

RUSSIAN AVIATION & MILITARY GUIDE

Special analytical export project of the United Industrial Publishing

№ 8 (61), November 2021

FMTS OF RUSSIA

*Interview with
Dmitry Shugaev*



.10

ROSOBORONEXPORT

*Special state status
and the best offers*



.18

ADJUTANT

*New-generation air defence
crew training system*



.24

DUBAI AIRSHOW 2021

*Good results of the
largest exhibition*



.32



The best innovations for Egypt, Africa and the global market



SPECIAL PARTNERSHIP



UNITED INDUSTRIAL PUBLISHING

Russia's largest defense publishing house



Among the publications of the United Industrial Publishing there are specialized export guides for the international technology transfer, magazines and newspapers for the Russian defense industry, official show-dailies of the largest international defense and industrial exhibitions and forums, corporate newspapers and magazines, news and analytic online resources. We offer the widest formats of cooperation and partnership.

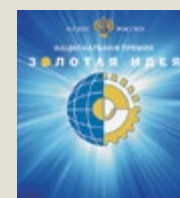
Address for letters: Russian Federation, 123104, Moscow, box 29, Industrial Edition
www.promweekly.ru, www.ramg.info, www.prom.red, doc@promweekly.ru
+7-495-7781447, +7-495-7293977



Russian Aviation & Military Guide'
№ 8 (61), November 2021

Special analytical export project
of the United Industrial Publishing

Registered in the Federal Service for
Supervision of Communications, Information
Technology and Mass Media (Roscomnadzor)
09.12.2015 PI № FS77-63977



The magazine 'Russian Aviation & Military
Guide', made by the United Industrial
Publishing, is a winner of National prize
'Golden Idea 2016' FSMTC of Russia

General director
Editor-in-chief
Valeriy STOLNIKOV

Chief editor's deputy
Elena SOKOLOVA

Commercial director
Oleg DEINEKO

Head of international projects
Alexander STOLNIKOV (s.xander@bk.ru)

Managers
Tatiana SOKOLOVA
Natalia SHVETSOVA
Andrey PARAMONOV

Designed by
Svetlana SELIVERSTOVA


*There are materials from the information
agencies and from the press services
of the federal authorities of the Russian
Federation used in the project.*

Edition is 3 thousand copies

Editorial office:
Malaya Gruzinskaya St., 39
Moscow, 123557
Tel.: +7-495-505-76-92, 778-14-47, 729-39-77

Media postal address:
Moscow, Russia, 123104, mailbox 29

doc@promweekly.ru
promweekly@promweekly.ru
www.promweekly.ru

The materials marked with 
published on a commercial basis

© 'United Industrial Publishing', 2021

C O N T E N T S

NEWS SHORTLY

- 2 Perspective Innovation
- 2 Rostec and AJ Holding
- 2 Russian Shipbuilding Steel Market
- 2 Precision Weaponry Defense Systems
- 4 Mi-171A2 for Bangladesh police
- 4 For Protection Against Weapons
- 4 From a Tower to Test it for Strength
- 6 Firefighting Ka-32A11M
- 6 Wheeled AFV With 125-mm Cannon
- 6 Aspid for the export
- 8 Additive Technology for aircraft
- 8 Night Vision Device
- 8 'Listva' to Foreign Experts
- 8 VK-650V Demonstrator Engine

MAIN TOPIC

- 10 Vladimir Putin and Abdel Fattah el-Sisi

EXPORT REGULATIONS

- 14 FSMTC of Russia
- 18

BEST TECHNOLOGIES

- 22 Almaz - Antey at EDEX 2021
- 24 Adjutant

HIGH INNOVATIONS

- 28 GNPP Region's novel munitions
- 30 RADAR P-18-2 'PRIMA'

GLOBAL MARKET

- 32 Dubai Airshow 2021
- 38 Newest security equipment and solutions at Interpolitex 2021

SECURITY INVENTIONS

- 40 Secure rescue at any height

MEDIA REVIEW

- 42 Russia and Egypt - the dynamic of cooperation

- 48 GUIDES IN 2022

EDITORIAL



The best innovations for Egypt, Africa and the global market

It has become already obvious and undeniable that security is becoming increasingly important among the various values of civilization. Today, for any state, the ability to reliably and securely protect the territory, residents and values is a priority.

Political situation in the world (conflicts, sanctions, threats of war and other) makes nations once again reconsider their defense possibilities. Threat of local conflicts to be evolved into global ones, failure of worldwide system of safety and non-ending crisis – all of this leads to an unstable and dangerous situation.

One can predict raise of defense means market in times like this. But together with developing of defense technologies in order to safety, rivalry among sellers of weapons and defense systems increases in order to achieve such goals as increasing profits and market share. Egypt's tri-service defence exhibition EDEX 2021 presents in Cairo the best Russian weapons and innovations for global market, which are the undisputed world leaders on price and quality in their segments.

These exhibition shows that it is not serious about how many weapons and planes you have, but quality and possibilities of every single one of them is fact what leads to victory on the battlefield and on the global market. Other significant factor is technological independence from seller – modern technologies make it possible to shut down any device from any place of the globe if you have appropriate access. With hi-tech products, solid aftersales service and proven reliability, Russia is honest and friendly partner for all countries, ready for mutual work.

Taking part in EDEX 2021 Russia continues the policy of open partnership with the Egypt and Africa's states. Russia has a wide product line that meets all the needs of this continent and ready propose the best technology and the best price offers.

Valeriy Stolnikov



PERSPECTIVE INNOVATION

Engineers of the Moscow enterprise of the Shvabe holding have patented a device for detecting hidden defects in restored car body parts by means of a thermal imager. Apart from metal structures, this device can also evaluate the condition of plastic and composite elements.

Rostec State Corporation has patented a device that can detect defects left after impact or deformation of the body of passenger vehicles as well as analyze their repair history. The device consists of two cameras enabling monitoring, illumination, signal conversion as well as control and evaluation units. Moreover, it is equipped with a computer for processing received data.

The device sends an impulse to the surface of a car body part by means of a thermal imager to reveal irregularities of thermal fields and identify hidden damage and deformations.

'The technical solution developed by Shvabe specialists is one of a kind on the market today. The device will significantly improve the quality of control over the condition of car body parts. Further implementation of the project will bring vehicle diagnostics to the next level', said Oleg Yevtushenko, Executive Director of Rostec. It is expected that this device will be popular in car workshops, dealerships, and at the service stations. Appraisers, insurers, and polishers who control the quality of car paintwork might also benefit from using this device.

ROSTEC AND AJ HOLDING

Russian Helicopters Holding of Rostec State Corporation and the UAE company AJ Holding LLC set up a joint venture Alpha Aviation LLC in the Ajman Free Zone to promote and sell Russian civilian helicopters abroad.

The key market for Alpha Aviation will be the Middle East, where it is expected to sell more than 20 civilian helicopters of various types, including the Ansat, Mi-171A2, Ka-32, and Mi-38 by 2026. The scope of responsibility of the joint venture also includes the organization of service maintenance of Russian helicopters in the region.

'AJ Holding is a reliable partner for the promotion of our civilian products in the Middle East. The joint venture format will allow us to expand our presence in a region that is extremely important for us. The company started operating a few months ago but we can see the results already now: during Dubai Airshow 2021, Alpha Aviation signed a contract for the delivery of two Mi-171A2 helicopters to Peru and an agreement for the delivery of four Ansat helicopters and one Mi-17-1V to the police of Ras al Khaimah', said Andrey Boginsky, Director General of Russian Helicopters.

Russian Shipbuilding Steel Market

The civil division of Motovilikha Plants, managed by RT-Capital of Rostec State Corporation, has mastered the manufacturing of cold-resistant shipbuilding steel. The material is used in the construction of military vessels and icebreakers. By the end of 2021, the production output will reach about 200 tons and satisfy 25% of the domestic demand.

Heavy-duty shipbuilding steel of the AB2-PK grade is used in the production of corvette and frigate warships, as well as universal nuclear-powered icebreakers. The material will be used to manufacture heavy-duty welded structures such as beams, supports, slabs, and load-bearing frame elements.

'Today, we have a high demand for cold-resistant steels in Russia, which are used in the construction of Arctic zone ships and vessels. The demand for AB2-PK steel exceeds 700 tons a year. The production of this steel at Motovilikha will allow for the domestic shipbuilding industry to be less dependent on imported counterparts. Entering this market is part of a program to get the enterprise out of bankruptcy proceedings and create a center for the manufacturing of innovative steels demanded by leading sectors of the economy. In the me-



dium term, we expect to take 50% of the shipbuilding steel market and enter into industrial cooperation with shipbuilding companies,' said Semyon Yakubov, the RT-Capital CEO.

The main consumers of the product are the shipyards of St. Petersburg. The first batch of 120 tons of forgings has already been shipped to the customer.

'Special and very strict requirements are specified for the steel which will be used in the circumpolar areas of the globe. Laboratory tests have

shown that our steel is highly durable and ductile, and retains high performance values at temperatures as low as minus 60 degrees Celsius,' said Sergey Dyadkin, director of MGM.

Previously, the civil division of Motovilikha Plants, with the support of Rostec, was the first in Russia to master the production of low-alloy steel grades for oil and gas production in the Arctic climate. It also developed a technology for forging long non-magnetic billets for the energy and oil production sector.

Precision Weaponry Defense Systems

The Central Scientific – Research Institute for Precision Machine Engineering (TSNIITOCHMASH) of Rostec State Corporation has launched the mass production of unified precision weaponry defense systems for advanced military vehicles. The product is designed to protect the TOS-2 heavy flamethrower system, the PRP-5 reconnaissance vehicle, and the Zavet-D automated artillery control systems.

The system incorporates attack warning sensors, control and indication equipment, launching devices and obscurant ordnance, and is designed to protect vehicles from precision weaponry with laser, optical, thermal and radar targeting.

'When the enemy attacks, the system detects the threat and 'hides' the equipment behind a veil of combined jamming. Thanks to this, the munition loses contact with the target, goes off the attacking course or continues to fly 'blind' in inertial mode without precise targeting. Tests have shown that the system is capable of protecting equipment during combat and on the march against



anti-tank missiles, as well as against aerial attacks by precision aviation weapons,' said Bekhan Ozdoyev, Industrial Director of the Armaments, Ammunitions and Special Chemicals Cluster of Rostec. The company is highly competent

in the field of optical-electronic defenses of military equipment against precision weaponry. It manufactures protection systems for the Iskander operational-tactical missile system, the PRP-4A mobile reconnaissance unit and other combat vehicles.

