of this work was to provide baseline airframe, which was the jet trainer aircraft PZL-130 Orlik TC-II Garmin used by the Polish Air Force, with a modern system that uses unified data sources and is managed completely by an onboard mission computer.

The most significant changes include the dialogue system, i.e. human-machine communication. Analog gauges were replaced

by "Glass Cockpit". It consists of four multi-function displays - two in the front cabin and two in the rear cabin. Ultimately, each crew member will be able to have up to three displays. Each monitor is universal and can display flight parameters, as well as tactical data derived from real and simulated sources (e.g., the simulated radar or virtual weapon systems).

Data imaging is complemented by the translucent HUD indicator in a pilot-student seat, and R-HUD that displays a repeated image of the HUD to the second crew member.

At the heart of the navigation system is EGI - inertial laser system integrated with a GPS receiver and aerodynamic data computer. The data is supplemented with information from area navigation and landing systems (VOR / TACAN / IRS), digital maps, and after processing by the computer - imaged in the synthesized form on the multi-function monitor screen and/or HUD in the form of analog form, digital form, or on the background of a digital map (only monitors). The latter can be displayed in several selectable scales with data and imaged terrain. The used solutions, including the so-called "open architecture" and access to the source code will allow the integration of new functions and features, such as the autopilot,

which will be able to independently carry flight under the programmed parameters in the future.

Orlik MPT has two radio stations and data exchange system, which allows users to learn communications management on board and offers extensive training opportunities. AFIT has developed "virtual" weapons for Orlik MPT, which include cannon, unguided bombs as well as guided air-to-air and air-to-ground missiles. The system allows the users to train attacking of ground targets and air combat. It also lets them train fighting outside the visual range. It is possible to simulate radar operation in different modes.

What's also essential for the training capabilities, is the registration system for flight parameters developed by AFIT for this machine. In addition to a "black box" (with voice recording from the cockpit) it consists of a special system that allows the registration of completed tasks, a very accurate record of flight parameters, including the actions of the crew and digital image recording seen by HUD. During the training using MPT Orlik, ground and/or airborne mission planning position is used.

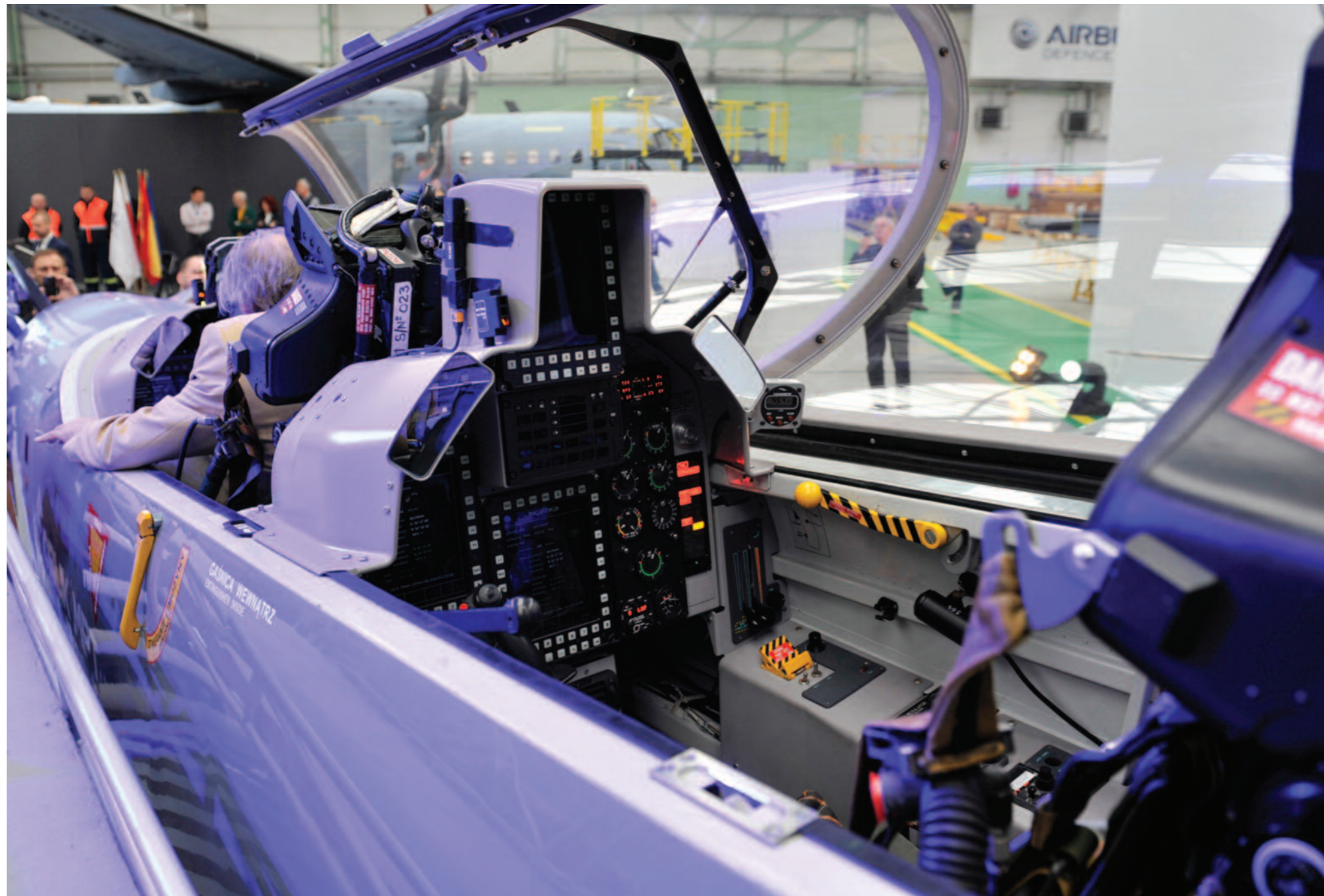
At the same time, AFIT has developed a Operation According to the Technical State System that revolutionizes the way service and

repairs are performed. It allows the use of PZL-130 TC II, or MPT Orlik without repair periods specified by time, but based on real TBO, assuming at least 300 hours of annual use. The necessary data is entered into the "Computer System for Registration and Evaluation of Operation Process of Aircrafts - SAMANTA" developed at the AFIT Department of Computer Logistics Support.

The system will reduce operating costs by extending technical TBO to 10 thousand hours (or more). Implementation of the program is planned for the end of 2014.

This way, the use of modern, integrated digital avionics developed for PZL-130 Orlik by AFIT has greatly increased the range of possible applications of this type of equipment, while reducing operating costs.

