

POLISH CHAMBER OF NATIONAL DEFENCE MANUFACTURERS

POLISH DEFENCE INDUSTRY

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**SIKORSKY S-70i BLACK
HAWK HELICOPTER > 20**

**THE SAPPER HAZARDOUS MATERIAL
TRANSPORT VEHICLE ATHENA > 8**

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SERVING IN THE POLISH ARMY > 12**

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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 defense 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 defense 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 Defense 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 defense 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 Defense 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 defense, 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 "Cto i Granica" (Border and Customs) Fair in Warsaw since 2004. In 2000, the Chamber has initiated and coordinated the Polish Defense 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 defense 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.



During the past 10 years, the Chamber has been initiating activities to advance the technical level and product quality for the national defense

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), {1the }Stalowa Wola S.A., MESKO S.A. and RADWAR as well as small businesses and private companies. ■

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.

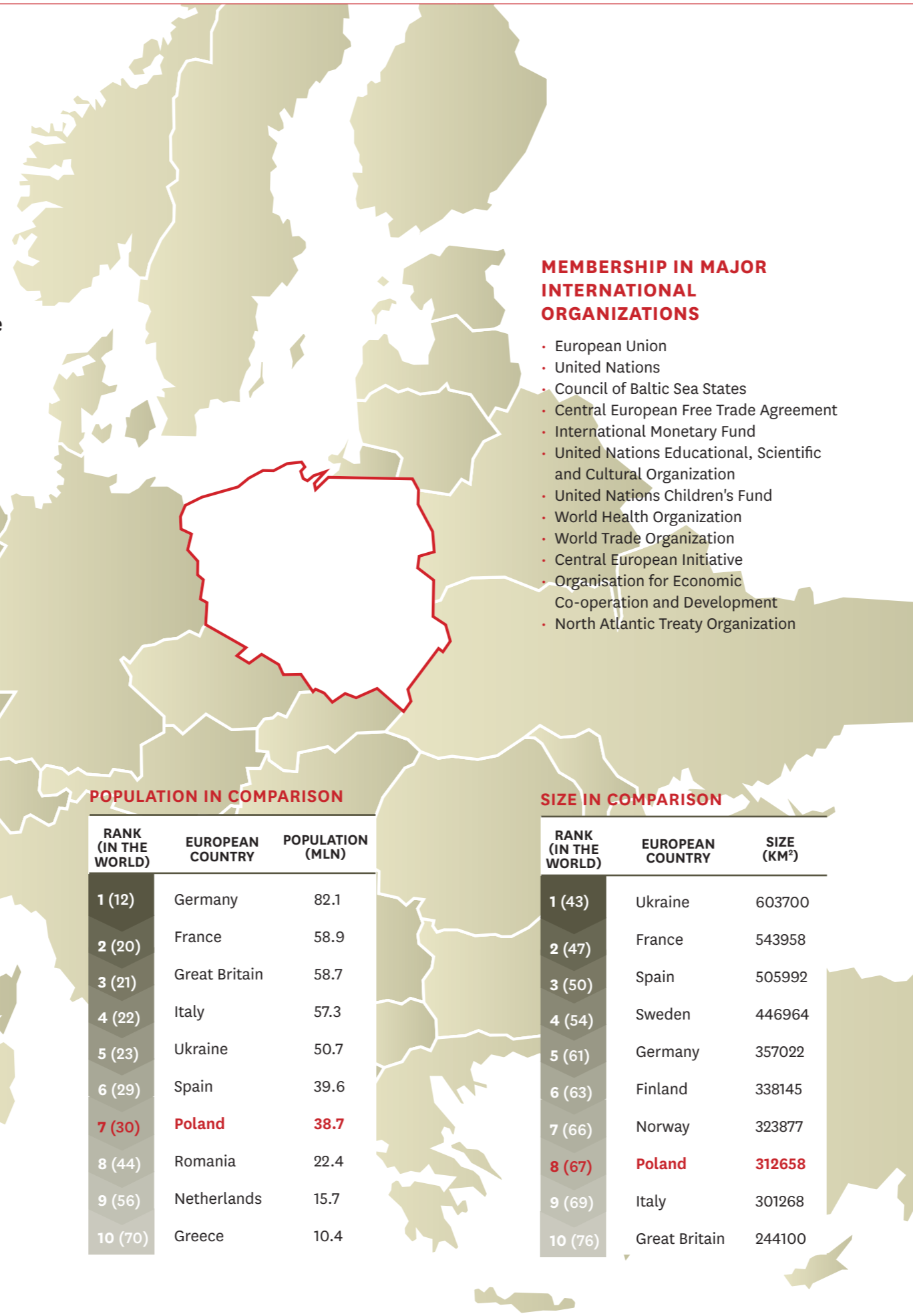
Poland has been participating in peacekeeping missions and operations since 1953.

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. ■



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

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

SIZE IN COMPARISON

RANK (IN THE WORLD)	EUROPEAN COUNTRY	SIZE (KM ²)
1 (43)	Ukraine	603700
2 (47)	France	543958
3 (50)	Spain	505992
4 (54)	Sweden	446964
5 (61)	Germany	357022
6 (63)	Finland	338145
7 (66)	Norway	323877
8 (67)	Poland	312658
9 (69)	Italy	301268
10 (76)	Great Britain	244100

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POLAND PEOPLE, COUNTRY, HISTORY

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.



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 defense of the Polish borders against outside attacks and cooperation with NATO. The armed forces are an essential element of the national defense system, designed for the effective implementation of the security and defense 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 2011, 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.

ZM Tarnów obtained a military contract

ZM Tarnów has signed a contract to supply of materials for small arms equipment used by the Polish Army. Under the contract, signed on February 20th, the supplier agreed to supply equipment and supplies, for which he will receive 2.3 million PLN. The contract is due on December 10th.

Bumar will repair Beryls for the Polish Army

District Logistics Base has signed a contract with Łucznicz Amrs Factory in Radom, part of Bumar Group, for repairing and modifying Beryl rifles.

The contract was signed on February 22nd and amounts to nearly 4.4 million PLN. Under the contract, about 1500 weapons used widely by the Polish Army will undergo repairs and modifications. Since Łucznicz is the manufacturer of Beryl rifles, negotiations were conducted with only one tenderer.