HELD UNDER THE PATRONAGE OF HIS EXCELLENCY, PRESIDENT ABDEL FATTAH EL-SISI
THE PRESIDENT OF THE ARAB REPUBLIC OF EGYPT, THE SUPREME COMMANDER OF THE EGYPTIAN ARMED FORCES



www.egyptdefenceexpo.com

@egyptdefenceexpo

/egyptdefenceexpo

@visitedex

#EDEX2021



THE 2nd EDITION OF EGYPT'S ONLY
INTERNATIONAL DEFENCE EXHIBITION

EGYPT INTERNATIONAL EXHIBITION CENTRE
29 NOV - 2 DEC 2021

400 +
EXHIBITORS

30,000 +
VISITORS

FULLY-HOSTED VIP
DELEGATION PROGRAMME

Headline Sponsor

FINCANTIERI

Gold Sponsor

MBDA
MISSILE SYSTEMS

Silver Sponsor

LOCKHEED MARTIN

Bronze Sponsor

HENSOLDT
Detect and Protect

Media Partner

RUSSIAN
AVIATION MILITARY
GUIDE

Supported by



Ministry of Defence



Egyptian Armed Forces



Ministry of Military
Production



Organised by



MI-171A2
FOR BANGLADESH POLICE



'Russian Helicopters' Holding Company (a part of Rostec State Corporation) and the Ministry of Internal Affairs of the Republic of Bangladesh have signed a contract for the delivery of two cutting-edge Mi-171A2 heavy multipurpose helicopters. Under the terms and conditions of the contract, the two rotcrafts are to be delivered to the customer in Q1 2023. 'The contract we signed is the logical outcome of our sustained efforts to promote our civil helicopters abroad. We view it as a key result of the demo tour of Southeast Asia we took our helicopters at the end of 2018, which featured the Mi-171A2. What's especially great is that this contract was signed at the end of a eventful week that our holding spent at the Dubai Airshow-2021, where we also presented the Mi-171A2. Delivery of new helicopters to the customer has been scheduled for Q1 2023,' noted Andrey Boginsky, Director General of Russian Helicopters Holding Company. In 2018, a Mi-171A2 helicopter was taken on a demo tour around Southeast Asia, during which its capabilities were showcased to experts and prospective customers. The helicopter was also presented at the recent Dubai Airshow 2021, during which a contract was signed for the delivery of two Mi-171A2 to Peru. 2017 saw the certification of the Mi-171A2 in Russia as a category A helicopter, meaning that it meets the strictest flight safety requirements that civilian helicopters must comply with. Kazakhstan and India were the first foreign customers to start using Mi-171A2. The helicopter type certificate was also validated by the aviation authorities in Columbia and South Korea. Countries that plan to validate the Mi-171A2 certificate include China, Brazil, Mexico, Peru, UAE and others. The Mi-171A2 combines all the best qualities of the world famous Mi-8/17 helicopters. It is equipped with digitally controlled VK-2500PS-03 engines. The increased power rating of the engines and the upgraded piloting, navigation and radio equipment have expanded the possible uses for the helicopter. They give the Mi-171A2 completely new capabilities in terms of operation in high mountains as well as hot climates. The more efficient X-shaped tail rotor, a new main rotor with composite blades as well as improved aerodynamics of the body mean the Mi-171A2 has 10% greater cruising and maximum speed than the Mi-8/17 and 25% greater load carrying capacity (up to 4 tons of cargo inside the cockpit or up to 5 tons externally).

For Protection Against Weapons

A new obsurant ordnance developed by the Central Scientific Research Institute for Precision Machine Engineering (TsNITochMash) of Rostec State Corporation has been accepted for service by the Russian Armed Forces. The product is designed for individual protection of vehicles against high-precision weapons with laser, optical and thermal guidance systems.

When a threat arises, the 3VD35 protective ordnance is fired in the direction of the enemy's attack and creates an aerosol screen that 'fools' the enemy's precision-guided munitions guidance systems.

'The main advantage of the ordnance is the ability to protect armored vehicles from high-precision munitions, especially from attacks in the most vulnerable upper hemisphere, which has less armor and usually is not covered by dynamic or anti-cumulative protection. This advanced solution protects the vehicle against high-precision aviation weapons, barraging ammunition and third-generation anti-tank missile systems, including Javelin systems. The



ordnance has good export potential. Foreign partners have already shown a high degree of interest in it,' said Bekhan Ozdoev, Industrial Director of Rostec's Armaments, Ammunition and Special Chemicals Cluster. The caliber of the ordnance is 76 mm, with length of 290 mm and weight of 1.8 kg. Temperature range of the ammunition is from -50°C to +50°C.

From a Tower to Test it for Strength

The Sprut-SDM1 upgraded self-propelled anti-tank gun has been dropped from a special tower in order to test the vehicle for the ability to withstand overload during airborne insertion, Rostec told.

'As part of the drop tests the capabilities of the vehicle during parachute deployment were tested. We achieved the maximum level of overload, and the upgraded Sprut has passed the tests successfully and no systems were affected in terms of their functionality. The next stage is the deployment of the tank from an aircraft,' Bekkhan Ozdoev, industrial director of the weapons, ammunition, and special chemistry sector of Rostec, says.

The developer of the vehicle, the Volgograd Tractor Plant (which, being a subsidiary of KMZ, is a part of High Precision Weapons of Rostec), explained that, during drop tests, military equipment is deployed from a special tower to simulate airborne insertion.

'The development of the parachute system for the upgraded Sprut is currently under way. When these works are completed, we will conduct drop tests of Sprut-SDM1 from

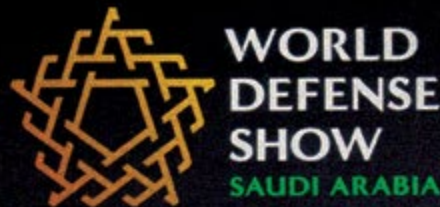


an aircraft under realistic conditions,' Vladimir Budaev, Deputy Chief Designer of the Volgograd Tractor Plant, said.

'Furthermore, as part of state tests, Sprut will be transported by the Il-76 and An-124 airlifters, as well as via the sling of the Mi-26 helicopter,' he added.

The Sprut-SDM1 self-propelled anti-tank gun on tracked chassis was developed and created by

Kurganmashzavod PJSC (part of the 'High-Precision Weapons'). Sprut is armed with a 125-millimeter artillery and rocket system and can be transported by vessels, aircrafts, can be deployed with the use if landing and parachute methods. Its maximum speed on a highway is 70 kilometers per hour, and it reaches afloat speed of 9 kilometers per hour. The self-propelled gun is also classified as a light tank.



FOUNDED BY



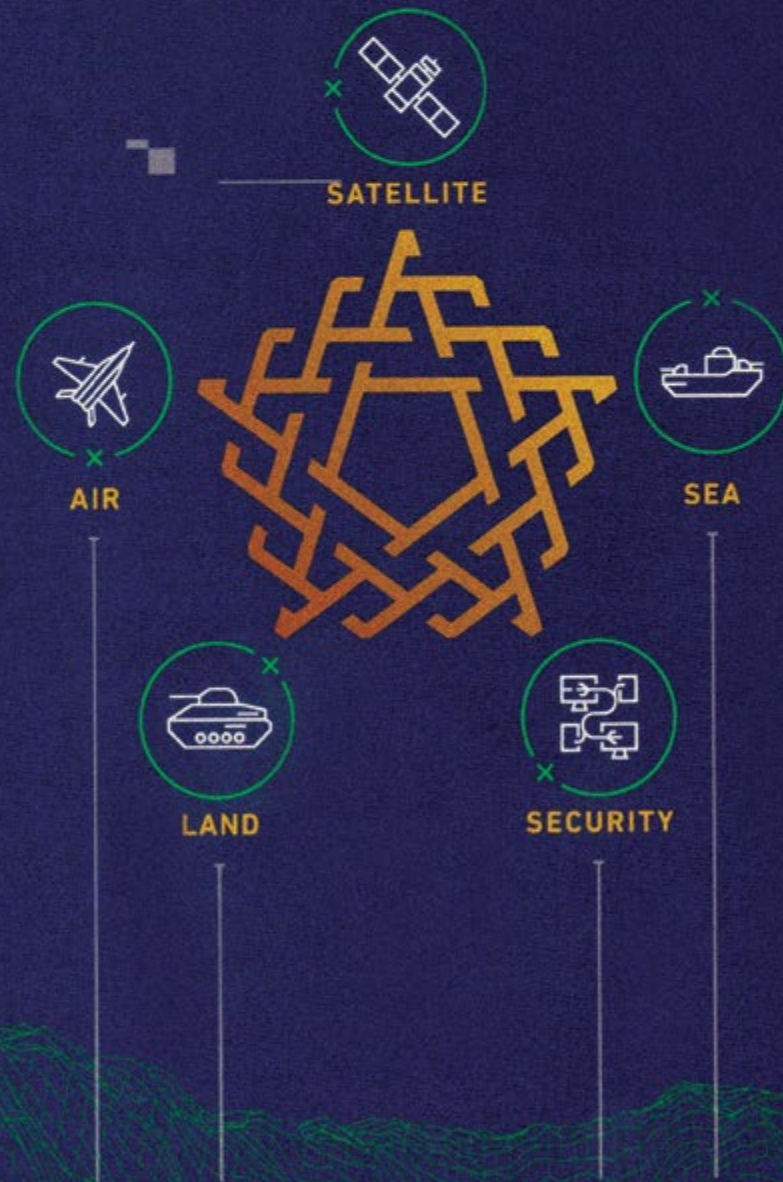
الهيئة العامة للصناعات العسكرية
General Authority for Military Industries

Take your place on the
global stage for defense
interoperability

6-9 March 2022

Riyadh, Saudi Arabia

Enquire now
WorldDefenseShow.com



FIREFIGHTING KA-32A11M

The upgraded Ka-32A11M firefighting helicopter produced by the JSC Russian Helicopters (part of Rostec State Corporation) took off for the first time and began flight tests. The machine fitted with new engines, radio-electronic equipment and fire-extinguishing system is to undergo preliminary and certification tests in 2022-2023, after which it will be available for Russian and foreign customers. The first flight of the Ka-32A11M took place in hover mode at the flight-testing complex of the Kumertau Aviation Production Enterprise in Bashkortostan.

'Modernization is significantly expanding the capabilities of one of the world's best firefighting helicopters, Ka-32, and we are planning to complete certification of the Ka-32A11M in 2023. After that, the machine with the latest electronics and firefighting system will be available for Russian and foreign customers,' said Andrey Boginsky, Director General of the Russian Helicopters.

Ka-32A11M was first presented at the MAKS-2021 Aviation and Space Salon. The modernization program of Ka-32 includes equipping it with a 'glass cockpit' with an onboard avionics system, more powerful VK-2500PS-02 engines, and a new fire extinguishing system. VK-2500PS-02 engines will significantly improve flight performance of the helicopter in hot and mountainous conditions. According to designers' calculations, helicopter load-carrying capacity in such conditions can increase by the value of about 1600 kg.

Technical solutions used in the 'glass cockpit' of the Ka-32A11M helicopter have already been tested on the civil multipurpose Ansat and Mi-38 helicopters; they will greatly facilitate the operation of additional navigation, optoelectronic and search equipment, which can be installed on the helicopter. It will also be possible to work with night vision goggles.

A new SP-32 fire extinguishing system developed by specialists from NHC Mil and Kamov and KumAPE has a number of significant advantages. A new tank holds 4 tons of water and is divided into four compartments. The patented flap system with digital control allows opening the flaps in pairs or alternately, as well as adjusting the opening angles of the flaps, thereby increasing the water discharge time. The fire extinguishing system can automatically draw 4 tons of water in 60 seconds and add up to 400 liters of foam agent and is adapted for the use of a water cannon.