With the changes in the construction of the airframe and the propulsion system, Orlik PZL-130 MPT has gained the potential for a more economical training of pilots on primary and intermediate levels (including combat operations).



Fot. Wójtowicz



Fot. Wójtowicz

Chemical weapons - Polish engineers developed an answer to it

Chemical weapons. The invisible killer that consumed almost 500 thousand lives during World War I. Today, it is the weapon of terrorists and dictators who are not afraid to use it against civilians. We all have in mind the recent use of sarin in Syria, after which people in Poland started asking - can we feel safe? Can we in any way protect ourselves against chemical attack?

The answer comes from Polish engineers who developed the world's first device that identifies contamination within a split second after the attack.

History of chemical weapons

Chemical weapons are chemical substances used in armed conflicts. They are often referred to as war gases, since this is their most common form. There are dozens of types of chemical weapons, but the best known include sarin, soman and mustard gas - these are the ones we most often hear about on the television or read about in the newspapers. **However, what is their history, who first used chemical weapons?**

War gases were already used by the Chinese in the fourth century BC and by the ancient Greeks. However, they were applied on a larger scale for the first time during World War I. The first ones to see an advantage associated with the use of this weapon were Germans, who fired tear gas grenades at the French on October 17, 1914. Of course, tear gas did not significantly affect the result of the battle, so the Germans reached for liquid chlorine. Discharged directly from



the barrels and carried by the wind, it was first used on April 22, 1915 at Ypres in Belgium. This date is considered the beginning of the so-called gas war. Interestingly, Ypres can be considered as a testing ground of World War I, since that is also where mustard gas was first used - known from now on as iprit.

Gas war in 1914-1918 resulted in the deaths of 430 thousand soldiers. More than 500 thousand were injured. Public opinion, humanitarian organizations, and many heads of state called for the development of rules that prohibit or limit the use of chemical weapons. Following a discussion on June 17, 1925, Geneva Protocol was signed, which banned the use asphyxiating, poisonous or similar gases, as well as bacteriological agents during war. It should be noted, however, that the protocol does not forbid the production of toxic warfare agents! It is not difficult to guess that in the interwar period, we still had to deal with the cases of the use of poisonous gases. This happened during the conflicts in China and Ethiopia.

It's been a little over twenty years, and the world has once again plunged into a global conflict. A war, in which individual did not matter. It is not clear why none of the parties decided to use chemical weapons. Historians say that on the one hand, this is a result of personal experience of Adolf Hitler, who found out on his own what a chemical attack involves. On the other hand, they claim this is a result of fear of unleashing a chemical world war, which could have affected the German cities that were within the range of RAF aircrafts. It should be noted that after 1941, the Germans started using Zyklon-B for mass extermination in Auschwitz camp, killing almost one million people this way.

After World War II

After the tragic experiences World War I and II, mankind has sought to eliminate toxic warfare agents from its arsenals. War knows no compromise, and when the generals recognize that such measures will help them win, they do not hesitate to use them. It is worth to mention a few examples here.

During the Vietnam conflict, Americans struggled with lush vegetation of this country, which is a natural hideout for Vietcong forces. To get rid of the dense flora, and thereby uncover enemy positions, they dropped Agent Orange from airplanes. As it turned out, Agent Orange was contaminated with dangerous dioxin, which caused characteristic changes in the appearance of the face, as well increased susceptibility to cancer in those who came in contact with it.

In the last two decades of the twentieth century of the infamous history of chemical warfare, Saddam Hussein played a particular role. During the conflict between Iraq and Iran, which he initiated, the factor that was supposed to tip the scales of victory in his favor was chemical weapons. Despite the general condemnation of the use of chemical weapons, Saddam Hussein - having the support of the United States, the Soviet Union and the Arab countries - could feel unpunished using all available means to achieve victory. The situation has turned by 180 degrees when he dropped bombs with a mixture of sarin, tabun and mustard gas on the Kurdish town of Halabja. Several years later, this event became one of the pretexts for the U.S. intervention in Iraq and the overthrow of Saddam Hussein.



Modern threats

Repeating incidents of use of chemical weapons are forcing the world to attempt a total ban on its production. In 1993, the Convention on the Prohibition of Chemical Weapons was signed in Paris. The compliance with the Treaty is guarded by the Organisation for the Prohibition of Chemical Weapons established in 1997. Today, the provisions of the treaty are binding 182 countries.

But the world is not free of chemical weapons, which remain in the hands of dictatorial regimes and terrorists. We all know the case of Syria. A country in the Middle East lying between Turkey and Israel - countries visited by numerous tourists, including Polish citizens. Hot country equals hot moods and the resistance against the regime is so great that riots have finally lead to the outbreak of a civil war.

In these circumstances, the government decided to use sarin, which in the second half of August 2013 left nearly 1.5 thousand people killed, and three times more injured, causing severe breathing difficulties. The world is in shock. Intelligence agencies of many countries have long warned of this possibility, the newspapers were writing about the scenarios for future events, but until they have become a fact - some were not even fully aware where Syria is located.

Suddenly, the threat turns out to be real, in the face of the scattered enemies and asymmetric conflicts anyone can launch a chemical attack - anywhere in the world. One does not need expertise or an advanced laboratory to produce sarin. It can be produced by any third year student of chemistry. It is no wonder that in 2013 the Nobel Peace Prize was awarded the aforementioned Organisation for the Prohibition of Chemical Weapons. This way, the Norwegian Nobel Committee sends a clear signal that the problem of chemical weapons must be finally resolved.

Polish answer - PRS-1W contamination detector

At the same time in Poland, as every year, defense industry exhibition is prepared in Kielce. WB Electronics and WICHiR are preparing to showcase their new "child" - PRS-1W contamination detection device. In early September 2013, the effect of the annual work of chemical engineers, electronic engineers and mechanics is shown with pride to all potential customers: both those in uniforms with stars and fourragères on their shoulder boards, as well as those in suits and ties.

But the generals and politicians responsible for equipping the Polish army are not the only ones that stop at the booth - we also see civilians, from outside of the world of politics and military, citizens of Kielce, Warsaw and other Polish cities, who came here interested in innovations that may settle in our army. Slim dark cuboid with a bright green, eye catching glowing LED makes you want to ask questions, including the most important one - "would it have worked in Syria?" There can only be answer: it would.

The device is the end result of work undertaken by researchers at the Military Institute of Chemistry and Radiometry, who have developed a novel detection method based on the so-called differential ion spectrometry combined with classic spectrometry. Joint effort with engineers from private companies, specializing in the production of very high-tech electronics for military use has led to a product that offers unique detection features. It can detect and report the presence of even small amounts of dangerous substances, and at the same time distinguishes these really dangerous from those that only resemble dangerous substances in their chemical structures.