Lubawa S.A. will modify vests

Lubawa S.A. has acquired the contract for the general renovation of the protective vests used by the Polish Army. OLV (155 units) and KLV (130 units) will be renovated. The contract was signed on February 22nd. The contracts amounts to nearly 800 thousand PLN.

Tender for the hydrographic boats for the Polish Navy

Arms Inspectorate announced a tender for providing the Polish Navy with four hydrographic boats. Marine units are to be provided in 2013 and 2014. Offers are planned to start on April 3rd. Estimated purchase price amounts to 6 million PLN. Each unit will have the following equipment: hydraulic crane, lifting frame, navigation equipment, communication equipment and equipment designed for underwater work. The latter include echo sounder, underwater high-resolution sonar (Kongsberg MS 1000 or equivalent to meet the same parameters), towed sonar, remotely operated underwater vehicle.

Maximum total displacement should amount to 20 tons, hull length should be up to 15 meters. Full-time crew should include four people, four additional people should be able to get on board.

Tender for advanced training aircrafts started

Arms Inspectorate has published a defense and security-related tender for providing in integrated "Advanced Jet Trainer System". The tender invites

companies to send offers or requests to participate in the tender.

Its goal is to buy a system composed of advanced training aircrafts (8 units), training system (including comprehensive flight simulator, pilot / part task simulator, emergency procedures – ejection simulator, computer training support system and training package) and logistics package (ground support equipment, aircraft ground equipment, repair & maintenance equipment, spare parts and consumables, technical support, IT support system, metrology safety measurements, technical documentation: for the aircraft, ground aircraft maintenance equipment, training devices – simulators for training flight and technical crew and operational system).

The purchaser allowed the tenderer to subcontract some of the work on the condition that the offer will indicate what part of the work this will apply to.

No detailed requirements have been published yet. They will be indicated in the Terms of Reference that will be given to the tenderers invited to make offers. The realization of the contract will start on January 1st, 2014 and will end on November 30th, 2017.

Servicing contract of Wojskowe Zakłady Łączności no. 1

Wojskowe Zakłady Łączności no. 1 signed a servicing contract with the Army amounting to 4 million PLN. Under the contract, WZŁ no. 1 agreed to perform repairs, diagnosis, maintenance and servicing on satellite terminals used by the Polish Army in Afghanistan and Kosovo.

From the very beginning, the negotiations were conducted only with WZŁ no. 1, since the company has proper experience and references.

Logistics trucks for the Polish Army

2. District Logistics Base has announced a tender to buy 32 Jelcz 862 trucks equipped with Hiab 855 crane. These four-axle vehicles are becoming standard in the logistics of the Polish Army, and equipping them with crane will ensure independence while loading and unloading the transported equipment.

Military Electronic Works contract

1. District Logistics Base has published a protocol related to the contract for the renovation of the NUR-31M radiolocation stations' special component and chassis.

The contract between the purchaser and Military Electronic Works from Zielonka was signed on January 30th and amounts to 453 thousand PLN. The work should be completed on June 10th.

PZL Świdnik started providing new Sokół helicopters for the Air Force

PZL Świdnik provided the Air Force with the first unit of PZL Świdnik W-3WA Sokół helicopter from the batch ordered in 2011. The helicopter was given to the 1st Airborne Transport Base. In total, the base will receive five helicopters from Świdnik, all of them will be used for transporting VIPs within Poland. New Sokół helicopters will join older vehicles of this type that are already used by the airborne unit from Warsaw. PZL Świdnik plant will complete the contract by the end of the year.

Bumar-Łabędy leading the Leopard tank modernization program

The new consortium will modernize Leopard 2A4 tanks used by the Polish Army. The consortium is led by Zakłady Mechaniczne BUMAR – Łabędy SA and also includes Ośrodek Badawczo-Rozwojowy Urządzeń Mechanicznych OBRUM S.A. from Gliwice as well as Bumar sp. z o.o. from Warsaw.

The consortium was formed to develop, implement for production, deliver and maintain Leopard 2GB modernization package in close collaboration with a strategic partner – Krauss-Maffei Wegmann. This program is a response to the needs of the Ministry of National Defence related to Leopard 2A4 tanks.

Bumar Elektronika will provide radars for the Polish Army

Arms Inspectorate acquired NUR-15 Odra radiolocation stations from Bumar Group. Under the contract, the manufacturer will provide the army with eight tricoordinate radiolocation stations along with two logistics packages. The contract amounts to nearly 330 million PLN. Such stations are already used by the Polish army. NUR-15 Odra is a tricoordinate device working in S band. It can locate airborne objects at a distance of 240 km and located at an altitude of 30 km. It can observe 120 objects at the same time.

Bumar will provide "Liwiec" artillery radars

Bumar will provide the army with seven "Liwiec" stations. First unit will be received in 2015. They will join three systems of this type that are already used by the army to locate enemy firing positions.

Jelcz will provide trucks for the army

Arms Inspectorate has recommended negotiations for buying military trucks from a Polish manufacturer – Jelcz.

Jelcz plants, belonging to Stalowa Wola Steelworks, apply for a contract for the purchase of 866 medium-duty military trucks and further trucks for special purposes. This program is listed in the technical modernization of the Polish Army project until 2022. The potential value of the contract amounts to 400 million PLN. New trucks will replace Star 266 vehicles. Jelcz plants can provide product that can replace them – 442 Bartek – designed in this category of trucks. The potential decision to buy trucks from this manufacturer embodies the declaration of the department to make the largest orders in the Polish defense industry.

PZL Rzeszów will renovate the W-3 Sokół helicopter engines

3. District Logistics Base has signed a contract with PZL Rzeszów to renovate engines of W-3 Sokół multi-purpose helicopters. The contract was signed on the 2nd of January and amounts to nearly 11 million PLN. Negotiations for the contract were conducted in December last year. Each Sokół helicopter uses two PZL-10W engines with 662 kW of power each.

Contract signed with NAUTA S.A. ship repair yard

Armament Inspectorate has signed a contract with the NAUTA S.A. ship repair yard to perform general and dock overhaul of ORP "DĄBIE" and ORP "RESKO", fulfilling the announcement of minister Tomasz Sieniowski concerning the cooperation with Polish companies in renovating and modernizing military equipment. The value of the work will amount to 45 million PLN.