Wheeled AFV With 125-mm Cannon

The High-Precision Weapons holding of the Rostec State Corporation is researching a design of wheeled amphibious armored fighting vehicle with a 125-mm cannon, said Vladimir Budaev, deputy chief designer of the Volgograd Tractor Plant (part of Kurganmashzavod, High-Precision Weapons holding company of Rostec State Corporation).

'We have an idea to install the Sprut-SDM1 module on a wheelbase chassis, which is also likely to be able to float. What specific wheelbase we will use is still an open question; there are several very effective variants available in Russia and it all depends on the final purpose of the vehicle and which kind of troops will use it,' he said.

Budaev specified: 'We assume that the wheeled Sprut will be export-oriented.' He said that in the Russian Armed Forces the use of a wheeled vehicle is less likely; priority is traditionally given to tracked chassis, which is more suitable for the geography of Russia.

The unofficial name for a family of armored combat vehicles on a wheelbase, armed with tank-caliber cannons, which are installed in a rotating turret is 'Wheeled tanks'. Usually, these combat vehicles have poor protection compared to tanks,



but have significantly greater mobility when used on general roads. They are also generally transportable by air. Wheeled tanks, for example, include French armored vehicles AMX-10RC, Italian Centauro or Japanese MCV. All of them are equipped with 105 mm guns in production versions.

Sprut-SDM1 is created by PJSC 'Kurganmashzavod' (part of the High-

Precision Weapons holding company). The Sprut-SDM1 is armed with a 125-millimeter artillery-cannon, can be transported by ships and planes, and can be dropped by landing and parachute methods. Sprut-SDM1 has speed on the highway at 70 km/h, afloat – up to 9 km/h. Now the combat vehicle is undergoing state tests.

Aspid for the export

The Central Scientific-Research Institute for Precision Machine Engineering (TsNIITochMash) of the Rostec State Corporation for the first time will export 9x19-mm sport self-loading pistol RG120 designed as part of the 'Aspid' (Elapid) development project. The first batch of pistols is to be delivered to a European customer this year.

The pistol has been designed on the basis of the combat 9x21mm pistol 'Udav' (Boa) and is intended for sport shooting at a range of up to 50 m. 'Aspid' is characterized by increased ergonomics and convenient configuration. Besides, special pads can be installed on the pistol handle at the request of the customer, adapted to the individual grip of the shooter.

'Russian weapons have been traditionally gaining success, both in the domestic and foreign markets. First of all, it is due to their reliability, ease of operation and high tactical and technical characteristics. 'Aspid' is a sport pistol developed on the basis of combat samples. The guaranteed resource



is 25 thousand shots. The pistol is equipped with an 18-round magazine, as well as a rail mount for sights and additional appliances – a Picatinny rail. 'Aspid' has a good export potential. The first batch will be delivered to a foreign customer by the end of

2021,' the Rostec speaker noted. The 9x19-mm Luger pistol cartridges or 9x19-mm Para pistol cartridges with a lead-core bullet are used with the pistol. The gun remains functional at temperatures from -30 up to +50 degrees centigrade.

VI International Exhibition of Arms and Technologies

kadex.kz



25-28.05.2022
Nur-Sultan, Kazakhstan

+ 7 (7172) 64 23 23
office@kadex.kz



Ministry of Industry
and Infrastructural Development
of the Republic of Kazakhstan

AEXKS



ADDITIVE TECHNOLOGY
FOR AIRCRAFT



Rostec State Corporation's Additive Technology Center (ATC) has launched mass 3D printing of parts for Russian aircraft engines. At the first stage, mass production of elements of the PD-14 engine fuel system for MC-21 aircraft was set up. By 2024, it is expected to produce about 2,000 elements of the engine's fuel system. Industrial 3D printing cuts the individual components production time from six months to three weeks. Moreover, additively manufactured components have lower weight while retaining their functional properties, thus increasing the useful load and improving other characteristics of the aircraft. 'Modern approaches to the design and production of engines for domestic aircraft construction, including the use of 3D printing, allow us to significantly increase the output of components without any loss to quality or reliability. We plan to continue consistent development in this area and believe that the future of the Russian aircraft engine construction lies in the synergy of innovative technologies and the rich experience of Russian design engineers,' said Rostec State Corporation's Aviation Cluster. PD-14 is the first turbofan engine created in contemporary Russia. It was developed with the use of cutting-edge technologies and domestic materials. The operating costs of the PD-14 are expected to be 14-17% lower than those of its incumbent counterparts, and the life cycle cost will be 15-20% lower. In September 2021, Rostec's ATC was licensed by the Russian Ministry of Industry and Trade to mass 3D printing of aviation products and became the first and only Russian company to date that has confirmed its competencies in mass industrial 3D printing for the aviation industry. The license enables the company not only to mass-produce prototype parts and blanks, but also to fully cooperate with the aviation industry. ATC engineers were involved in manufacturing parts for prototype engines PD-35, VK-650V and VK-1600V produced by the United Engine Corporation, hull products for Ansat-M helicopter, and many others. Today, the Additive Technologies Center has mastered the production of 450 types of parts.

Night Vision Device

Shvabe Holding (part of Rostec) engineers offer a new technological solution for laser range-gated imaging systems, designed to improve the functionality of opto-electronic surveillance equipment.

The development team of MZ 'Sapphir' (part of Shvabe Holding) received the patent. The new device enables surveillance in low light night-time conditions and low atmospheric visibility caused by fog, rain, snow and other weather events. This was made possible by introducing a thermal imaging channel, a passive mode control panel, and other technical elements. 'The proposed solution improves the functionality of night vision devices. Precision surveillance in difficult conditions and quick angular field adjustment without compromising the image quality are just some of the advantages of the new build. These capabilities set the device apart from the products that are currently on the market', says Sergey



Kuznetsov, CEO of MZ 'Sapphir'. The upgraded device is expected to deliver 3 to 10 power magnification. In normal atmospheric

visibility, the maximum recognition range will be 1 km for a human figure, 4 km for a truck, and 15 km for a ship.

'Listva' to Foreign Experts

The Ruselectronics holding company (part of Rostec State Corporation) has demonstrated the Listva remote mine clearing vehicle to foreign experts. The vehicle, developed by the Kaskad Instrument Plant in Krasnodar, can be used for detection and disposal of planted explosive devices at up to 100 m using electromagnetic and induction emitters.

Listva can be used as a forward demining vehicle in convoys of armored vehicles, combat engineers, or to ensure the safety of humanitarian convoys. 'Listva's main designation is to detect of explosive mines and dispose sapper munitions and improvised explosive devices', Director for International Cooperation and Regional Policy of Rostec State Corporation, Viktor Kladov. 'The vehicle is capable of providing full protection for the following convoy, practically replacing an entire unit of sappers.' During the forum, representatives of 10 foreign delegations assessed the Listva. Foreign delegations showed great interest in the microwave emitter, with the help of which the detect-



ed charges equipped with electronic elements are demined. The radiation 'burns' the electronics of the explosive device, rendering it unusable. If a pressurized mine is found, the crew, which includes sappers, makes a decision on controlled detonation or disarming of the device. To neutralize improvised explosive devices that are activated using mobile phones, Listva is capable of emitting radio signals at frequencies typical of civilian electronics. The detonation of the explosive occurs at a safe distance when the mine enters the active zone of the vehicle's emitter.

15-21 AUGUST
PATRIOT EXPO



INTERNATIONAL
MILITARY-TECHNICAL
FORUM



WWW.RUSARMYEXPO.COM



VLADIMIR PUTIN and ABDEL FATTAH EL-SISI

Relations between Russia and Egypt demonstrate stable principles of friendship and partnership in all spheres, including economic, political and military-technical cooperation. An important component of the good relations between our countries is the frequent contacts between the leaders of the countries – President of the Russian Federation Vladimir Putin and President of the Arab Republic of Egypt Abdel Fattah el-Sisi.



For example, in November of this year there was another Telephone conversation Vladimir Putin with Abdel Fattah el-Sisi, topical issues of Russian-Egyptian cooperation were discussed. The two leaders praised the level of comprehensive partnership and strategic cooperation between their countries, which are being developed in various spheres. A special focus was placed on trade and economic ties, above all the implementation of large joint projects such as the construction of the first nuclear power plant in Egypt based on Russia's model and the creation of a Russian industrial zone near the Suez Canal.

Mr Sisi expressed his gratitude for the effective joint work in the context of ensuring aviation security at Egyptian airports, which enabled all regular flights between Russia and

Egypt to be restored as of August 2021.

The two leaders noted the importance of further coordination of their steps on the international arena, including the settlement of various crises in the Middle East and Africa. The presidents agreed to maintain personal contacts.

In April of this year there was also Telephone conversation Vladimir Putin with Abdel Fattah el-Sisi. Taking into account the joint work that has been accomplished to ensure high standards of aviation security at Egyptian airports, an agreement in principle was reached to restore full-fledged air traffic between the Russian Federation and the Arab Republic of Egypt, which corresponds to the friendly nature of relations between the two countries and peoples. It was agreed that the relevant departments will work out the

practical parameters for the resumption of flights from Russia to the cities of Hurgada and Sharm el-Sheikh.

It was stated that the Agreement on Comprehensive Partnership and Strategic Cooperation between Russia and Egypt, which entered into force in January 2021, will further enhance bilateral cooperation in various fields. In this context, the progress in the implementation of large joint projects in trade, the economy and energy, as well as coronavirus response measures, including the supply of Russian vaccines and the localisation of their production in Egypt, were discussed. The leaders exchanged views on the efforts being made by both countries to promote a settlement in Libya.

Also important for the development of friendly relations between our countries was the telephone conversation between the leaders last June. The situation in Libya was discussed in detail. The Egyptian President informed his Russian counterpart about the talks held in Cairo on June 6 with President of the Libyan House of Representatives Aguila Saleh and Commander of the Libyan National Army Khalifa Haftar, where steps were proposed for a political settlement of the Libyan crisis. The Russian side praised the diplomatic efforts undertaken by Egypt. The two leaders reaffirmed their mutual interest in continued

coordination of efforts to ensure a speedy cessation of hostilities and the launch of inter-Libyan negotiations under the auspices of the UN.

Also, the parties discussed current issues of further development of the Russian-Egyptian strategic partnership, including cooperation in industry, nuclear energy, and joint efforts in fighting the coronavirus infection.

In January of that year, the two presidents continued to discuss the situation in Libya, including with consideration to the joint statement made by the Russian and Turkish leaders during Vladimir Putin's visit to Istanbul on January 8. Both sides stressed the need to step up interna-

tional efforts with a view to resolving the crisis in Libya by peaceful means, by facilitating political dialogue between the sides to the conflict.

Other items on the international agenda, including the developments in Syria and the Persian Gulf region, were also discussed. Current issues pertaining to bilateral relations, first of all, cooperation in the nuclear power industry, were also touched upon. Both presidents reaffirmed their intention to further develop the multifaceted Russian-Egyptian cooperation. It was agreed to maintain contact at various levels.