These are its key features, because - as one might guess - the diagnosed use of hazardous substances in low concentrations allows the users to quickly protect themselves against the consequences of its effects, thus reducing the number of victims. Avoiding false alarms caused by an incorrect diagnosis will prevent unnecessary panic and - consequently - possible victims.



Thus, such a device would work in every place in Syria, where the country's army performed chemical attack on its own citizens, on the positions occupied by the opponents of the dictatorship. With it, the civil service could also warn its own citizens about the attack. Residents would have been alarmed almost in the very moment, in which sarin from fired rockets got released into the atmosphere. So we can say with a very high likelihood that there would be considerably less victims.

It is worth knowing that the device does not need to be used only by the military, although it has been designed primarily with our soldiers using Polish Rosomak vehicles in mind. It may also be useful to other services that take care of the order and security of the population. It would be applicable in protecting the subway lines. Warsaw subway had several false bomb alarms - readings from the contamination detector in the initial phase of the action would tell what kind of threat we are dealing with, and would thus protect the passengers and professionals who want to help them.



PRS-1W could be useful in factories and industrial plants where production processes use toxic industrial substances - there is always a risk of an event that will threaten the life or health of the employees.

The device could protect the Parliament, ministries, institutions and airports against the attacks of protesters or terrorists. Used to monitor the course of any mass events, it will warn participants who may also become a target for using hazardous substances, even quite innocent, but with specific - and thus suspicious - properties (e.g., characterized by a pungent smell), preventing the outbreak of panic, which certainly would constitute an additional threat.

But these are not all possible usage scenarios for PRS. Its features are not limited to detecting the use of toxic warfare agents or toxic industrial substances.

In the modern world, despite the ban on the use of nuclear weapons, list of the holders of these weapons is being joined by more and more new powers that produce it efficiently and - due to the unpredictability of their behavior - represent a huge threat to global security. PRS-1W can detect impending shock wave resulting from the use of said weapons. For now, it only helps to protect the crew of Rosomak vehicles - separating the microcosm inside the vehicle from the deadly environment outside. However, with equal success, it can be adapted for use in shelters or other areas to turn them into safe sanctuaries, for example the aforementioned subway.



PASSION CREATES PROFESSIONALISM – PROFESSIONALISM ENSURES QUALITY

SZCZEŚNIAK POJAZDY SPECJALNE SP. Z O.O. IS HEAVILY INVOLVED IN THE PRODUCTION OF EQUIPMENT FOR THE ARMED FORCES, IN PARTICULAR FOR THE MILITARY FIRE PROTECTION.

SZCZEŚNIAK Pojazdy Specjalne Sp. z o.o. is a company located in Bielsko-Biala, which employs more than one hundred highly qualified specialists in various fields and produces more than one hundred specialized vehicles, for both domestic and foreign markets. Currently, these are mainly special vehicles used by fire protection units. The company offers both special military vehicles, such as armored tractors, sapper vehicles, heavy evacuation vehicles and

technical rescue vehicles. The vehicles have many characteristics that set them apart from the competition: first of all, they are made of high quality corrosion-resistant materials and are equipped with equipment and components supplied by the world's leading manufacturers. The concept of the offered product and the production system itself are based on the patented modular construction that allows easy customization of vehicles in the initial phase of the project. An extremely important asset of the company is the production technology, refined over the years, that takes into account the specific conditions of specialized vehicles, especially fire vehicles.



PRODUCTION FOR THE MILITARY

The company has recently engaged in the production of equipment for the Polish Armed Forces, in particular for the Military Fire Protection. It should be emphasized that the Military Fire Protection, aside from duties performed inside the country, performs many tasks outside Poland, providing fire safety for soldiers serving in the Polish Military Contingents. According to the NATO standardization documents, fire protection is one of the elements of Force Protection, and all tasks in this field have been imposed on the Military Fire Protection. Military Fire Department operates both within the country and outside the country, securing air operations including aircraft fueling and engine testing, fighting fires in military bases and outdoor areas, removes the effects of accidents, disasters, and the attacks on military bases, removes the effects of natural disasters, protects works that involve fire risks.

Special recognition should be given to vehicles based on the chassis of Scania G440 – airport firefighting-rescue car, Iveco Eurocargo ML15E28 WS 4x4 – medium firefighting-rescue car. In its solutions, the company constantly follows the latest guidelines and user expectations, looks for innovative, economical solutions which improve the safety and quality of rescue and firefighting operations.

Scania G440

Heavy airport firefighting-rescue car with Scania G440 chassis is a vehicle designed to operate military airports and air operations carried out by the Armed Forces. The vehicle is based on proven chassis from the Swedish company – Scania – with selected assembly that differentiates it from other Scania vehicles used in other formations of the fire brigade. The vehicle has a 13-liter engine with 440 hp that allows this 26-ton vehicle to accelerate from 0 to 80 km/h in less than 32 seconds which, in turn, in accordance with the airport regulations, allows it to reach every section of the airport within four minutes.

The advantage of the drive system, aside from high dynamics, is the four-wheel drive that allows it to move beyond the hardened sections of the airport and a fully automatic transmission from Alisson [identical to the one used in Rosomak armored vehicles] that allows the administration of fire-fighting while driving [pump and roll function]. Vehicle specification allows it to drive using military F-34 fuel which is used by all the vehicles in armed conflicts [from tanks to trucks] and ensures operation in temperatures ranging from -20 to +50 degrees Celsius. However, this is not what makes the vehicle special. It's the unique housing constructed by Szczęśniak company, designed for demanding users such as the Military Fire Department. The housing is a block construction based on the intermediate



frame that eliminates stress resulting from the movement in rough terrain. Block construction consists of a specially designed subframe made of three components: equipment compartment + extinguishing tanks + pump compartment, each of them is independently mounted on the flexible elements on the subframe.

The first element, when looking from the vehicle cabin, is the equipment compartment designed as a frame from high quality stainless steel with anodized aluminum plating lacquered on the inside and outside in accordance with the requirements of the armed forces – green according to RAL6006. Access to the interior is accomplished through aluminum blinds, bryzo and dustproof, protecting mounted inside the powder generator unit with the capacity of 250 kg, filled with ABC powder, which is administered through the roof or a special plot where the powder, along with working agent, which is mostly nitrogen, can extinguish jet fuel, light metals and combustible gases. Another element located centrally on the vehicle in order to obtain the highest possible angle, is the extinguishing agent tank with the capacity of 8,000 + 800 [l] [water + foaming agent]. Extinguishing agents are transported in containers placed in laminated shells made of stainless steel, coated with aluminum plating similarly to other compartments. It is a unique design used exclusively by Szczęśniak. It protects the tank from the harmful effects of UV radiation, high temperatures and allows for easy upgrades in the future. The last element of the housing, located at the end of the vehicle, is the compartment constructed in the same way as equipment compartment, but containing the heart of the vehicle – the water-foam system. The main element of the system is the two-band automatic pump with the capacity of 4000 l / min at 10 bar, which can be

used through remotely controlled (from the cabin of the vehicle) roof turret. It is also equipped with compression caps mounted at the back of the vehicle, hose reel for extinguish small fires and sprinklers placed under the chassis used in the case of grass ignition.