The contract that was signed on the 22nd February includes renovation of the main armaments and military equipment, as well as of internal combustion engines and auxiliary equipment, modernization of control systems of monitoring, main propulsion, ship's power plant and ship's drainage installation. The completion of works is planned for the end of November 2013.

BCC award for WZM S.A.

On January 26 the Grand Gala of Polish Business Leaders took place. Chairman of the Board and Chief Executive Officer of Wojskowe Zakłady Mechaniczne S.A., Adam Janik was given the "First Diamond to the Golden Statuette of the Polish Business Leader". This prize is awarded to winners of the competition who have maintained or improved their position in the market. The ceremony was the culmination of the 22nd edition of the Polish Business Leader competition, recognized by the entrepreneurs as the most prestigious economic competition in Poland.

The sapper Hazardous Material Transport Vehicle Athena

Sapper vehicle Athena can transport hazardous materials equivalent to 10 kg of pure TNT. The inner shelf has a load capacity of 100 kg. The container is resistant to cal. 152 mm 53-OF-540 projectile.

All components of the vehicle's equipment are mounted on drawers in an ergonomic and user-friendly manner. Special equipment may include sapper equipment (manual and mechanical saws, shovels), portable light towers, pyrotechnic robots, heavy sapper suits.

Container for transporting hazardous materials is equipped with loading window lifting and lowering drive and a special conveyor belt with container ejecting and retracting drive. It can be loaded manually or through the sapper robot that is transported on board. Removable control panel can be used to remotely control Athena to ensure sapper safety.

The vehicle uses 345 horsepower (257 kW) Cummins ISLe+ 350 engine that meets the EURO 3 standard. It has an automatic, 6-gear Allison MD 3200 SP gearbox. The cabin can hold four people and can be armored to STANAG 4569 level 2. The actual weight of Athena's amounts to 15 tons, permissible gross weight is 19 tons. Sapper vehicle can be transported on board C-130 Hercules aircraft. Maximum speed is 115 km/h and maximum wading depth is 1.2 m.



POJAZDY SPECJALISTYCZNE®
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CONSTRUCTION DETAILS

CONTAINER TECHNICAL DATA

Container mass: 2 800 kg
Max. TNT charge or equivalent: 10 kg
Max. resistance to projectile fragments:
cal. 152 mm (53-OF-540)
Shelf load-bearing capacity: 100 kg
Max. dimensions of load transported
(H×W×L): 360×490×750 mm

CHASSIS

Type: TATRA T815-789R59
Drive: 4x4
Curb weight: 19 000 kg
Power pack: 270 kW (367hp)



The vehicle designed by PS Szcześniak has been equipped with specialized facilities used to transport the necessary sapper equipment: manual and mechanical saws, shovels, heavy pyrotechnic suits, PIAP inspector sapper robot, as well as the personal equipment of soldiers. Equipment compartment is waterproof and enables safe transport in any conditions. Universal equipment compartment can also be arranged as transport compartment for pyrotechnic robots. The vehicle is equipped with a lift that has 550 kg carrying capacity, which enables the sapper or the robot to get inside the container. Athena is equipped with a 5-meter high lighting mast with two spotlights, 1000 watts each.

CONSTRUCTION

The vehicle is equipped with a specialist container with a drive raising and lowering the loading window cover and a special conveyor belt with a drive for

”**ATHENA is the company's response to the increasing demand for this type of vehicles, especially in peacekeeping missions.**”

movement into and out of the container. Beyond the main switch, the control cabinet contains the container drive control system. Also there is located a practical and simple control apparatus (panel), which is connected with the control system by means of cables on a reel. Having unwound the cables, it is possible to perform container operations from a distance which guarantee safety of the user. The vehicle may be equipped with a special hydraulic crane for loading the container with an Improved Explosive Device (IED)

of a mass up to 150 kg lying at a distance of 4m from the vehicle. The firm also offers other containers and chassis intended for the transportation of loads of

different mass and durability. Completion is dependent on specific purchaser requirements. The vehicle is constructed in collaboration with the firm JAKUSZ. The completion above is an example aimed at showing the construction potential of the firm Szcześniak SV.

PURPOSE

The sapper hazardous material transport vehicle is equipped with an anti-shrapnel, ventilated container intended for the safe transport of medium-sized unexploded ordnance and misfired ammunition of the

equivalent of 10 kg of pure TNT collected by military terrain-clearing patrols or other engineer sub-units in conformity with the regulations in force. It may also be used at airports, ferry terminals and automatic sorting offices for the rapid isolation of suspicious packages, letters or baggage potentially containing explosive materials. It protects individuals and surroundings effectively against the effect of shrapnel in the event of an uncontrolled explosion of unexploded ordnance, misfired ammunition or other hazardous explosive material being transported within the container. The military nature of the vehicle allows its transportation by air as well as rail. ■

INTERVIEW

Grzegorz Szcześniak

The Vice President of the Pojazdy Specjalistyczne Zbigniew Szcześniak Sp. z o.o.

Where is "Athena" currently used? A few vehicles are used by the Slovakian army.

ATHENA is the company's response to the increasing demand for this type of vehicles, especially in peacekeeping missions. One of the first inquiries of this type came from Slovakia, but the vehicle has such an interesting construction that further inquiries came from Sweden and Saudi Arabia.

In what type of operations is the vehicle used?

The vehicle is used to secure the work of a sapper team within the army structure. The vehicle is used for transporting people along with the equipment, including heavy pyrotechnic suits, robot and hazardous materials. Trucks used to be adapted for these purposes, but as advanced electronics were introduced (robots, cameras, georadars), transporting them using an ordinary truck was not compatible with the modern sapper's work. The current prototype is adapted to level III armor according to STANAG 4569 as well as to being transported on C-130 Herkules airplane, which allows it to be moved to the operations area using commonly available airplanes, so that it can secure the actions of other units on site.

What are its advantages?

The vehicle is based on Tatra 815-7 chassis which was a military chassis with the option to be used by civil users and not the other way around, which is

often the case. The vehicle can wade through water up to 1.5m deep. Further advantages include 40-degree angle of attack, ability to climb 100-degree elevations and the most important advantage is independent suspension of all the axles.

Does Athena have any competition in its category?