In October 2019, before the COVID-19 epidemic broke out in the





world, in the run-up to the Russia-Africa Summit in Sochi, Vladimir Putin met with President of the Arab Republic of Egypt, African Union Chairman and Co-Chairman of the Russia-Africa Summit Abdel Fattah el-Sisi.

In opening that meeting, Vladimir Putin noted: 'At the beginning of our meeting, I would like to thank you for your support during our preparations for the summit's events that involve the heads of state and government from African states and

Russia, and which are scheduled to take place today and tomorrow. We are hosting such a large-scale event for the first time, and your support was vitally important and timely.

As for our bilateral relations, they continue to develop very successfully. In 2018, our trade increased by 14 percent and reached \$7.7 billion. We continue to implement ambitious projects that have been coordinated by us, including a nuclear power plant and an industrial zone in Egypt. We are working very actively in these

areas, and we are planning to invest \$190 million in infrastructure development projects and to attract up to \$7 billion.

By the way, I have recently visited our common friends in the United Arab Emirates. They became extremely interested in our joint project and will also think of how to become involved in our joint industrial development plans. We have many infrastructure and transport projects.

Mr President, we maintain constant personal contacts: this is our third meeting in 2019. Cooperation between our foreign ministries and security services includes a broad range of issues on the international agenda, the fight against terrorism and organised crime. We are very happy to see you. Welcome.'

President of Egypt Abdel Fattah el-Sisi said: 'Thank you very much, Mr President. First of all, I would like to express my sincere gratitude and appreciation for your hospitality and the warm welcome I have been given in this wonderful city of Sochi.

Mr President, I would like to thank you for holding the first Russia-Africa Summit. Our relations have a long history in many fields and spheres, starting with Russia's support to the liberation movement in Africa. I would like to say that we are interested in coordinating our efforts with Russia so as to ensure the success of both the summit and the forum. We strongly hope that thanks to the contribution from many African countries we will attain practical results in the interests of all countries and parties based on mutually beneficial cooperation.

I would like to point out that we view Russia as a reliable partner of the African continent. We hope very much that Russia will be working in Africa in all spheres and fields, including in that of the development, as well as in the financing of infrastructure projects on the continent and in particular in energy and road construction.

As for bilateral relations, Mr President, I would like to assure you of our high appreciation of our bilateral relations, which are developing in various formats, especially after we signed a comprehensive cooperation

agreement. We sincerely hope that our relations will continue to develop in all fields and spheres.

I would like to speak about the spheres where we will be working together. Speaking about the Russian Industrial Zone, we have a strong interest in accelerating the implementation of this project in the Suez Canal Economic Zone. We also want to settle all the outstanding problems, so that Russian companies and enterprises come to Egypt, register and start working in this zone.

We highly appreciate our bilateral relations in the sphere of railway lines and the manufacturing of train carriages in Egypt. We hope very much that the Russian company concerned will be able to work in Egypt, especially after it has delivered 1,300 carriages to the country.

As for the nuclear power plant, we set a high value on our bilateral cooperation. We strongly hope that all topics related to this project will be settled without delay so that we can start implementing the project in accordance with the signed contract.

Mr President, I would like to invite you to visit Egypt once again so as to be able to attend the groundbreaking ceremony of this vital project and also to attend the signing of the contract on the Russian Industrial Zone in Egypt.

Mr President, we also hope that the Russian side will provide support to nuclear energy facilities in Egypt so that we can work and act in accordance with the approved schedule.

As for military cooperation, we have a strong interest in promoting our cooperation in this sphere, because we know that Russia has been a traditional partner in the field of military technical cooperation for many decades.'

In June of that year, a meeting was held in Osaka on the sidelines of the G20 summit. Vladimir Putin said at the time in particular: 'I am happy to meet with you. I would like to start our conversation by saying that relations between Egypt and Russia are developing dynamically, and we have plans to elevate them to a new and more advanced level, since this is the objective of the Treaty on Comprehensive Partnership and



Strategic Cooperation, which we signed during your visit to Russia in October 2018. Mr President, we appreciate your work as co-chair of the Russia – Africa Summit to be held in October in Russia. I hope we will both contribute to creating a new impetus for developing relations between Russia and Africa. I am also very pleased to have this opportunity to discuss our bilateral relations and the overall situation in the region.'

President of the Arab Republic of Egypt Abdel Fattah el-Sisi said:

'I also want to stress the special importance I attach to our relations, as well as to highlight our readiness to foster and enhance our bilateral relations at various levels, including at the strategic level. We are always committed to cooperation and developing relations in all areas, especially in the economy, trade, and also in countering terrorism. Thank you very much for the opportunity to take advantage of Russian's knowledge and expertise.'

/RA&MG/



FSMTC OF RUSSIA

Dmitry Shugaev: 'Our military equipment is highly efficient, quite easy to maintain and is much better than its competitors in terms of its unsurpassed ability to operate in severe geographical and weather conditions'



In accordance with the law of the Russian Federation, activities in the field of military-technical cooperation (MTC) with foreign countries shall be controlled and supervised by the Federal Service for Military-Technical Cooperation (FSMTC of Russia) that, among other things, shall ensure implementation of basic principles of the Russian government policy in the field of MTC. Dmitry Evgenyevich Shugaev, the Director of FSMTC, discusses main directions and tendencies in development of military-technical cooperation between the Russian Federation and foreign countries, the peculiarities of Russian military purpose product exporters' activities at the present stage in his interview to our magazine.

- Minister Shugaev, many countries need defense exports to capitalize on the economy of scale effect and make their systems more affordable. At the same time there is a considerable political component to arms trade. As for Russia is it more of a political or a commercial issue today?

– Well, the military-technical cooperation (MTC) is in essence a special area where economic and political interests of a country intertwine. It is the same for the majority of the countries no matter whether they export or import military purpose products (MPP). The economic aspect of MTC is certainly extremely important. Along with the scale effect, which you have aptly mentioned, for any country, not excluding Russia, successful military-technical cooperation contributes to the federal budget and helps us modernize the national industry. It is no secret that export contracts

ensure work-load for domestic industrial enterprises all over our country increasing production and creating jobs. Importantly, global competition of defense producers forces them to analyze success stories of rivals as well as the requirements of their partners so that they can better understand global industrial and technological trends.

At the same time even from the economic point of view the military purpose products' market is substantially different from other global markets such as raw materials, end-goods and services. First, fluctuations are quite rare in global arms trade while military purpose products are traditionally in high demand. However, the demand for arms is usually subject to the influence of such factors as national armies' modernization programs, importer states' overall economic stability and, in particular, funds allocated to purchase arms. So, evidently, even in economic terms arms market is influenced by both economic and political factors.

And, of course, MTC is an extremely 'sensitive' area. Both for the Russian Federation and for any other leading exporter of military purpose products it remains an important foreign policy tool.

Therefore, it will be correct to say that in pursuing our military-technical cooperation with foreign states Russia proceeds from its strategic interests that have both an economic and a political component.

– What are the principles, the system of cooperation in the field of MTC is based on today?

– Today the system of military-technical cooperation of Russia is built as a vertical relationship where Rosoboronexport is the only exporter of final military purpose products. Concurrently, there is also a number of entities in the field of military-technical cooperation of Russia that are authorized to provide service of the equipment previously purchased by customers, to upgrade it and to supply spare parts for this equipment.



These, in particular, include such integrated structures of the defense industry as the United Aircraft Corporation, the United Shipbuilding Corporation, Almaz – Antey Air and Space Defense Corporation and others. They obtained this right to service their equipment supplied to foreign customers as they represent defense industry itself, they embrace the factories that manufacture spare parts, components, etc.

Federal Service for Military-Technical Cooperation is an agency that controls and supervises all the activities related to military-technical cooperation and issues licenses. From strategic point of view the FSMTC of Russia plays the role of government policy 'conductor' in the field of military-technical cooperation and acts as a controlling and licensing agency at the same time.

However, all decisions regarding final supplies anyway are made at the highest level in Russia. That is, either an appropriate ordinance or instruction of the President or the Russian government should be issued. That's why I call it a 'vertical type of relationship.'

– How can you describe the development and dynamics of Russian activities in the field of MTC?

– First of all, I'd like to note that Russia is second in the list of world top exporters of military purpose products. It is not a secret that part of our export is made up by aviation equipment; export of the equipment related to aviation varies in the range of 40-50% of the total volume. Of course, we positively appreciate this fact, and we wish exporters of other

weapon types to achieve these figures as well.

At the same time we understand, that the market of military purpose products (MPP) is a very specific market having cyclic nature. A number of factors should be taken into account, including rearmament programs of armies, financial solvency of coun-

tries depending on their general economic health. Therefore, we do not expect any abrupt jumps, we are building long-term relationships that allow us to speak with confidence about stable growth of export supplies.

It is important to participate in long-term programs, providing

'Russia is a world-leading arms exporter. If we are to analyse Russian military exports over the past several years, the country has reached a steady level of weaponry and hardware exports at some 15 billion dollars per year.'



technical support to our clients and creating maintenance stations with an understanding that many of our clients aspire to improve their own industry, for example.

– **What trends currently drive the development of Russian arms exports?**

– Russia is a world-leading arms exporter. If we are to analyse Russian military exports over the past several years, the country has reached a steady level of weaponry and hardware exports at some 15 billion dollars per year.

Despite the sanctions which the USA and its allies keep piling up on Russia's defence companies and banking sector, and the threat of similar sanctions being introduced against our foreign partners, Russia continues successful military-technical cooperation with foreign coun-



tries in keeping with national norms, in strict adherence to the rule of international law, and in full conformity with its contractual obligations.

– **Which classes of weapons and military hardware are particularly popular with foreign customers?**

– Historically, or air force, air-defence and army equipment enjoys the greatest international demand. These three segments used to account for some 90% of Russia's entire arms export portfolio. We predict further growth in the military aviation segment, including as regards rotorcraft. We also expect an increase in orders for air defence systems. There is also good reason to expect the naval market to grow as the leading world powers are demonstrating an increasing interest in upgrading and bolstering their navies.

– **You have mentioned the projected growth in demand for air defence systems. Which objective advantages make Russian systems particularly appealing in this segment?**

– The experience of contemporary local conflicts demonstrates that the side which commands the more powerful air defences usually has an edge over the adversary. It is, therefore, only natural for Russia, which is a world-leading manufacturer of advanced air defence systems, to be looking to capitalise on this advantage in the global arms market.

This market segment is highly competitive. There are a number of countries that used to import air defence systems but are now entering the international market with indigenous products. These include India, South Korea, Turkey and South Africa, which could become our rivals in the future.

Despite the broad choice of air defence systems available in the global arms market, Russian products enjoy a steady demand. They surpass

foreign equivalents in a number of important technical parameters, and their price is also more appealing. The optimal combination of these characteristics is what ensures the steady global popularity of our products, as conceded by US and West European military experts.