Iveco Eurocargo ML150E28 WS

Another equally interesting and unusual vehicle is a medium rescue-firefighting car based on Iveco Eurocargo ML150E28 WS chassis designed to protect line units, training grounds, ammunition depots and training on the ranges. Characteristic element of the vehicle, which cannot be missed, is the impressive single tire size 14.00 R20 that allows it to reach the difficult areas of bases and training grounds, which the typical firefighting and rescue vehicles are not able to reach. Vehicle crew is made up of six members transported in the crew cabin of the vehicle together with individual respiratory protection equipment. Just like Scania, the vehicle is prepared to work in extreme weather conditions and use battlefield F-34 fuel, as with the previous vehicle it is not the chassis that makes it unique. It's the housing which allows it to perform specific functions. The modular housing is another unique design offered by Szczęśniak.

As in the previous vehicle, the housing is based on a subframe that does not carry stress of the vehicle frame and does not cause breakage of the housing or extinguishing agent tanks. Modular housing also allows for economical and simple repairs in case of any damage in the event of a collision, which becomes impossible when using complex composite structures.

Rescue and firefighting equipment is arranged in compartments and on the roof of the vehicle, taking into account the division into different areas of emergency as well as phases of operations and order of using the individual equipment by the rescuers. Mounting of the equipment was carried out in a manner that prevents movement



of items during driving, emergency braking and ensures quick and easy placement and removal. The vehicle has a portable power generator, carried in the housing on a retractable platform. Power generator's power rating adapted to the power of electronic devices onboard. Electric winch installed on the front of the vehicle can hold up to 7.4 [t] and has a line with a length of 30 [m]. A lighting mast is installed between the crew cabin and the housing to ensure adequate night time visibility at the site of rescue-firefighting operations. The lighting mast can be automatically folded. This function is activated by pressing a single function key.

The tests carried out on the training grounds revealed that the construction of the fire-fighting vehicle from Szczęśniak based on Iveco Eurocargo chassis is a very good solution. The vehicle meets the expectations set by the emergency services, has very good field specifications with maximum security, which is provided from the first phase of the operation - when it drives to its designated area. The vehicle is equipped with signaling equipment - sending warning acoustic and lighting signals, made in LED technology. The installed device also allows the driver to send voice messages as well as transmit information through the transceiver. Emergency-warning lighting is installed on each side of the vehicle and, irrespective of the location of the vehicle, ensures visibility from all sides.

Special vehicles built by Szczęśniak are perfect partners to ensure the safety of rescuers and maximum support even in the most difficult rescue operations.

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Polskie Zakłady Lotnicze Sp. z o.o. – PZL Mielec – is a largest aircraft manufacturer in Poland. Thanks to development of R&D base and expansion of the production to S-70i™ BLACK HAWK helicopters the company is currently, from the technological perspective, the most advanced representative of the state aviation industry.

COMPANY'S CURRENT PRODUCTS LINE INCLUDES:

- Sikorsky S-70i BLACK HAWK™ – an utility helicopter intended for international market
- Cabin sections for UH-60M BLACK HAWK™
- Helicopter's structure elements (tail cone and pylon)
- M28 – STOL (short take-off and landing) dual turboprop engine aircraft, used for cargo and passenger transport, parachute jumps, medevac, patrolling and maritime reconnaissance and for search and rescue actions.
- M28B Bryza – military model of M28, used for special operation (depending on the installed equipment)

Currently the company has 2200 employees, including the technical-engineering and production staff with highest professional qualifications, as well as it has adequate technical, organizational and production capabilities to manufacture aircrafts and conduct the aviation development programs.

S-70i helicopter is a BLACK HAWK type helicopter intended for international customers and manufactured using international suppliers chain. It is also the first BLACK HAWK helicopter to be manufactured in Europe and at the same time, the first helicopter to be manufactured in PZL Mielec in Poland. The deliveries of those machines are being successively increased until reaching, after 2012, an intended production level, which foresees the production level of 20 complete helicopters per year.

PZL Mielec, a Sikorsky Aircraft subsidiary, as a manufacturer of S-70i BLACK HAWK helicopters plays a leading role in creation of a modern product which has a high reliability, proved itself in the field and provides the highest usage values and technical performance.

From the beginning of the S-70i BLACK HAWK production in 2010, Polskie Zakłady Lotnicze manufactured 19 complete helicopters and had delivered them to customers in USA, Saudi Arabia, Mexico, Colombia, and Kingdom of Brunei.

The company with a success still manufactures and sells the aircrafts of its own construction M28 and M28B/PT. The aircrafts are manufactured in civil and military version intended for variety of missions including transportation, landing operations, passenger and patrol.



Sikorsky S-70i BLACK HAWK Helicopter

INDUSTRY-LEADING SERVICE AND SUPPORT

Sikorsky Aerospace Services brings together its OEM expertise with the unique strengths of our leading aircraft service companies to provide innovative platform solutions to meet your demanding aviation service needs.

PILOT AND MAINTENANCE TRAINING

- Basic to advanced courses
- Partnered with Flight Safety International

HELOTRAC® 2X MAINTENANCE MANAGEMENT TOOL

- Significantly reduces maintenance record keeping
- INTEGRATED VEHICLE HEALTH AND USAGE MONITORING SYSTEM
- Speeds entry into service after maintenance

FLEET MANAGEMENT OPERATIONS CENTER (FMOC)

- Provides predictive data to reduce operational costs and increase aircraft availability

ENHANCED UTILITY CONFIGURATION

AVIONICS

- Troop Commander ICS + Antenna
- Digital Map Software (Regional Maps)
- Integrated Vehicle Health Management System (IVHMS)
- Cockpit Voice Recorder/Flight Data Recorder (CVR/FDR)
- ARC-220 HF Radio

FUEL SYSTEM

- Auxiliary Fuel Pump (External / Internal)
- Auxiliary Internal Fuel Tank 200 Gallon Provisions and Completions (Crashworthy)