Wars in Afghanistan and Iraq had influence on creating a special type of vehicle – MRAP (Mine Resistant Ambush Protected) – which were used to find and eliminate EOD materials during patrols. Vehicles which – thanks to the excellent level of protection – fared well in heavy asymmetric conflict where the team would blow the load it found without having to move it. But vehicles of this type are not useful during peace time or as rapid reaction forces since they cannot be transported using aircrafts smaller than C-17. Their mass had significant impact on chassis, not to mention high fuel consumption (40 L/100 km). The construction itself does not allow the transportation of larger equipment (heavy pyrotechnic robots) or transportation of unexploded bombs in containers. Our ATHENA can be modernized and adapted to the mission and its versatility increases its appeal to the user.

How is the equipment promoted abroad?

The vehicle had its premiere at the International Defence Industry Exhibition EUROSATORY 2012 in Paris. The vehicle now participates in the IDEX 2013 international trade fair in Abu Dhabi where it sparked great interest in the visitors. A series of tests and shows is now being organized to interest potential clients in obtaining ATHENA.

Polish drones from Ożarów serving in the Polish Army



Artillery units, Airborne Reconnaissance Squadron from Miroslawiec and commando unit from Kraków will obtain FlyEye drones manufactured by WB Electronics before the end of this year.

Contract for twelve sets of drones will significantly increase the capacity of the Polish Army in air reconnaissance and target engagement. FlyEye sets that will go to artillery units will increase their reconnaissance and attack capabilities. They will obtain a new method for reconnaissance and correction of artillery fire, as well as for observation of effectiveness of attacks.

FlyEye drones can be integrated with the automated artillery command system – TOPAZ. This system uses the newest IT, communication and surveillance technologies which allow it to increase the effectiveness of artillery fire, at the same time increasing the safety of performed operations for the military units and civilian objects.

"The contract is the best confirmation of the quality of our equipment. When designing modern command systems and drones we assume that they should meet the highest quality and reliability criteria. This is due to the fact that our most important customer is the Polish army, which has the full right to expect that the equipment we deliver ensures the highest standards of quality" – says Dariusz Sobczak, Marketing Director of WB Electronics.

Aside from artillery units, Polish drones from WB Electronics will also go to Special Forces and Airborne Reconnaissance Squadron from Miroslawiec. This will increase the safety of operations and, most importantly, safety of our troops in Afghanistan.

FLYEYE UNMANNED AERIAL VEHICLE

FlyEye unmanned flying platform is used for observing the battlefield, indicating and correcting targets for artillery fire, as well as for reconnaissance. The drone is released from hand. This simplifies the logistics of the system (no need for a launcher). Another advantage of this system is the ability to start a platform from a very tight space, such as buildings in urban areas or a forest clearing.

Landing system is based on automatic ejection of the battery tray and surveillance head on a parachute. The moment of tray ejection is calculated by the on-board computer to enable the parachute to open safely and continue its descent to a pre-programmed point of contact on the ground. Landing precision is no larger than 10 meters. This not only effectively protects the most expensive part of the system, i.e., the surveillance head, but also allows the aircraft to maintain full steering control in the final phase of the flight at the minimum speed.

Surveillance head with two cameras (daytime and IR) mounted under the fuselage provides a lot more opportunities to observe and feature a very fast video imaging mode switching. The whole system requires only two operators and can fit into two backpacks. Easy assembly and disassembly, modular design and readiness for take-off achieved in under 10 minutes make it useful in virtually any terrain, even by a small subdivision. ■



MAIN OPERATIONAL FEATURES

- Option to pre-program the route and change the route during the flight.
- Video signal reception and transmission of telemetry data to the LGCS Light Ground Control Station (through transmitter – receiver station) in real time.
- Digital link for two-way control transmission, data and video.



FLYEYE PLATFORM CAN BE USED FOR VARIOUS TASKS, INCLUDING:

- determination of coordinates for the artillery,
- interaction with artillery fire as reconnaissance,
- battlefield surveillance,
- convoying,
- surveillance of national borders,
- securing public events,
- monitoring of natural disasters and their consequences,
- monitoring forest fires,
- search for missing people, e.g. in wooded areas.

FLIGHT MODES AND FEATURES

- fixed route flight,
- flight to the point with specific coordinates,
- circulation around a specific object,
- going in the direction of the surveillance head,
- manual flight control from the operator station,
- maintaining the observed object on sight,
- automatic convoying,
- determining the coordinates of the observed objects and passing them to BMS or SKO systems,
- autonomous flight on a defined route, even beyond the reach of radio,
- in the case of loss of communication – automatic return to the place where connection was last available and automatic landing in a predetermined location,
- changing mission parameters during the flight,
- option to record video and flight information on a computer hard drive, including telemetry data (altitude, transmission speed, time and coordinates of the current view).

THE DEVELOPMENT PLAN

WB Electronics constantly works to improve its newest product. *Our plan is to extend the flight endurance, as -with respect to our clients- this is the most desired feature. Today, we are limited by the available battery technology – the aircraft is driven by an electric motor. As the technology advances, we should be able to provide longer flight times. We have also been examining a new kind of dedicated surveillance payloads. As the FlyEye has been completely designed by our engineers, we have the flexibility to introduce changes and improvements, at the customer's request – says Dariusz Sobczak*





Dariusz Sobczak,
the Director of Marketing
and Sales at WB Electronics

You've recently signed a contract to provide twelve sets of drones. Where will your products be used?

Unmanned aircraft sets that we are providing will be given to military units where they will serve general military reconnaissance tasks (9 sets), as well as artillery reconnaissance (3 sets). The sets slightly differ in assembly and equipment.

What are the benefits for soldiers that use the FlyEye system?

Reconnaissance is aimed at preparing the soldiers for operating in an unknown territory. The first and the most fundamental benefit is full safety of the soldiers who use this type of recon. Unmanned aircrafts enable the soldiers to obtain information about the activities of the enemy performed in very remote areas

(in the case of FlyEye it is up to 30km) in real time and without risking the lives of the scout or the aircraft pilot. In addition, we can receive the video feedback transmitted by the aircraft to the personal receivers which can be given to every soldier to see the territory where they will perform operations.

It is strange that comparing to Bumar – a real giant on the arms industry – you managed to become a leader in manufacturing military equipment. Does it mean that the Polish industry is oriented towards different products?