Foreign customers note that Russian air defence systems meet the highest contemporary requirements. They appreciate the reliability, low maintenance and excellent repairability of Russian products. In addition, Russia offers a broad range of air defence equipment, from complex solutions to more affordable but nevertheless equally effective options for those governments which require protection of their airspace while not commanding significant financial resources.

The greatest international demand is currently observed for the Kub, Buk, Tor-M2E and S-300PMU SAM systems; for the Pantsir-S1 gun-and-missile system; and also for the S-400 and S-300VM Antey-2500 SAM systems. The S-300PMU Favorit and the S-400 Triumf are worthy of special mention. They have performed excellently in actual combat environments in Syria.

The Federal Service for Military-Technical Cooperation (MTS) is a key element of the power vertical managing the MNS system. As federal executive authority. Federal Service for Military-Technical Cooperation (FSMTC of Russia) performs MTS control and supervision functions. FSMTC of Russia reports to the Russian Federation President. FSMTC of Russia is subject to jurisdiction of the Russian Federation Defense Ministry.



– **How difficult is it for Russia to export weaponry and military hardware to countries that are members of military blocs (such as NATO)? Is politico-military affiliation a serious obstacle for those**

countries interested in procuring Russian weapons?

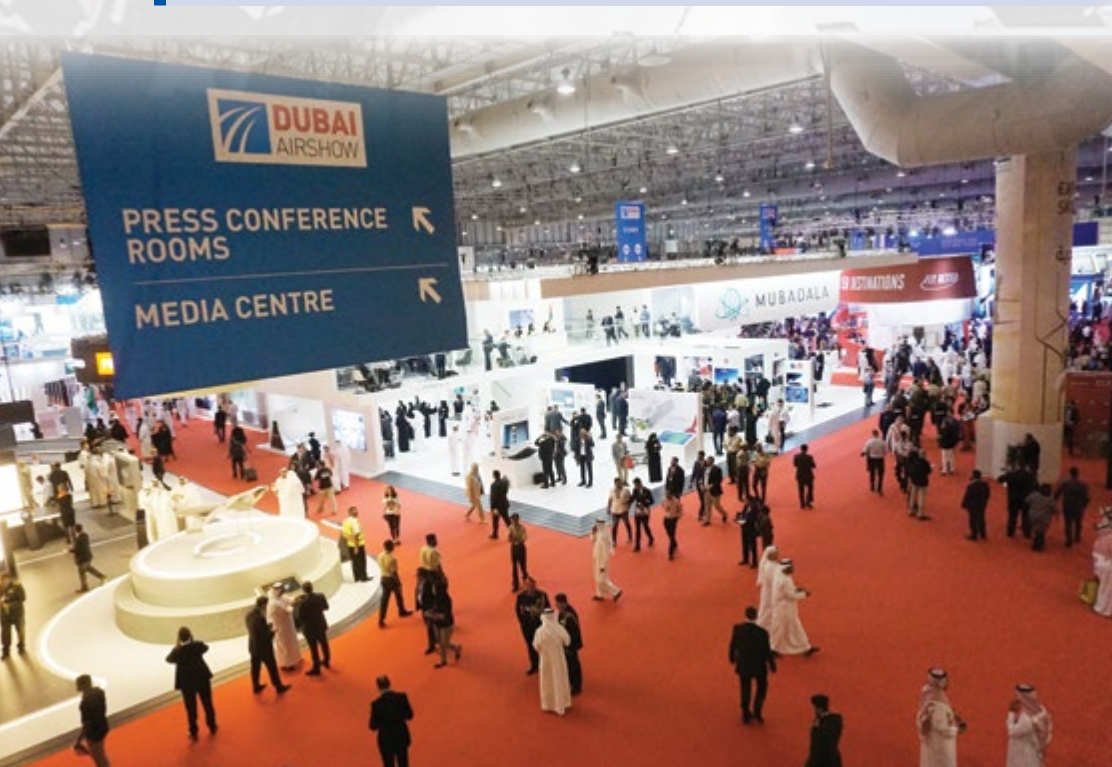
– We do not differentiate between countries that are members of military blocs and the rest of our customers. Russia sets no additional politico-military conditions in its bilateral relations when it comes to military-technical cooperation. Our country is open to mutually beneficial cooperation with all countries, irrespective of their affiliation with any military alliances.

That said, the global arms market generally remains highly politicised. Quite illustrative in this respect was the introduction of sanctions against Russian defence enterprises by the NATO member states and their allies. The sanctions have caused direct economic damage to many hi-tech manufacturers in NATO countries. This is why the political component and bloc mentality should not be disregarded.

Nevertheless, Russia is prepared to continue dialogue on military-technical cooperation with all interested partners. We continue such cooperation with Bulgaria, Greece, Slovakia and Turkey, all of which are NATO member states, and we discuss further prospects of this cooperation with the respective governments.

/R&MG/

'We do not differentiate between countries that are members of military blocs and the rest of our customers. Russia sets no additional politico-military conditions in its bilateral relations when it comes to military-technical cooperation. Our country is open to mutually beneficial cooperation with all countries, irrespective of their affiliation with any military alliances.'



RUSSIA at EDEX 2021

Rosoboronexport is organizing a large-scale display of Russian defense products

JSC Rosoboronexport (part of the Rostec State Corporation) will organize a large-scale exhibition of products from Russian defense enterprises at the International defense industry exhibition EDEX 2021, which will be held from November 29 to December 2, 2021 in Cairo, Egypt.

Egypt is Russia's most important strategic partner. Military-technical cooperation between our countries has a long history and is constantly developing in line with global market trends. Rosoboronexport is ready for further interaction with the Egyptian side in any modern formats and across the entire range of promoted military, dual-use and civilian products,' said Rosoboronexport Director General Alexander Mikheev. – At EDEX 2021 we will present in detail the latest developments of the Russian industry to representatives of all branches of the Egyptian armed forces and other African countries and hold

meetings and negotiations on topical issues in the field of security.

At EDEX 2021 Rosoboronexport is the organizer of a single Russian exposition, within the framework of which 12 major Russian manufacturers of weapons and military equipment for all types of the armed forces demonstrate their products in Hall 4 of the International Exhibition Center in Egypt. At its stand Rosoboronexport presents more than 350 samples of products including in the form of models: Yak-130 combat trainer aircraft, Mi-35M transport and combat helicopter, Ka-31 radar reconnaissance helicopter and Rubezh-ME coastal tactical missile system.

In addition, on the Rosoboronexport stand Remdiesel will present models of Typhoon and Tornado vehicles (see p.31), Concern Kalashnikov will demonstrate a wide range of small arms, including Kalashnikov AK-15, AK-19 and AK-308 automatic weapons, as well as the newest PPK-20 submachine gun and Lebedev pistol.

The world's largest manufacturer of armored vehicles, the Uralvagonzavod Concern, will show mock-ups of the best-selling weapons market models – the super-popular T-90MS tank and BMPT 'Terminator' in the Middle East and Africa, and the Petrovsky Plant will present a mock-up of the newest antitank land mine PTKM-1R. The Special Technology Center will present Orlan-10E unmanned aerial vehicles.



'Egypt is Russia's most important strategic partner. Military-technical cooperation between our countries has a long history and is constantly developing in line with global market trends. Rosoboronexport is ready for further interaction with the Egyptian side in any modern formats and across the entire range of promoted military, dual-use and civilian products. At EDEX 2021 we will present in detail the latest developments of the Russian industry to representatives of all branches of the Egyptian armed forces and other African countries and hold meetings and negotiations on topical issues in the field of security.'

Alexander Mikheev,
Rosoboronexport Director General





At EDEX 2021 Rosoboronexport is the organizer of a single Russian exposition, within the framework of which 12 major Russian manufacturers of weapons and military equipment for all types of the armed forces demonstrate their products in Hall 4 of the International Exhibition Center in Egypt. At its stand Rosoboronexport presents more than 350 samples of products including in the form of models: Yak-130 combat trainer aircraft, Mi-35M transport and combat helicopter, Ka-31 radar reconnaissance helicopter and Rubzh-ME coastal tactical missile system.

'Rosoboronexport notes a serious increase in the interest of foreign partners in Russian-made unmanned aerial vehicles. In 2021, the Orion-E reconnaissance strike drone entered the foreign market, and we are currently conducting more than 10 contract negotiations for it. Besides that, this year we have supplied more than 50 Orlan-10E drones to our customers. We are getting ready to launch new samples in the near future, including kamikaze drones and heavy strike vehicles,' said Alexander Mikheev.

Rosoboronexport will set up separate booths at the Cairo exhibition to

demonstrate products of the Almaz-Antey Concern, the Research Institute of Steel, and the Rostec holdings: High-Precision Weapons, Russian Helicopters, Technodynamika, and Roselektronika.

The Russian defense industry in Egypt will be represented by more than a thousand products. Foreign partners will be shown air defense systems and systems of different range, combat and transport aircrafts, including military transport IL-76MD-90A (E) and IL-78MK-90A tanker, helicopters, armored vehicles, products for the Navy, small arms, as well as a wide range of ammunition.

At EDEX 2021 Rosoboronexport plans to hold a public presentation of the Kornet-EM universal missile system and its crew equipment. The company's specialists will explain in detail the characteristics and capabilities of the system, as well as the peculiarities of its use, including in view of combat experience.

As part of the exhibition's business program, Rosoboronexport will hold meetings and negotiations with representatives of various branches of the armed forces and branches of the Ministry of Defense of Egypt and other countries. It is planned to discuss further cooperation in all areas of defense topics relevant to the region, including countering terrorist groups.

/RA&MG/

The Russian defense industry in Egypt will be represented by more than a thousand products. Foreign partners will be shown air defense systems and systems of different range, combat and transport aircrafts, including military transport IL-76MD-90A (E) and IL-78MK-90A tanker, helicopters, armored vehicles, products for the Navy, small arms, as well as a wide range of ammunition. Russian military products at EDEX 2021 include innovations from the Rostec holdings: High-Precision Weapons, Russian Helicopters, Technodynamika, and Roselektronika.



ALMAZ – ANTEY at EDEX 2021

At the second edition of Egypt Defence Exhibition (EDEX) this year, the umbrella exposition of Almaz – Antey Corporation will present products by six of its subsidiaries: NPO Almaz, Ulyanovsk Mechanical Plant, Izhevsk Electromechanical Plant Kupol, Granit, Dolgoprudny Research Production Enterprise and VNIITR Scientific Research Institute of Radio Engineering.

At EDEX 2021, the Corporation will be demonstrating mock-ups of the Antey-4000 long-range SAM system, the Viking and S-350 Vityaz medium-range SAM systems, the Tor-M2E and Tor-m2K short-range SAM systems, and the Adjutant target training system. Also on display will be mockups of the Podlyot-E, Kasta-2E2 and Gamma-DE radars as well as of the Redicom maintenance centre.

The exposition personnel will be delighted to inform visitors about the S-400 Triumf, Buk-M2E, Tor-A and Tor-EA SAM systems, as well as about the 9F678M training system and the Rif-M. Shtil-1 and 9K96-3E Resurs shipborne systems.