INTERIOR

- Custom Paint Scheme
- Armored Pilot/Co-Pilot Seats with Armored Wings Crew
- Chief Seats (LH/RH) (2)

AIRFRAME

- Cargo Hook, 9,000 Pound Capacity
- External Electric Rescue Hoist
- Fast Rope Insertion/Extraction System (FRIES)

ARMAMENT AND SURVIVABILITY EQUIPMENT

- Engine Exhaust Suppression System
- Cockpit Armored Floor and Doors
- Cabin Armored Floor, Lightweight Removable
- M60 / MAG-58 / M134 Structural Provisions
- M134 Electrical Provisions
- M134 Ammo Pallet

PILOT AND MAINTENANCE TRAINING

- GE-T701D Engines with Integral Particle Separator
- Wide Chord Main Rotor Blades for Improved Performance
- Glass Cockpit with Digital Automatic Flight Control System
- Four Landscape Color MFDs
- Integrated NVG Compatible Displays and Lighting
- 4-axis Autopilot through Coupled Flight Director
- Dual Embedded Global Positioning / Inertial Navigation Unit, Honeywell H-764
- Active Vibration Control
- Dual Raytheon MX-4027 UHF/VHF – AM/FM Radios
- APX-117 IFF Transponder
- Artex C-406N ELT
- VOR/ILS
- Low Frequency Automatic Direction Finder
- Terrain Awareness and Warning System
- Wire Strike Protection System
- Dual Independent Hydraulics with additional backup.

Note: This Enhanced Utility Configuration is available for delivery contingent upon approval of required U.S. Government export licenses.

PERFORMANCE		
Maximum Takeoff Gross Weight	22,000 lbs	22,000 lbs
Maximum Gross Weight with External Load	23,500 lbs	23,500 lbs
Maximum External Load	9,000 lbs	9,000 lbs
Maximum Cruise Speed*	160 kts	160 kts
HIGE Ceiling**	15,000 ft	15,000 ft
HOGC Ceiling**	11,000 ft	11,000 ft
AEO (All Engines Operating) Service Ceiling**	20,000 ft	20,000 ft
Number of Engines	2	
Engine Type	T700-GE701D	
Cabin Width	7.0 ft	7.0 ft
Cabin Height	4.5 ft	4.5 ft
Cabin Area	88 sq.ft	88 sq.ft
Cabin Volume	396 cu.ft	396 cu.ft

*Standard day, sea level

**Ceiling for 18,000 lbs GW (8,165 kg)



ONE HELICOPTER, MANY SOLUTIONS

The S-70i helicopter's durable, straight forward design allows for maximum flexibility under extreme conditions. Rigorously tested and combat proven, the BLACK HAWK helicopter is an ideal solution for

- Personnel Transport
- Cargo Transport
- Medical Evacuation
- Search and Rescue (SAR)
- Special Warfare Operations
- Border Protection
- Law Enforcement
- Armed Fire Support
- Forestry Services and
- Land Management
- Humanitarian
- Assistance

RELIABLE

Nearly 3,000 BLACK HAWK helicopters are in service today. This fleet has flown more than 9 million flight hours in some of the most rigorous conditions known, successfully completing missions ranging from utility transport, search and rescue, to combat assault armed support, and beyond.

LEGENDARY

The Sikorsky BLACK HAWK helicopter has earned its standing as the preferred utility aircraft of militaries worldwide. Designed to strict military standards, its ruggedness, dependability and versatility have made this aircraft a legend.

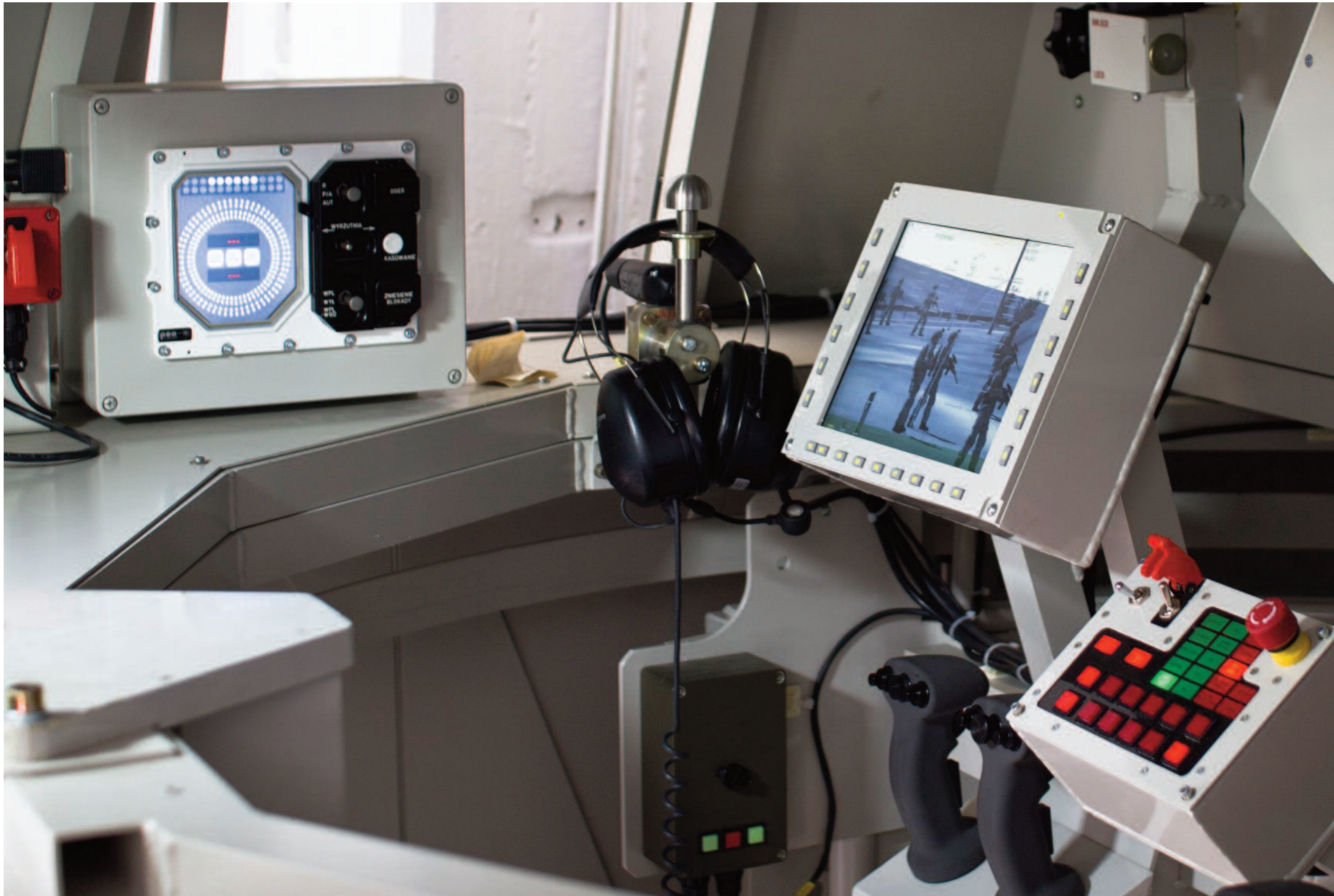
SUPPORTABLE

Sikorsky Aerospace Services (SAS) brings together its OEM expertise along with unique experiences to support the S-70i™ helicopter. From spares, overhaul and repair to programs such as performance-based logistics, contractor logistics support and military depot partnerships, SAS offers innovative services designed to increase flying time, improve ease of use and reduce cost of ownership, allowing you to focus on your mission.