WB Electronics, perhaps due to not being a "giant", can rapidly react to the needs of the market and propose innovative products that meet the users' expectations. Yes, the Polish arms industry has just recently noticed the potential that lies in innovative products. Today, the word "innovative" appears in every advertisement and company strategy. The thing is, we have been doing it for the last fifteen years, since the beginnings of the company and now, when our followers talk about investing in innovation, we can enjoy having innovative products as the main source of income. But of course we do not slow our development.

What is the WB Electronics phenomenon?

I think that the success of WB Electronics lies in combining passion, patience and good management. What is more, we managed to gather employees that combine passion with talent. In our relations with the clients, we were always striving to meet the needs of the users, at the same time not being afraid to propose solutions that open up new possibilities that the client did not know about.

Poland is one of three leading countries, next to USA and Israel, that has the competence to design and manufacture drones. But what is equally important, how is the demand for such products?

According to my observations, companies from different parts of the world have the ambition to build drones in different categories. This is a result of demand analysis – it is a relatively new technology and various armies are now just considering the use of drones. This also applies to the Polish army. Only the American and Israeli armies have been widely using drones for a dozen or so years. That is probably why this is the only category of the military equipment whose market is characterized by dynamically increasing trend.

Various armies are now just considering the use of drones. This is the only category of the military equipment whose market is characterized by dynamically increasing trend.

Aside from the Polish army, are you planning to sign a contract with a foreign client in the near future?

Cooperation with foreign partners always has been an important element of our strategy. This way, due to increased scale of production, lower the costs and offer better prices to our army. We can also confront the competition from other countries, which allows us to verify our concepts. Research performed during the tenders allows us to check the equipment in the conditions that cannot be attained in Poland. This option is very valuable.

To answer your question about the contract – we are now completing a contract with a foreign partner who asked us for support in building their own drone based on our technology. Aside from that, we are participating in tender proceedings – they are now at evaluation stage.

What makes Polish products different from American and Israeli ones?

First of all, they are Polish. Really – it's important that we possess the key technologies necessary for building drones. This gives us unlimited options for development and allows us to compete on other markets through sales and technological cooperation. If we're talking about FlyEye, it has numerous features that make it stand out when compared to its competition – easy taking off and landing, stabilized optoelectronic head with dual camera to observe at day and at night, protection system for key components in the event of landing on unfavorable ground, additional equipment, used for example to train users or analyze images obtained from the drone.

How are the Polish products selling compared to the foreign ones?

As I mentioned before, the drone market is just starting to emerge. The appearance of a Polish product that dominates its category thanks to the features that I mentioned, along with its moderate price tag, forced the foreign competitors to verify their own offers. We are doing our best to track tenders all over the world and participate in them. We should remember however, that our product premiered two years ago, so it's hard to compare its sales with Israeli or American products, where the technology has longer history and the number of types itself can make your head spin. On the markets of other countries – in its own category – the Polish product can successfully compete with products from the aforementioned countries. ■



IBIS®

IBIS® is a robot designed for applications such as high-speed pyrotechnics reconnaissance of roads or urban areas and for remote removal and neutralization of improvised explosive devices. Six-wheel flexible chassis with independent suspension and all-wheel drive allows to operate in challenging and varied terrain (rocky ground, wetlands, rubble, sand, snow).

IBIS® robot moves at a maximum speed of 10 km/h, and the system of smooth regulation of drives enables it to work in full speed range. The robot can be controlled by radio (up to 1000m) or by fibre-optic cable (up to 300m).

Control panel used to operate the IBIS® robot is in the form of a small suitcase which, once opened, resembles a laptop. Two joysticks and a set of logically laid out buttons ensure almost intuitive operation. Picture of 4 colour cameras (including one PTZ camera on the upper arm), results from sensors and autodiagnostic system messages are displayed on the LCD screen. The manipulator with gripper has a range of more than 3 meters. Its arm has seven degrees of freedom and is able to lift from 30 kg (at maximum extension) up to 50 kg (when the arm is folded).

IBIS® robot has been designed to work with a range of equipment used in the uniformed services. It can be equipped with such devices as a disrupter or command wire for remote detonation of explosives. The robot can be used with sensors of biological, chemical and radioactive contamination, a device for breaking windows, barbed wire cutters, drill or a negotiation kit. It can also be adapted to work with other devices, in order to adjust it to the specific requirements of the customers.

IBIS® robot is powered by an easily removable battery. Working time without intermediate charging ranges from a few to several hours, depending on the kind of mission in which it is involved. ■



CONSTRUCTION DETAILS

Mass	300 kg
Width	890 mm
Length	1350 mm
Height	1100 mm when folded
Maximum speed	10 km/h
Activation time	under 2 sec.
Number of degrees of freedom	7
Manipulator base rotation range	400°
Lower arm rotation range	200°
Upper arm rotation range	220°
Telescopic arm linear motion	0.5 m
Wrist rotation range	220° (±110)
Gripper jaws rotation range	infinite
Gripper jaws opening range	0-360 mm
Manipulator's maximum lift	50 kg
Manipulator maximum reach	3050 mm
Operator's control panel weight	12 kg
Control system	radio/fibre optic cable
Maximum battery operation time	minimum 3h
Maximum range (open area)	up to 1000 meters



SIKORSKY S-70i BLACK HAWK HELICOPTER

The modern S-70i™ BLACK HAWK helicopter incorporates advancements that connect this remarkable aircraft into the fast-pace, digital information world that exists today. So whatever your mission is, the BLACK HAWK helicopter will provide excellent support to your everyday needs.

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 turbo-prop 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 Zaklady 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.

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

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

PERFORMANCE

Maximum Takeoff Gross Weight	22,000 lbs	9,979 kg
Maximum Gross Weight with External Load	23,500 lbs	10,659 kg
Maximum External Load	9,000 lbs	4,082 kg
Maximum Cruise Speed*	160 kts	296 km/hr
HIGE Ceiling**	15,000 ft	4,572 m
HOGE Ceiling**	11,000 ft	3,353 m
AEO (All Engines Operating) Service Ceiling**	20,000 ft	6,096 m
Number of Engines	2	
Engine Type	T700-GE701D	
Cabin Width	7.0 ft	2.14 m
Cabin Height	4.5 ft	1.37 m
Cabin Area	88 sq.ft	8.18 sq.m
Cabin Volume	396 cu.ft	11.22 cu.m

*Standard day, sea level **Ceiling for 18,000 lbs GW (8,165 kg)

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.