Apart from military produce Almaz – Antey will also showcase mock-ups of air traffic control and airport security products, includ-

ing the Sopka-2 en-route radar, the RLK-10RA and Lira-A10 airfield radar systems, and the ROSC-1 anti-UAV radar system.

The Corporation will inform EDEX 2021 guests and participants about its development, production, after-sales support, modernization, repair and disposal capabilities.

Vyacheslav Dzirkaln, Almaz – Antey's deputy general director for foreign economic activity, said in the run-up to the exhibition that the Corporation's exposition at EDEX 2021 would be tailored to the peculiarities and interests of the Middle East and Northern Africa. According to him, particular attention will be

paid to the possibilities of establishing after-sales support centres in comfortable proximity to customers. 'Apart of our defence products we will inform specialists about the benefits of our civilian and dual-use solutions,' he stressed, adding that Almaz – Antey as a leading Russian defence corporation has a reputation as 'a reliable supplier of the best air-defence and radar systems capable of providing guaranteed airspace protection for both separate areas and entire countries'.

Dzirkaln expressed his confidence that the Corporation's exposition at EDEX 2021 would arrest the attention of both visitors, existing customers

and potential clients: 'I have no doubt that EDEX 2021 will prove beneficial to further strengthening of Russo-Egyptian defence industry ties and to the development of Egypt's defence industry. All the more so as the forum has already established itself and is tipped to become a major international defence sector event.' /RA&MG/

Almaz – Antey Corporation, one of the largest Russian defence companies, incorporates over 60 hi-tech enterprises and employs more than 130,000 personnel. It exports to more than 50 countries around the world.





ADJUTANT

ADJUTANT

New-generation air defence crew training system

Continuous recurrent and advanced training is an important factor in creating an effective air-defence system. Contemporary aerial threats are growing ever more complex targets with smaller radar cross-sections and improved manoeuvrability. Assured air-defence protection requires crews that would know about the enemy assets in advance. The Adjutant universal target training system is a new-generation air-defence training solution.

The Adjutant was developed by Izhevsk Electromechanical Plant Kupol (an Almaz-Antey Corporation company) in conjunction with and to specifications of the Russian Defence Ministry.

It is intended for training crews of all types of air defences, from long-, medium- and short-range SAM systems to MANPADS and anti-aircraft guns. The Adjutant introduces trainees to a wide variety of targets realistically similar to contemporary and advanced aerial threats.

Each Adjutant system currently includes six targets of four different types: a turbojet-powered missile, a turbojet-powered fixed-wing aircraft, a propeller-driven fixed-wing aircraft, and a rotorcraft. The unmanned targets have a low radar cross-section so are low-observable by radars. The catapult launch is performed with the use of a rubber band and an electric motor. The targets are controlled from a mobile ground station. The system includes portable airspace situation visualisation, communi-

cations and personnel life support equipment.

The targets emulate a wide range of aerial threats, from fixed- and rotary-wing aircraft to reconnaissance/strike UAVs and cruise missiles. All six targets may be launched simultaneously and operated from the same station to create complex airspace situations. Depending on the type they can stay in the air between 30 minutes and four hours, controlled both automatically (when proceeding along a pre-programmed route) and manually. The targets imitate contemporary aerial threat tactics by performing manoeuvres including dives, pitch-ups and S-turns, emulating low-hovering and popping-up helicopters and so on. The system allows for creating various difficult-to-predict target trajectories, thus emulating real-life aerial combat,

with the air-defence crews not knowing in advance what targets they will encounter, how many there will be, from what direction and along what trajectory they will be travelling. The system's advanced algorithms significantly complicate the task of intercepting targets, which raises the quality of training.

The system's open architecture allows for using appropriate targets by other manufacturers. Kupol is also working to introduce new target types. The enterprise has already designed a target imitating a make-shift UAV and is planning to create a missile-type target with a significantly higher airspeed and a small-sized fixed-wing target with expanded flying characteristics. In parallel, Kupol is experimenting with various payload types in conjunction with the existing targets. For example, targets may be used for target towing (in which case it is an inexpensive towed mock-up that gets destroyed and not the towing aircraft). In future Kupol plans to introduce the interoperability option enabling two or more systems to operate in concert. This would allow for using up to 12, 18 or more targets simultaneously and sufficiently expanding the capabilities of imitating complex aerial attack situations which are characteristic of contemporary UAVs and other types of aerial threats.

The Adjutant's key feature is that it is based on an all-new philosophy: instead of costly single launches, in the course of which the targets are destroyed, it provides for reusability of targets. The system is primarily intended for drilling the detection, tracking and notional destruction of targets, without their physical

destruction. The idea is to use targets nearing the end of their service life in live firing practice. This will result in a dramatic reduction in training costs, thus allowing for multiple training cycles and ensuring quality training of air-defence personnel.

The Adjutant is easy to operate. The standard deployment time is 2 hours but it can be reduced if necessary (Kupol personnel prepare the system for use in just 20 minutes). The crew comprises seven troops, of whom only the commander is an officer. Learning to operate the system only requires 1.5 to two months of theoretical studies and two weeks of practice. The catapult launch principle means that the system does not contain explosive components (gunpowder, compressed air and so on) so is safe to operate. This is truly a field system: it is reliable, safe and easy to operate by ordinary troops.

Prior to its being put into service the Adjutant was repeatedly used in creating target situations dur-

ing exercises and testing of virtually all the air-defence systems in service with the Russian Armed Forces, including the latest S-300V4 and Tor-M2DT SAM systems. The Adjutant fully met its declared specifications and proved the correctness of its concept in general, gaining recognition from Russian and foreign military specialists. In February 2021 the Adjutant was successfully used during the tests at the Sary-Shagan training ground of the Buk-M2E SAM systems supplied by Russia to Kazakhstan. The Kazakh Air Defence Forces are now planning to procure the system.

/RA&MG/

The Adjutant universal target training system is a highly efficient and cost-effective training aid for air-defence crews, helping personnel to significantly improve their skills in repelling contemporary aerial threats.




NGPP Region
Tactical Missiles Corporation
115230 Russia, Moscow,
Kashirskoye Shosse 13A
phone: +7 499 611 30 50
fax: +7 495 741 55 55
e-mail: gnppregion@sovintel.ru
website: gnppregion.ru

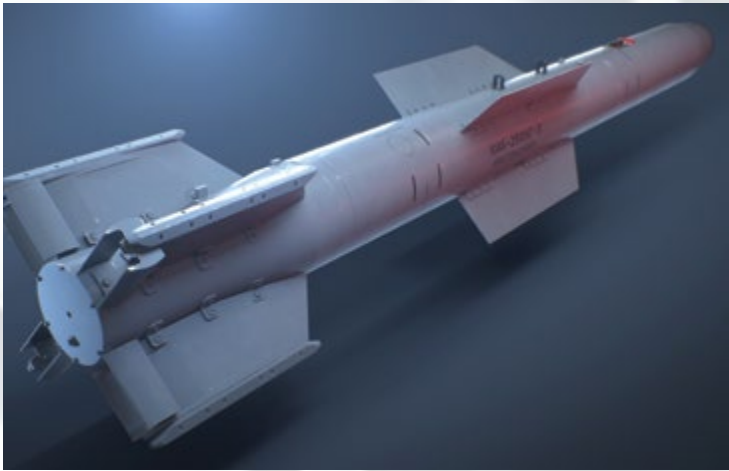
GNPP REGION'S NOVEL MUNITIONS

Region Scientific and Production Enterprise (GNPP Region, a Tactical Missiles Corporation company), Russia's leading design house for sea- and air-launched precision munitions, regularly presents new types of effective weaponry on the global market.

KAB-250LG-E

High precision in a small-size device. High-tech solution lets using the bomb within a range of from 1 to 10 kilometers in altitude, from a wide range of carriers, including unmanned aerial vehicles.

The GBU is intended for wiping away highly vulnerable equipment, rail junctions, ammunition depots and similar objects. Combat employment from task air force aircrafts allows both single and salvo firing. Target indication can be provided from carriers equipped with target laser illumination systems as well as by external target indication means.



Key specifications:	
Mass, kg	256
Length, mm	3,200
Diameter, mm	255
Charge mass, kg	165
Fuse	contact type with three delay options
CEP, m	up to 5

KAB-500S-E

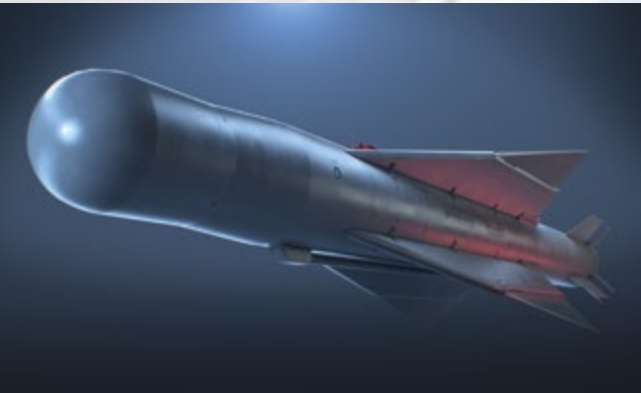
At any time of the day, in any weather conditions, based on principle 'fire-and-forget' – this is the high-tech solution Region offers for 4+ generation aircrafts.

The satellite homing head used in this GBU provides for multi-purpose applicability of the product and high precision in combat missions. The bomb is intended for hitting stationary ground and water surface targets: military industrial infrastructure facilities, warehouses and ships moored in ports.

The GBU is used at altitudes from 500 to 5000 meters and is an integral part of the weapon systems of task air force serial production aircrafts.



Key specifications:	
Mass, kg	560
Length, mm	3,000
Diameter, mm	400
Charge mass, kg	460
Fuse	contact type with three delay options
CEP, m	7-12



UPAB-1500B-E

The best-in-class product of 'Region' enterprise within 'fire-and-forget' concept is applied as part of weapon systems of 4++ and 5 generation aircrafts from altitude of up to 15 kilometers.

The glide bomb is intended for damaging targets with known coordinates such as strongholds, deeply grounded targets and highly vulnerable objects of high importance. It uses a bunker-buster high-explosive warhead weighing over a ton and can penetrate through several meters of concrete-reinforced barriers.

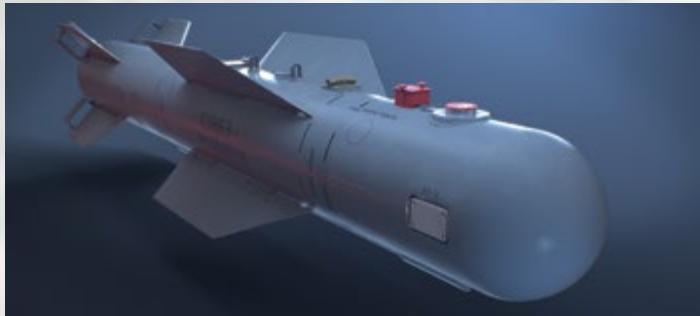
A high-precision satellite-aided inertial homer ensures that the bomb can be dropped any time of the day and in any weather conditions. Its features are reinforced by unique design that enables its firing at ranges of up to 50 kilometers from the target. This lessens the threat to the aircraft from the enemy's local air defense units.