AFFORDABLE

Many mission equipment options are available for the S-70i helicopter, enabling you to configure your fleet to suit your unique requirements. Options range from wide chord rotor blades, extended range fuel tanks, medical litters, crashworthy seats, armament, ballistic protection, sensors, radar, cargo hook, external rescue hoist, and more.

New simulator for the crew of wheeled APC

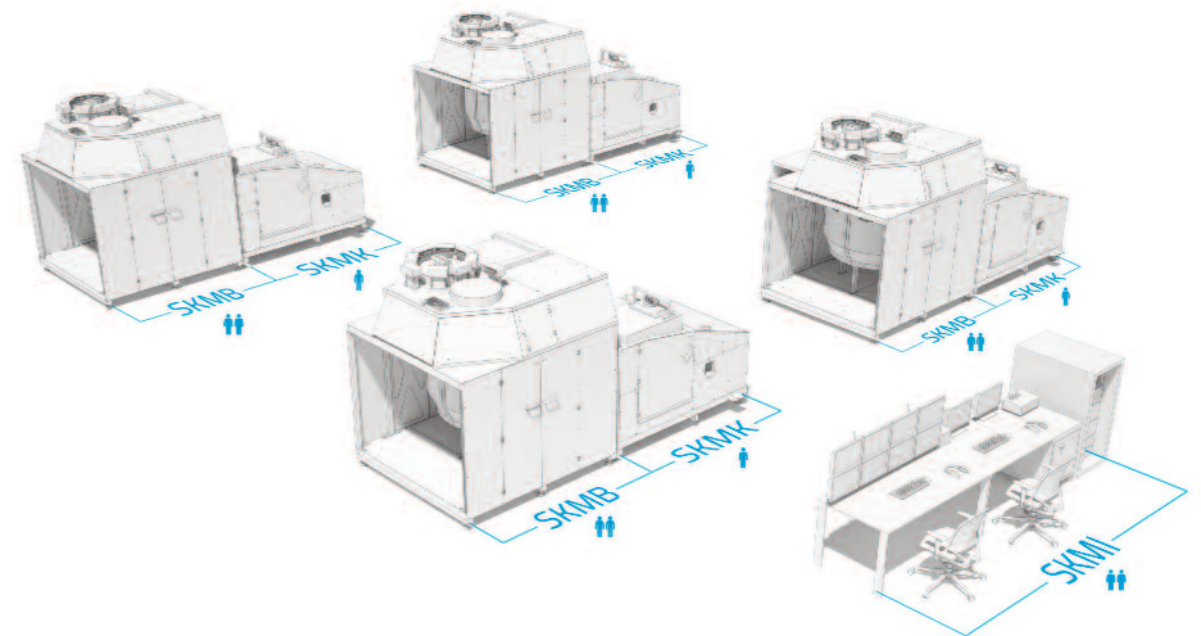


A complex shooting simulator for the crews of KTO Rosomak in the SK-1P platoon version was designed to replace and supplement the currently used firing and tactical training equipment for the KTO Rosomak, and has been developed as a successor of systems produced by OBRUM in 2007 -2011, i.e. TH-1 and SK-1. One of the main objectives of the SK-1P project was obtaining a system dedicated for use by the training centers and military institutions involved in the training of crews of Rosomak APCs. SK-1P satisfies the need for training system used for training at various levels, without having to modify the software or hardware configuration.

As part of the use of SK-1 simulators in the Land Forces Training Center in Poznań, experiences and needs of the users and instructors who conduct trainings of KTO Rosomak crews, were collected. In cooperation with instructors and users of the system, specifications and requirements for completion, functionality and support of the system were defined. Over 5-years of exchange of experiences between OBRUM sp. z o.o. and CSWL Poznań on the use of SK-1 complex simulators allowed for the development of Tactical and Technical Guidelines and Specifications of the Comprehensive Software for Firing Simulator for Platoon crew of KTO Rosomak.

Another institution cooperating with OBRUM sp. z o.o. on the development of the Guidelines and Software Specification is Military Academy of Land Forces in Wrocław. After giving the simulator to the user, along with the additional team leaders and platoon commander posts, in April 2012 it was possible to clarify the requirements for hardware and software configuration of the complex Mechanized Platoon simulator, such as scenarios and battlefield objects. Military Academy of Land Forces performed an analysis of the possibilities for using the system and prospects for its use in training of fighting groups in the Polish Armed Forces. Military Academy of Land Forces in Wrocław, with its many years of experience in training commanders of the Polish Armed Forces, helped steer the work of the OBRUM team in the directions that maximize the utility of the developed system.

From the very beginning, SK-1P was built in cooperation with military units. Both the concept phase of the project and the following steps were carried out based on a dialogue with the recipient of the system. The whole product was developed and manufactured by OBRUM in close cooperation with the Military University of Technology, specifically with the department of cybernetics, whose team has an extensive experience in the field of computer simulation and modern training solutions. As a result of the cooperation of engineers from OBRUM and cybernetics department, one of the most advanced and complex Virtual Battlespace 2 (VBS2) system applications was created. Within the project, instructional modules were developed with sub-systems that can be either devices that are stationary or mounted on motion platforms. Extremely complicated part of the work was to create simulator software. For this purpose, a group of programmers specializing in the development of this type of solutions was created, further assisted by experts from the cybernetics department. In



order to refine the used design solutions and complete the required functionality of the system, the simulator went through a research process. This also included testing in Military Academy of Land Forces with the participation of academic staff members from the Military University of Technology, responsible for training in the tactical use of Rosomak wheeled armored vehicles.