A. Optional FRIES Bar **B.** Rescue Hoist (enhanced utility configuration)
C. Optional Interior Gun Mount (M3M .50 cal shown) **D.** Folding Troop Seats (optional) Improve Use of Floor Space
E. Optional 4-place Interior Litter System

STANDARD CONFIGURATION

- 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

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)

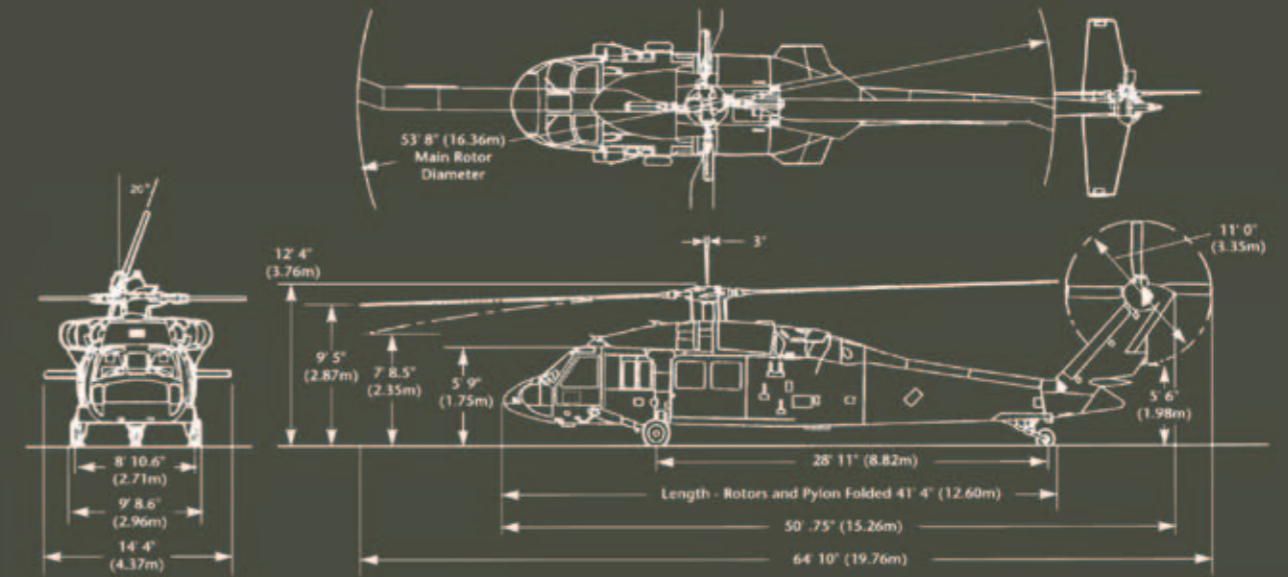
AIRFRAME

- 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

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



MISSION CAPABILITY

Missions	Standard Baseline	SAR	Utility	Medical Evacuation	Increased Capability through Options
Tactical Troop Transport		•	•	•	•
Tactical Air-Transportability	•	•	•	•	•
Night Vision Device Operations	•	•	•	•	•
Tactical Formation Flight	•	•	•	•	•
Convoy Escort	•	•	•	•	•
Command and Control					•
Border Protection and Law Enforcement	•	•	•	•	•
Internal Cargo Transport	•	•	•	•	•
External Cargo Transport			•		•
Humanitarian Assistance	•	•	•	•	•
Medical Evacuation	•	•	•	•	•
Self Deployment	•	•	•	•	•
Search & Rescue Operations		•			•
Fire Fighting			•		•
FAST Rope Insertion					•
Rappel Insertion					•
Rescue Hoist Operations		•		•	•
Armed Fire Support					•
Executive Transport or Head of State Operations					•
Surface Surveillance & Targeting					•

Note: Communication, navigation and mission equipment shall comply with U.S. exportability requirements.



POLAND WILL HAVE ITS TANK

Bumar leading a consortium

Bumar is leading a consortium that will build a new Polish basic tank.



On the 14th of February in Warsaw, Bumar sp. o.o. along with other companies from the Polish defense sector appointed a consortium to build a new basic tank. The goal of the consortium is to perform research and development work and implement a "Universal Modular Tracked Platform in the form of Direct Support Vehicle / New Basic Tank" for production. Bumar became the leader of the consortium and will coordinate as well as supervise the research and development work and, after finishing it, will be responsible for implementing the new Polish tank for production and providing it to the Polish army.

Aside from Bumar, the following Bumar Group companies participate in the consortium: Ośrodek Badawczo – Rozwojowy Urządzeń Mechanicznych OBRUM Sp. z o.o., Zakłady Mechaniczne „Bumar – Łabędy” S.A., Bumar Żołnierz S.A., Bumar Elektronika SA, as well as – Huta Stalowa Wola S.A., Wojskowe Zakłady Motoryzacyjne S.A., Wojskowy Instytut Techniki Pancernej i Samochodowej – Instytut Badawczy and Wojskowe Zakłady Mechaniczne S.A.

The consortium was appointed in response to the Ministry of Defense's interest towards the Universal Modular Tracked Platform / New Basic Tank" project. Bumar Group has been conducting analytical, conceptual, as well as research and development work in order to provide the Polish army with a Universal Tracked Platform in the form of Fire Support Vehicle in accordance with the Ministry's expectations.

The consortium allows the intellectual and production potential of the members to be used in building tracked fighting vehicles, including fighting and special platforms.

Detailed division of tasks between the members of the consortium is being drawn up based on initial architecture prepared by the leader.

"This contract means that the Polish industry has joined forces, because we all want to provide the best vehicle to the Polish Army and we want Polish soldiers to use Polish tanks" – says Mariusz Andrzejczak, vice president of the technology and development board. ■

NEW IFV FOR THE ARMY

HSW leading a consortium

HSW is leading the consortium that will design the new infantry fighting vehicle along with the mechanized battalion technical equipment.