Key specifications:	
Mass, kg	1,525
Length, mm	5,050
Diameter, mm	400
Charge mass, kg	1,010
Fuse	contact type with three delay options
CEP, m	up to 10

K08BE

The new high-precision product of the enterprise is equipped with a satellite-aided inertial homing head and a high-explosive warhead. The Guided bomb unit (GBU) is intended for inflicting damage to a wide range of stationary targets in different weather conditions, at any time of the day and at a range of up to 40 kilometers.

The main targets of the GBU are enemy personnel and military equipment, armament and POL depots, railway and highway bridges, ships and vessels at a roadstead, equipment at airfields and military industrial infrastructure facilities. The bomb is used as part of weapon systems of task air force aircrafts at altitudes up to 15 kilometers.



Key specifications:	
Mass, kg	505
Length, mm	2,840
Diameter, mm	355
Charge mass, kg	390
Fuse	contact type with three delay options
CEP, m	up to 10

RADAR P-18-2 'PRIMA'

THE BEST OF THE BEST IN METER BAND



Highly mobile two-coordinate surveillance and target designation Radar P-18-2 'PRIMA' is intended for automatic acquisition, tracking, coordinate measuring and identification friend or foe of aerial objects of various types and classes under active noise jamming and passive interference environment, direction finding of active noise jammers, radar data transfer to automation means of consumers.

The Radar 'PRIMA' operates in meter wave band and it is able to effectively acquire air vehicles of various classes, contemporary and challenging low-speed, low-observable and stealth technology targets. With all this the Radar operates under active noise jamming and passive interference environment and in the area of rough terrain (ground clutter rejection ratio not less than 52 dB) and marginal weather. Limits of Radar operation are as follows: coverage in range from 500 meters to 400 km, in elevation 45 degrees, in azimuth 360 degrees. The Radar has three scan rates of antenna – 3, 6 and 12 rpm, as well as sector search that allow acquisition of minor aerial surveillance drones.

The Radar is built on solid-state technology including transmitting and receiving device. It has digital signal processing and features high potential and increased interference immunity.

The 'PRIMA' advantageously differs from the most of the Radar stations represented on the market by its high mobility, achieved due to mounting of all equipment and antenna-mast device on one transport unit – a high-cross-country automobile chassis. At the same time the combat crew of the Radar consists of two men that can operate both from an equipped vehicle cabin and from remote operator's work stations at a distance of up to 1000 meters. The Radar has a high degree of readiness for operation – the time of its automatic rolling-up (rolling-in) is less than five minutes.

The Radar levelling and orientation is automatic due to the presence of satellite navigation equipment operating on GLONASS/GPS signals.

The 'PRIMA' power supply is provided by a built-in diesel power plant consisting of a diesel-generator and a

power take-off generator of the truck engine. In addition, the Radar can be connected to a three-phase general-purpose network. At the request of the Customer the standard diesel-power electric station can be replaced by a similar one, including foreign make. The automobile base chassis of the station can also be replaced by a similar one.

At the same time in the set of the Radar it is possible to supply an additional cabin on the vehicle chassis that houses an operator's workstation, interface equipment, automatic dependent surveillance – broadcast (ADS-B) equipment, air conditioning and ventilation system equipment, spare parts and accessories, stand-by diesel-power station and power take-off generator, a work bench for repairing equipment and combat crew rest compartment.

The Radar 'PRIMA' has unique technical capabilities to integrate into existing national air defense systems of customers, significantly increasing their effectiveness.

Consumers in many countries came to understanding that one of the main modern threats is the low-observable targets (UAVs) and stealth-technology aircraft F-35 type, which are capable of carrying different kinds of weapons. The P-18-2 'PRIMA' Radar is meant for effective acquisition of suchlike targets. That type of Radars is necessary to repel modern threats and, if the Customer possesses this radar, target acquisition, tracking and target designation for such air objects becomes a regular activity that will permit the country's air defense system to operate more effectively.

The P-18-2 'PRIMA' Radar corresponds to all the requirements and current standards and is indispensable for any country thinking of its safety.

/RA&MG/



TYPHOON K-4386

AIR-DROPPED MULTIPURPOSE VEHICLE



It is intended for running a combat mission with built-in armament and performing the tasks of combat, logistical and other types of support, e.g. transportation of the crew, military and other freights. High rates of cross-country ability, travelling speed, towing and dynamic performance, maneuverability on all types and terrains. Protection solutions ensure safety of personnel up to 8 people.

RD REMDIZEL

remdizel.com

DUBAI AIRSHOW 2021

The largest aerospace show was very successful and promising

17th edition of Dubai Airshow was from 14-18 November 2021 at Dubai World Central (DWC), Dubai Airshow Site. Dubai Airshow is one of the largest and most successful air shows in the world, connecting aerospace professionals across all areas of the industry to facilitate successful global trade. Dubai Airshow was held under the patronage of His Highness Sheikh Mohammed Bin Rashid Al Maktoum, Vice President, Prime Minister of the UAE, Ruler of Dubai and UAE Minister of Defence. The event was held with the support of the Dubai Civil Aviation Authority, Dubai Airports, the UAE Ministry of Defence and Dubai Aviation Engineering Projects, and organised by Tarsus Middle East. JSC Rosoboronexport (part of the Rostec State Corporation) was showcasing the latest Russian-made Air Force, Air Defense and Electronic Warfare equipment at the Dubai Airshow 2021.

Dubai Airshow 2021 was the biggest edition of the event since it began in 1989. The Airshow brought the aviation, aerospace, space and defence industries together for what was the most extraordinary experience in the history of air shows.

This year, the event were welcomed more exhibitors than ever before, including over 370 new exhibitors, and representatives from almost 150 countries. There were civil and military delegations from more than 140 countries and the event will feature 20 country pavilions, including new additions from the Czech Republic, Belgium, Brazil, Israel, and Slovakia.

The global event was welcomed more than 85,000 visitors this year. It

were featured world-class products, solutions, technologies, and services from market leaders and disruptors, enhanced networking opportunities and state-of-art aircraft display along with major industry announcements.

The event was officially inaugurated by His Highness Sheikh Hamdan bin Mohammed bin Rashid Al Maktoum, the Crown Prince of Dubai who led the Royal Tour in the morning.

One of the biggest highlights of the show were the static park and flying display, which featured more than 175 of the world's most advanced aircraft on ground and in the air. The Airshow were featured aerobatic displays from the UAE Air Force's Fursan, the Russian Knights, the Saudi Hawks, Surya Kiran from

India and the Sarang Team of the Indian Air Force.

Checkmate, the next generation Sukhoi fighter jet was make its first international debut for the next generation Sukhoi fighter jet. The Boeing 777X and the Leonardo AW609 also debuted at this year's Airshow.

This year, Dubai Airshow has introduced a host of free-to-attend conferences featuring more than 250 industry experts, who will be providing more than 50 hours of invaluable insights and trends across nine tracks including cargo, sustainability, technology, and space among others.

Aerospace startups took part in the brand new startup hub where they had the opportunity to showcase their breakthrough solutions, take part in pitch competitions

with major local and global aerospace entities such as Etihad Airways, Mohammed Bin Rashid Space Centre (MBRSC), Amazon Web Services (AWS) and Boeing Applied Innovation. Entrepreneurs will also have the chance to get involved in mentorship programmes, workshops, and high-level networking with leading investors and accelerators.

There were new aircraft demos from Bellwether Industries presenting the Antelope, an urban vertical take-off and landing vehicle with hidden propellers as well as Manta Aircraft's ANN2, a two-seat model for personal air mobility with wide regional range at high speed.

Dubai Airshow 2021 had a major focus on technology, providing a dedicated platform for showcasing the latest emerging technologies, including Artificial Intelligence (AI), 5G, cybersecurity and automation. A brand new feature for the show this year is the Dubai Airshow application, which harnesses the power of AI to facilitate business matchmaking based on profile and interest.

Significant Russian participation

JSC Rosoboronexport (part of the Rostec State Corporation) was showcased the latest Russian-made Air Force, Air Defense and Electronic Warfare equipment at the Dubai Airshow 2021.

'We are strengthening partnerships with Middle Eastern countries. This involves not only the supply of

military equipment – orders coming from this region through Rosoboronexport account for more than 30% of our order book – but also the development of cooperation in civilian areas. This year, Rostec is exhibiting a record number of new products. The Airshow will be hosting the world premiere of the MC-21 passenger airliner powered by Russian PD-14 engines, a VIP version of the Superjet 100 passenger aircraft in the style of the Aurus brand and the Checkmate fifth-generation stealth fighter aircraft. We have also brought the Ka-226T and Ansat civilian helicopters in various configurations and Ka-52 and Mi-28NE attack helicopters to the exhibition. All the new products will be displayed as full-scale mock-ups so that foreign partners can get better acquainted with our equipment,' said Rostec CEO Sergey Chemezov.

At its stand, Rosoboronexport exhibited scale models of air and air defense systems having a high market potential in the Middle East region. Among them were the fifth generation Su-57E stealth fighter and the generation 4++ Su-35 fighter, IL-76MD-90A(E) military transport aircraft, Mi-28NE, Ka-52 and Mi-17V-5 helicopters, S-400 Triumph air defense missile system and Tor-M2KM SAM system.

'Foreign partners in the Middle East are traditionally interested in new high-tech products, and every time we bring here the main new export products from the Russian



defense industry and unique proposals for industrial cooperation,' said Rosoboronexport Director General Alexander Mikheev.

For the first time at Dubai Airshow, Rosoboronexport showcased products at its stand using a kinetic multimedia installation composed of 60 moving screens. The Repellent-Patrol, Kupol and Pishchal-PRO counter-drone systems, as well as the most popular Russian-made unmanned aerial vehicles, Orlan-10E reconnaissance and the Orion-E reconnaissance/attack UAVs, was presented in such a format.

The Russian exhibit also comprised products from Rostec's holding companies including the United Aircraft Corporation (UAC), United Engine Corporation (UEC), Russian Helicopters, High-Precision Systems and Radio Electronic Technologies





Group (KRET). In addition, the National Aviation Service Company, a state intermediary for servicing exported Russian military aircraft, was present for the first time abroad.

Almaz-Antey Air and Space Defense Corporation, the world leader in the development and production of air defense and electronic warfare systems, exhibited a wide range of anti-aircraft missile systems that Rosoboronexport has been successfully promoting in the Middle East, including the S-400 Triumph, Antey-4000, S-350E Vityaz, Viking, Buk-M2E and Tor-M2E in various configurations.

At Dubai Airshow 2021, Rosoboronexport was orga-

nized a demonstration of the latest reconnaissance/attack and attack unmanned aircraft systems (UAS) developed by the Kronstadt Company. For the first time in the world, the largest Russian UAV developer and manufacturer was unveiled scale models of the Inokhodets-RU (Ambler) long-endurance reconnaissance/attack UAV, the Helios-RDL long-range early-warning radar picket UAV and the Grom (Thunder) high-speed attack UAV at its stand.