Developed within the framework of the SK1P project, the system significantly extends beyond the requirements specified in the initial assumptions. By using VBS2 software as simulation and imaging engine, real-time editor and interoperability interface, the solution is a unique combination of Serious Game type solutions with a comprehensive crew training system equipped with cabins that very accurately reproduce the interior of the simulated vehicle. All software layer built on commercial VBS2 allows the use of all manipulators, human-machine interfaces and cooperation of the system with mobile platforms. Precisely mapped driver and battle compartments are equipped with all the functionalities defined by Land Forces Training Center and Military Academy of Land Forces as key. These functionalities, according to requirements given by the instructors, allow them to train at both primary and specialized levels - gunners, commanders and drivers of KTO Rosomak. Combat and driver modules combined in a platoon, supported by all the features provided by the Serious Game type solutions give unprecedented training opportunities with the use of complex simulators. The system was implemented at the Military Academy of Land Forces in a configuration that has been enriched with additional posts in accordance with customer requirements. This configuration includes a SK-1 Platoon simulator, along with the posts of team commanders, platoon commander and company commander who acts as the leading instructor at the same time. The simulator can be scaled depending on the requirements of the scenario, which means that the user can connect additional complex simulators, TH-1 training simulators or Serious Game posts equipped with laptop computer. Depending on the requirements and facilities of the user, the system can be cut or divided into separate locations, and depending on the scenario, individual selected modules can be used. The simulator can include any number of the above-mentioned Serious Game posts. Depending on the needs, these can be freely configured. Such post can be assigned the role of the driver of any vehicle, gunner, platoon commander or company commander. It is also possible to operate the BSL or participate in the battle in one of hundreds of other roles available as part of the software. All the above-mentioned capabilities are available in the base version of the system.

SK-1P simulator is constructed in such a way that it can be scaled at as many layers of the system as needed. Starting from the hardware

layer, i.e. selection of the number of individual training modules within the local system configuration, through the selection of the type of conducted exercises (level - basic, advanced), and changes to the network configuration, the simulator can be adapted to current needs. The device can become a group of individual training devices, controlled from the instructor post. Thanks to the open design of the software, the system can be supplemented with additional posts, such as crew commander, platoon commander, landing troops.

SK1P simulator is a solution that fully supports interoperability interfaces using the DIS and HLA protocols. These interfaces give it the option to connect with the majority of training systems used by NATO: virtual, actual or constructive.

Further directions of development of the SK1 Platoon system will be in part imposed by the directions of the development of training facilities in the Armed Forces and trends within the requirements of NATO and other countries or partners of OBRUM sp. z o.o. Basic directions can be defined as:

- Interoperability - application use of interoperability using HLA or DIS protocols supported by every simulator developed by OBRUM sp. z o.o. Integration of the system with constructive simulator, complex simulator used by the Armed Forces and a host of desktop solutions is being prepared as part of the work of the Center.
- Including commercial software supporting scenarios and exercises carried by the customer. Using the software functioning available on the market and compatible with VBS2-3, such as the modeling of artificial intelligence for computer-generated units, models of battlefield objects, communications subsystems and a wide range of domestic and foreign solutions.
- As part of the development, the system is being prepared to migrate to a new version of the simulation and visualization software - Virtual Battlespace 3 This software will enable the implementation of even more scenarios, improve artificial intelligence, physics and many other elements.
- As part of the ongoing work to tailor the solution to the requirements of customers in different units of the Polish Armed Forces, different variants of the system are being developed.

The complex shooting simulator for the crews of KTO Rosomak in the platoon version is a solution that is ready for deployment in any unit of the Polish Armed Forces in the configuration already developed or tailored to specific user requirements.



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WB Electronics, a private company of Ożarów Mazowiecki, with entirely Polish capital, is one of the major companies of the Polish arms market.

The company, as one of the major supplier for the Armed Forces of the Republic of Poland, has been actively contributing to improving the defence capabilities of the Polish army for more than twenty years. This contribution consists in creation of new technologies as well as modernisation of military equipment.

Compared to large world corporations, WB Electronics is a small company, but with a comparable range of product offerings. WB ELECTRONICS for years has consequently been conquering new areas of electronics and IT applications in the military technology.

Proprietary solutions in new technology make it possible to develop innovative products with unique utility properties. The offerings of WB Electronics include mainly military electronics, software as well as services associated with integration of military vehicles. The primary client of WB Electronics are the Armed Forces of the Republic of Poland. The company is also actively involved in overseas trading.

The technology offered by WB Electronics is based on long – term experience resulting from the use of the company's solutions implemented in the Polish army as well as from participation of WB Electronics in international tenders and long – term cooperation with the most demanding customers from around the world.

WB Electronics is a resilient and rapidly growing company, which undertakes new challenges in the field of development and modernization programs for security and defence. Consistency, perseverance, commitment and the belief in continuing development makes company one of the best participants in the Polish and foreign arms markets.

The strategic directions of development of the offer of WB ELECTRONICS S.A. include:
C4ISR systems – integrated command support systems and battlefield visualisation systems,
Software – integration of platforms and systems
Military Electronics – gun and cannon automation, communication systems, sensors, computers and terminals,
Integration of Military Vehicle Electronics – in combat vehicles, command vehicles, reconnaissance vehicles, specialist vehicles as well as gun and cannon automation.



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Wojskowe Zakłady Mechaniczne was established in Siemianowice Slaskie in 1952 and since then is strongly involved in overhauls, modernization and special Production for necessity of Armed Forces.

Military Mechanical Works developed in scope of documentation and production following equipment:

- T-72/SKZ-T-72/ tanks field control stands
- Tracked vehicles SKS – G engines' field Control stands
- Maintenance and lubrication equipment
- Compressor installation
- Power generation

Factory started repairs in scope of following engines: Henschel, Ikarus, Star 200, Leyland, Jelcz.

In 1996 upgrading works of the BRDM-2 armoured reconnaissance care began. As a result of this work the whole family of upgraded armoured reconnaissance vehicles was generated: from the BRDM-2M96i model through the BRDM-2B, BRDM-2A and BRDM-2M96iK "Szakal".

A number of vehicles were produced, which have been successfully exploited in the Polish Army, especially during peace keeping missions. Now the persisting construction works tend to follow upgrading of these vehicles, for the purpose of upgrading their reliability and battle possibilities.

In the year 2001, Ministry of National Defence invited Wojskowe Zakłady Mechaniczne, among other companies, to participate in a tender for the delivery of Wheeled Armoured Transporters (KTO) for the Polish Army. In this tender, WZM offered a fourth generation armoured modular vehicle AMV 8x8 designed by Finnish concern Patria, armed in combat version with HIFTIST 30mm weapon system of Italian concern OTO Melara.