On the 14th of February, 2013, a consortium contract was signed in Warsaw by: Huta Stalowa Wola S.A., Ośrodek Badawczo-Rozwojowy Urządzeń Mechanicznych „OB-RUM” Sp.z o.o., with headquarters in Gliwice, Zakłady Mechaniczne BUMAR-ŁABĘDY S.A., with headquarters in Gliwice, Wojskowe Zakłady Mechaniczne S.A., with headquarters in Siemianowice Śląskie, Wojskowe Zakłady Motoryzacyjne S.A., with headquarters in Poznań, Wojskowe Zakłady Inżynieryjne S.A., with headquarters in Dęblin, Wojskowy Instytut Techniki Pancernej i Samochodowej – Instytut Badawczy, with headquarters in Sulejówkę, Wojskowe Zakłady Elektroniczne Spółka Akcyjna, with headquarters in Zielonka.

The purpose of the Consortium is to prepare and submit a joint offer to the Inspectorate of Armaments of the Ministry of Defence (MON) and / or the National Research and Development Centre (NCBiR) to perform research and development work aimed at designing a "infantry fighting vehicle with mechanized battalion technical equipment", as well as the implementation of the above mentioned work should the offer of the Consortium be selected by the Ministry of Defense and / or NCBiR and subsequent mass production of the IFV.

The aforementioned parties appoint the consortium with headquarters in Stalowa Wola on Kwiatkowskiego 1, with HSW as the leading company. Consortium members have equal rights and at the same time agree that the Consortium can not be considered a corpo-

The defender Prize of International Defence Industry Exhibition in Kielce awarded to HSW S.A.

- 1998 98 mm Mortar M98
- 2001 35 mm Automatic Cannon KDA
- 2002 Universal Engineering Machine BackhoeLoader 9.50
- 2003 155 mm Self-Propelled Howitzer KRAB
- 2004 Scattered Mine Laying Vehicle KROTON
- 2007 Rocket Launcher WR-40 LANGUSTA
- 2011 120 mm Self Propelled Mortar, wheeled chassis

The honorable mention of the Minister of National Defense

- 2011 Scattered Mine Laying Platform Baobab



ration, civil law partnership, commercial law partnership, or other legal entity.

The consortium is closed and its members allow the option to remove a company which does not fully or properly fulfill its contractual obligations.

"Appointing further consortiums is a matter of time. Our ranks include a few more leaders for consortiums that could perform further tasks associated with the technical modernization of the Polish army" – adds Antoni Rusinek, HSW member of the board. ■



Application of CID JASMINE in Decision Support for Command and Control

The main idea of CID JASMINE is to provide effective solution that will satisfy all requirements for CID (Combat Identification) Server both in national and multinational environment. To make it possible, the topic of CID has been deeply analyzed. Also existing CID solutions and capabilities have been studied. After that, advanced programming techniques and patterns have been applied to achieve goal.

Developing solutions for identification of objects on battlefield is crucial to minimize casualties and improve performance of military forces. In brief, definition of CID is as follows: Combat Identification (CID) is the process of attaining an accurate characterization of entities in a combatant's area of responsibility to the extent that high-confidence, real-time application of tactical options and weapon resources can occur. The CID Server is one of CID solutions that improve combat identification process by collecting CID data from different sources and providing it on demand to consumers.

TELDAT, an innovative company from Poland, has started development of its own CID Server product – CID JASMINE. The main goal of this article is to present concept of CID JASMINE and to show its main features according to existing CID and CID Server solutions.

The CID JASMINE product is based on existing components of JASMINE System, both software and hardware. As a hardware component CID JASMINE uses Server Box, which is an efficient and powerful military Server station. Dedicated CID JASMINE software will work on Microsoft Windows 2008 Server operating system. All software elements are based on the SOA (Service-Oriented Architecture) and build upon Message

Bus. Position Location Information (PLI) will be received using NFFI IP1, IP2 (NATO Friendly Force Information, Interface Profile 1 and 2) and Link 16. It will be provided using Link 16 and NFFI SIP 3 (Service Interoperability Profile 3). CID Server capabilities will be successively extended to all available CID solutions, like VMF (Variable Message Format) and BRM (Battlefield Replication Mechanism). CID JASMINE will also provide operational picture and expose it using NVG (NATO Vector Graphics) protocol and web client application. This will enable to use CID information created by Server directly from Web Browser user interface.

Therefore CID JASMINE will not only be a set of functional services but it will also provide operational picture on tactical level. The architecture and implementation of CID JASMINE will be focused on quality parameters of product. In all cases, the goal for CID is to provide the level of identification that is necessary for Weapon Delivery Assets to make correct decisions.

CONCEPT AND IMPLEMENTATION

CID JASMINE is an implementation of the concept of CID Server from TELDAT Company. CID JASMINE is a part of JASMINE System.

According to NNEC (NATO Network Enabled Capability) concept elements of JASMINE System was designed to be able to work at all military levels, starting from the highest to the brigade level or even at the mobile battlefield unit. The system consists of hardware and software. The main advantage of the JASMINE System is its high flexibility and easy way of configuration, which shortens the time needed for achieving operational condition. JASMINE System



equipment and its interoperability have been tested during the national and international exercises, where wide range of provided services were presented.

Position Location Information (PLI) information is received using:

- NFFI IP1, IP2 – land tracks is send to CID JASMINE using UDP or TCP protocol
- Link 16 – messages containing information about paths of different types of objects can be provided to CID JASMINE. Some of the possible messages are J3.5, J3.2

The information is provided for consumers using:

- Link 16 – there are dedicated Link 16 messages that enable to provide information on demand, according to given area
- NFFI SIP 3 – based on Web Services this protocol allows to pool for tracks information for specified area





CID Server capabilities will be successively extended to all available CID solutions (like VMF and BRM). Link 16 communication will be implemented over JREAP C protocol.

CID JASMINE provides also operational picture and exposes it using NVG protocol and Web Client application. This enables to use CID information created by Server directly from Web Browser user interface. Therefore CID JASMINE is not only a set of functional services but it also provides operational picture on tactical level.

The architecture and implementation of CID JASMINE is focused on quality parameters of product, in particular:

- performance – server process a lot of real time data
- scalability – it is possible to scale CID JASMINE to multiple computer stations. This is achieved using MessageBus infrastructure and SOA architecture
- reliability – Server Box is a military server that satisfies all quality and reliability parameters for military equipment. Also development of CID JASMINE software has been focused on reliability

CID JASMINE implements NATO STANAG which provides a standard for a service that will allow maintenance of a database that contains all friendly positions that have been reported by forces by means of Force Tracking Systems (FTS), C2 systems with the capability of extracting own position information and other identification systems, including Combat Identification (ID) systems and the forwarding of the positional information to weapon delivery assets and other attack-associated units such as forward/tactical air controllers, fire support cells, and command and control nodes by means Link 16 and other RF based information exchange networks.

CID JASMINE interfaces (draft of STANAG):

- NATO Friendly Force Information (NFFI) Interface Profile 1 (IP1)
- Link 16 J-series messages
- HTTP 1.1 as defined by the World Wide Web Consortium (W3C)
- NATO Friendly Force Information (NFFI) Interface Profile 2 (IP2)
- NFFI Service Interoperability Profile 3 (SIP3) web services

- NFFI-Message Text Format (NFFI-MTF)
- Draft STANAG 5519, Tactical Data Exchange – Variable Message Format (VMF) K-series messages
- Other tactical data links
- Serial interface for specific CID systems

CID Server uses various protocols and each of them use its own identifiers for battlefield objects. CID JASMINE will solve this issue in the following way:

- for all types of information received by CID JASMINE the original information will be preserved
- if it will be necessary to map information between different protocols and it will be impossible to translate identifiers, then new identifiers will be generated according to configuration
- once created mappings for identifiers will be stored for future use, to guarantee that each piece of information will be mapped in one way
- system will provide user interface for configuring and manually manipulating all mappings

Presented above strategy will be used not only for identifiers mappings but for all parameters of battlefield objects that require mappings.

PERFORMANCE AND RELIABILITY

The quality of CID Server depends mainly on the two factors:

- quality of data services, i.e. the services that are responsible for storing and providing data
- quality of internal communication infrastructure

This two elements will be supported in CID JASMINE in the following way:

- data store will be based on relational database, however it will be supported with object oriented database and additional caching mechanism. On this area TELDAT engineers has broad experience gained during developing data services for tactical command systems (BMS JASMINE)
- communication and messaging infrastructure will be provided by Message Bus, the TELDAT middleware solution that provide robust, scalable and reliable infrastructure for interconnecting system services

Provided mechanisms will guarantee proper quality:

- the performance of system will be based on scalability of data services and Message Bus. It will be possible to add new physical servers that will work as cluster for CID JASMINE during mission, without interrupting the server
- reliability will be assured by reliable-messaging that is part of TELDAT Message Bus solution

SUMMARY

Combat Identification is a basic capability for modern forces. CID Server is one of the solutions that extend CID capabilities and in some scenarios it is essential. The importance of CID Server has been noticed by NATO nations and also by NATO itself. First solutions have been implemented and STANAG development has been started.

CID JASMINE is an implementation of CID Server from TELDAT company. The main advantages of CID JASMINE will be:

- interoperability – it supports all required interfaces and protocols
- performance and quality – based on the proven components of JASMINE System and SOA architecture it provides powerful platform for CID data exchange

CID JASMINE is a network centric product and an element of NNEC compliant architecture of JASMINE System. It consists of hardware and software elements and therefore it is a complete product ready to use on the field, in particular in NATO operations. ■



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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 innovatory 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 Śląskie 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.



THE BUMAR GROUP

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Bumar sp. z o.o. is a leading supplier and exporter of armaments and military equipment manufactured in the Polish defence industry.

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. Bumar 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.

The Bumar Group was formed in 2002 as a result of adoption of Strategy for Structural Transformation of the Defence Sector Capacity 2002-2005 by the Polish Government.

Bumar sp. z o.o. was appointed the integrator of the newly formed Bumar Group, with the responsibility for exercising owners supervision. The Bumar Group consists of 22 manufacturing companies from the Polish defence industry (PPO) specializing in munitions radars, rockets, armour and vehicles including 2 trade companies. Some of the dependent companies form capital groups. Bumar also holds shares in other companies, including foreign ones. More than 50 entities belong to the Bumar Group.

The internal structure of the Bumar Group form Bumar Electronics SA, two capital subgroups Bumar Ammunition SA and Bumar Soldier SA and the product division Bumar Land.

Market activities of the Bumar Group are concentrated around four product groups constituting the subject matter of production and service divisions respectively:

- **BUMAR AMMUNITION** – ammunitions and missiles (shooting ammunition, artillery and missiles, SPIKE, GROM, FENIKS missiles);
- **BUMAR SOLDIER** – the soldier and the official (individual equipment and armament of the soldiers including: pistols, guns, optoelectronic equipment, protective measures: gas masks, helmets, bullet-proof jackets);
- **BUMAR ELECTRONICS** – electronics and IT (commandment systems, radars, sensors, anticraft and anti-missiles systems);
- **BUMAR LAND** – land platforms (wheel, caterpillar platforms, military vehicles, tanks, special vehicles, technical backup vehicles, bridges).



HSW STALOWA WOLA S.A.

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Huta Stalowa Wola S.A. specializes in designing, manufacturing and sales of the following types of military equipment:

- **Artillery equipment** – Self-propelled, hauled or mounted on other objects. Fully autonomous and / or automated. Integrated with battlefield digital command systems
- **Special armored carriers** – Wheeled and tracked chassis. Multipurpose or specialist. Amphibious.
- **Engineering equipment**

Huta Stalowa Wola S.A. worked out its' own strategy of offering newly designed and modernized products by delivering them composed into complete Military Units.

Making the best of our know-how we offer cooperative services too: We produce ready-made products and supply technical services – based both on our own as well as client's documentation.

The HSW S.A.'s experience in the field of special production dates back to 1938, when the first products have been shipped from the Zakłady Południowe (Southern Plant).

The professionalism that has been confirmed throughout more than 70 years of effective operation within the field of special production has an impact on our cooperative activities – we manufacture products and deliver technical services based on documentation created for or supplied by the customer.

The Stalowa Wola S.A. has been able find their proper place in the market during the transition period. The company continues the excellent tradition of military production in the Central Industrial District. In the recent years we have maintained a steady growth in our organization and product range. The HSW's separate Military Production Center division has provided a greater mobility in new construction developments and increased the rate of production deployments. This may be illustrated by the complete delivery of the WR-40 "Langusta" rocket launcher fire unit, the implementation activities for the fire module (codename Regina) as well as the innovative technical solution for the 12mm caliber, automatically loaded mortar implemented within the 120 mm self-propelled mortar Company Fire Unit "RAK" program.



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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



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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.

Honorary Auspices - Jacek Cichocki Minister of Interior

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