POJAZDY SPECJALISTYCZNE ZBIGNIEW SZCZEŚNIAK SP. Z O.O.

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Vehicle bearing the Szczęśniak logo have many characteristic features distinguishing them against the backdrop of the competition. Above all, they are produced using the highest quality materials and components supplied by leading global producers. The product concept, and the production system itself, is based on a patented system of modular structures, these enabling vehicle configuration freely as early as the initial design phase, with the application of existing solutions.

The firm employs over 100 highly qualified specialists in a variety of fields, guaranteeing the high standard of the products manufactured. The construction department has at its disposal modern technical solutions supporting the design and computation stage. Each new product comes into being in the form of a spatial model, allowing a thorough analysis of all sub-assemblies and far-reaching optimization of the solutions applied. This formula for action permits the active participation of the user in the design process and the creation of a structure entirely in conformity with requirements.

Zbigniew Szczęśniak Specialist Vehicles is a leader in the production of specialist vehicles in Central and Eastern Europe, having commenced operation in 1992 in Poland. Since the beginning, the firm has focused on the automotive trade and, more precisely, specialist productions for uniformed services, including the fire brigade, army and police.

The high quality products and the manner in which the enterprise is managed together provide the firm with market success, and are reflected in the numerous awards received by Zbigniew Szczęśniak Specialist Vehicles, both domestic and international:

- Highest Quality – Quality International 2011.
- Title of Winner and Silver Emblem in the QI Product category.
- Innovation Certificate, from the Polish Academy of Sciences.
- Responsible Employer and HR Leader 2011.
- EDURA Fair Prize 2011 – EDURA International Rescue and Fire Technology Exhibition.
- Polish Export Leader 2011.



PZL MIELEC A SIKORSKY COMPANY

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Polskie Zakłady Lotnicze Sp. z o.o. – PZL Mielec A Sikorsky Aircraft Company is the biggest Polish manufacturer of aircraft, currently expanding its production profile to include aerostructures and helicopters. On March 16, 2007, 100% of the shares of Polskie Zakłady Lotnicze Sp. z o.o. were purchased from ARP S.A. by United Technologies Holdings S.A. (UTH), a subsidiary of United Technologies Corporation (UTC). The new era was initiated not only in the history of Mielec aviation industry but also in the history of the company itself. As a part of UTC, PZL initiated cooperation with Sikorsky Aircraft Corporation – a world leader in helicopter production, including the UH-60 BLACK HAWK, S-76 and S-92 models.

Our current product line includes:
S-70i BLACK HAWK – multitask helicopter for international markets.

M28 – a turbo-prop, twin-engine, STOL class (short takeoff & landing) aircraft designed for passenger and/or cargo transportation, paradrop, medical evacuation, marine reconnaissance and patrol flights, and Search & Rescue missions.

M28B Bryza – the military version of the M28 model, designed for special operations (depending on configuration).

M18 Dromader – a single-engine aircraft used in agricultural, fire fighting and forest protection operations.

UH-60M BLACK HAWK™ Cabins, the major structural assembly used to build the Sikorsky UH-60M BLACK HAWK™ Helicopter.

Following the free market rules and operating in accordance with Polish Commercial Code, we pursue manufacturing and commercial activities in the field of PZL designed aviation products and introducing them to international markets. We also cooperate with such aviation industry leaders as: Sikorsky Aircraft, Spirit Aerosystem, Pratt & Whitney Canada and SAAB Aerostructures.



TELDAT

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TELDAT is a Polish business entity, which has been dynamically operating in the defence market for sixteen years. It is the leading constructor and producer of the world's most innovative data communications solutions, which are dedicated mostly to security and national defence.

The solutions has been awarded by Buyers and Users (also from NATO). TELDAT solutions in many cases are unique in international scale and reference to the systems of other countries. Their advantages and reliability have been confirmed by the following certificates and awards signed by NATO Communications and Information Agency / NATO C3 Agency.

The company has the all necessary capabilities to meet requirements and standards imposed to the companies participating in bid projects and research and development in the area of C4ISR systems. It comprises: research and development, production capacity and service, lessons learned drawn from the participation in NATO and USEUCOM exercises, certificates, awards and honors. These attributes locate the company closely to the top of producers of the specialized military data communication solutions.

Since the beginning of its operation the company has been involved in: research & development, designing, development and production, implementation and maintenance (including remote supervision) of specialized electronic, data communication, IT, telecommunication and alarm systems and devices dedicated mostly to security and national defence.

In this field company has collaborated with many national and international institutions which develop for security and defence. TELDAT has provided for them with research and development, supplies, technical support of implementation and maintenance of specialized data communication systems (including mobile and stationary versions), which are implemented into the Polish Armed Forces (in accordance with required procedures).

All of above mentioned activities have been performed with the highest accuracy, faultlessly and always on time what is confirmed by awarded certificates, prizes, numerous references.



THE POLISH DEFENCE HOLDING

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The Polish Defence Holding is the biggest manufacturer and supplier of military equipment in Poland and in Central, Eastern Europe. We are the biggest supplier for the Polish Ministry of Defence. 40 defence companies domestically and abroad operate within the Polish Defence Holding with 10 000 employees. Bumar Ltd is the leading body of the Polish Defence Holding.

For over 40 years the company has been a leader in the domestic and international market of weaponry, construction plant, mining and handling equipment. Its extensive experience, world-recognized and distinguishable brand, achievements in implementing new technologies in the Polish industry and in initiating relationships with renowned producers all over the world, professional and skilful personnel are company's main assets. PHO has been supplying and selling its equipment and services to the Polish Army and in over 40 countries in Europe, Africa, Asia, South America and the U.S., winning many international bids.

Market activities of the Polish Defence Holding are concentrated around four product groups constituting the subject matter of production and service divisions respectively:

- AMMUNITION AND ROCKETS – ammunitions and missiles (shooting ammunition, artillery and missiles, SPIKE, GROM, FENIKS missiles);
- SOLDIER – the soldier and the official (individual equipment and armament of the soldiers including: pistols, guns, optoelectronic equipmnet, protective meas: gas masks, helmets, bullet-proof jacets);
- ELECTRONICS – electronics and IT (commandment systems, radars, sensors, anticraft and anti-missiles systems);
- LAND – lands paltforms (wheel, caterpillar paltforms, military vehicles, tanks).

BALT MILITARY EXPO

Poland | Gdańsk | 24-26.06.2014

13 Baltic Military Fair



6th International Science and Technology Conference entitled
„Maritime Technologies for Defense and Security”
NATCON 2014



Polska

DEFENCE INDUSTRY

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**Polish defence industry
- your reliable business partner**