In addition to organizing outdoor and indoor exhibits, Rosoboronexport conducted a large-scale campaign to promote Russian military, dual and civilian products on digital platforms. Text and multimedia materials, presentations of

the most promising products were posted on the company's website and in social networks.

'During the exhibition, we will pay special attention to technology cooperation. Today Rosoboronexport has a number of ongoing joint projects in the Middle East for the licensed and joint production of armored vehicles, small arms and anti-tank weapons. As a result, the countries in the region know us not only as a reliable supplier of final products, but also as a highly competent partner in technology transfer,' said Alexander Mikheev.

Several important documents were signed at the exhibition. For example, Russian Helicopters Holding of Rostec State Corporation and the UAE company AJ Holding LLC set up a joint venture Alpha Aviation LLC in the Ajman Free Zone to promote and sell Russian civilian helicopters abroad.

The key market for Alpha Aviation will be the Middle East, where it is expected to sell more than 20 civilian helicopters of various types, including the Ansats, Mi-171A2, Ka-32, and Mi-38 by 2026. The scope of responsibility of the joint venture also includes the organization of service maintenance of Russian helicopters in the region.

'AJ Holding is a reliable partner for the promotion of our civilian products in the Middle East. The joint venture format will allow us to expand our presence in a region that is extremely important for us. The company started operating a

few months ago but we can see the results already now: during Dubai Airshow 2021, Alpha Aviation signed a contract for the delivery of two Mi-171A2 helicopters to Peru and an agreement for the delivery of four Ansats helicopters and one Mi-17-1V to the police of Ras al Khaimah,' said Andrey Boginsky, Director General of Russian Helicopters.

Three presentations from the UAC

The United Aircraft Corporation has presented three new products abroad for the first time: a medium-range MC-21-310 with Russian-made PD-14 engines, a new version of a business aircraft based on the Superjet 100, and a light tactical aircraft Checkmate.

'This is the first foreign aviation event of such scale after the global lockdown. We see quite a high level of interest in Russian equipment. And for us it is, of course, the opportunity to present our achievements. First of all, it's MC-21 with the PD-14 engine. The airplane have arrived here straight from the tests; its cabin is fitted with measuring equipment. Another premiere is a business jet Aurus. People here are very interested in such machines, even more so because our aircraft has an attractive combination of features and cost. And, of course, we are presenting to foreign specialists the fifth-generation single-engine Checkmate. This is a significant step forward for us: the aircraft will be unique in terms

of its combination of combat characteristics, possibilities of an upgrade, operating costs, and fifth-generation characteristics,' UAC President Yury Slyusar told to journalists.

MC-21-310 took part in the salon's air show program performing its first foreign demonstration flight, which included such elements as a quick climb to 800 m, turns with climb and descent, a zoom maneuver with a 45 degree angle and minimum speed of 210 km/h, a 2g turn, a 100 m high pass with a welcome rocking of the wing to the exhibition visitors. For the exhibition, a part of business and economy class cabin was installed on the airliner. This allowed the demonstration of one of the advantages of the MC-21 – a larger passage between seats, provided by the widest fuselage in its class.

The UAC exposition was visited by a number of delegations from the UAE and other countries. Particular attention was to the updated version of the business aircraft based on the Superjet 100 and presented for the first time in Dubai under the Aurus business jet brand, next to the Aurus Ansats helicopter and the Aurus Senat limousine. The aircraft is part of the line of Russian high-tech luxury products promoted under this brand.

On the same day, the first foreign presentation of the Checkmate light tactical aircraft took place. The prototype of the new aircraft was presented in a specially constructed pavilion, which allowed for a spectacular multimedia presentation. The pavilion is expected to be visited by representatives of potential customers, specialists and other guests on the following days.

The UAC delegation has an intensive business program scheduled for all days of the air show, including meetings and negotiations with current and potential partners, representatives of interested countries and heads of major corporations from the UAE and other states.

The UAC joint exhibition stand (No. 895) displays models and multimedia presentation of all current aircraft construction programs of the corporation, including Su-57, Su-35, MiG-35, Yak-130, Il-76MD-90A, Il-114-300, Be-200, Superjet 100 and MC-21.



Special Premiere – Checkmate

At the Dubai Airshow 2021 was featured special presentation of the Checkmate light tactical aircraft, also in format for the delegations of several countries and an open demonstration for the media.

'It is not a coincidence that the first international presentation of the new 5th generation fighter is taking place here, at the Dubai Airshow. People in the Middle East appreciate the reputation of Russian weapons, show great interest in our advanced products and seek the development of partnership with Russia. The Checkmate combines low visibility and excellent equipment, and is ideal in terms of combat effectiveness and flight hour cost. All these factors make the aircraft a unique offer in



the international arms market,' said Rostec head Sergey Chemezov.

Checkmate is Russia's first fifth-generation single-engine aircraft, created by Sukhoi, part of Rostec State Corporation's UAC Holding Company. The fighter was first presented in July 2021 at the MAKS-2021 air show. The key features of the aircraft are its low visibility, low flight hour cost, open architecture and high cost-effectiveness.

'Checkmate was developed on the basis of scientific and technical groundwork gained in the course of creation of the export version of Su-57E. In particular, the aircraft inherited the cockpit, onboard systems, and some other elements. This reduces the aircraft's cost and simplifies its maintenance,' Rostec's Aviation Cluster spokesperson said.

Rostec State Corporation also unveiled the unmanned modification of the Checkmate 5th generation light tactical aircraft developed by Sukhoi Company of the United Aircraft Corporation.

The unmanned version of the aircraft complex was shown in a new video posted on the YouTube channels of Rostec State Corporation and the United Aircraft Corporation, as well as in a new informational special project.

The protagonist of the video, the Air Force commander of a foreign country, describes the advantages of the 5th generation aircraft and the project philosophy.

The Checkmate light tactical aircraft developed by Sukhoi Company (part of Rostec's United Aircraft Corporation), Russia's first single-engine fifth-generation aircraft, was first presented in July 2021 at MAKS-2021 air show. The key characteristics



of the aircraft are its low visibility, low flight hour cost, open architecture and high performance in terms of 'cost-effectiveness'.

Light helicopter Ka-226T

During the Dubai Airshow 2021 the 'Russian Helicopters' Holding Company (a part of Rostec State Corporation) was demonstrated the deeply modernized climber light helicopter Ka-226T. Andrey Boginsky, Director General of Russian Helicopters Holding Company, reported on the progress of the Ka-226T light helicopter modernization project during a working meeting with President of the Russian Federation Vladimir Putin. For the first time, Ka-226T Climber was presented at the international aerospace show MAKS-2021, and at the eve of the Dubai Airshow 2021 the helicopter began flight tests and completed its maiden flight.

The modernized Ka-226T is the first helicopter in Russia to be manufactured according to digital design documentation. This initiative made it possible to significantly reduce time for building the machine and to start flight tests in a short time.

The modernized Ka-226T is the first helicopter in Russia to be manufactured according to digital design documentation. This initiative made it possible to significantly reduce time for building the machine and to start flight tests in a short time. At the Dubai Airshow 2021 Ka-226T aroused genuine interest among foreign customers due to its excellent flight performance, allowing it to operate at altitudes up to 6.5 kilometers, versatility, convenience and safety.

Ka-226T has a coaxial rotor design, which provides good controllability in thin air, resistance to strong side winds, high rate of climb, ability to take off and land on sites located at high altitudes. Helicopter is also highly effective when flying over water surfaces. It can take off and land on the deck of even small marine vessels.

The aircraft is characterized by low vibration level, ease and simplicity of operation, ability to take off and land on minimum size grounds (including urban infrastructure), high accuracy of hovering even when working with cargo on the external sling, and safe passenger boarding with working rotors.

Thanks to its key feature – adaptability to high altitude flights – the Ka-226T modernization project received operating name 'Climber'. Aircraft airframe features new design with significantly improved aerodynamics which distinguishes it from previous models of the Ka-226 family. The fuselage of improved aerodynamic shape is made using modern lightweight materials. Ka-226T has received a new rotor head, blades, and main gearbox, as well as a shock-proof emergency-resistant fuel sys-



tem, which meets increased safety requirements.

The helicopter is also fitted with a new complex of pilot navigation and radio communication equipment; it can optionally have oxygen equipment, ballonnets, air conditioning and heating systems.

Ka-226T has a coaxial rotor design, which provides good controllability in thin air, resistance to strong side winds, high rate of climb, ability to take off and land on sites located at high altitudes. Helicopter is also highly effective when flying over water surfaces. It can take off and land on the deck of even small marine vessels.

The aircraft is characterized by low vibration level, ease and simplicity of operation, ability to take off and land on minimum size grounds (including urban infrastructure), high accuracy of hovering even when working with cargo on the external sling, and safe passenger boarding with working rotors.

Mass manufacturing of upgraded Ka-226T helicopter in close cooperation with Kumertau aviation production company at Ulan-Ude Aviation Plant is scheduled to begin in 2022.

First flight Mi-28NE abroad

At Dubai Airshow 2021 Mi-28NE attack helicopter manufactured by 'Russian Helicopters' Holding Company (Rostec State Corporation) made its first demonstration flight as a part of the flight program international exhibition. Guests and participants had the opportunity to enjoy complex aerobatics of the combat helicopter with the unique maneuverability. Famous Russian Mi-28 attack helicopter in its export modi-



fication made its debut at this exhibition. This was its first demonstration outside of Russia.

Mi-28 helicopter family is called 'Night Hunters' (or 'Havoc' according to NATO classification). Mi-28 has been taken in the inventory of the Russian Armed Forces as the main attack helicopter of the Aerospace Forces. 'Night Hunter' showed its outstanding flight performance in Dubai sky. Mi-28 can perform a number of aerobatics available only to aircraft.

Many aerobatics were performed at minimum altitudes and speeds, which is especially important for survivability of the helicopter in real combat conditions. Mi-28NE demonstrated combat turns, nose diving, pitch-up maneuvers, rearward flight, hovering and climb with rotation under the supervision of Sergey Barkov, honored test pilot and hero of Russia.

The pilots demonstrated the dynamic capabilities of the rotorcraft, its stability in the air, and ease in control. Combat characteristics of the 'Night Hunter' are significantly expanded due to its maneuverability.



It is able to reach the target quickly even while active maneuvering.

Mi-28 attack helicopter has a powerful armament complex which includes a mobile automatic 30 mm gun with a left to right rotation range of $\pm 110^\circ$, three types of anti-tank guided missiles with a range of 6 and 10 km, air-to-air guided missiles, unguided missiles of two types, suspended cannon containers, aerial bombs of up to 500 kg grade.

Main rotor blades of the 'Night Hunter' are capable of withstanding a 30 mm projectile. It has high-power engines, with 2,400 horsepower each. It is possible to fly it with one engine if the other is damaged. 'Night Hunter' features high survivability. Front and side windows of the cockpit are armored. Mi-28NE cabin is protected by ceramic armor, and Mi-28NE is able to effectively perform its tasks in a hot climate. It has a new exhaust infra-red suppression system and particle separator.

Mi-28NE is manufactured at the Rostvertol enterprise, which is a part of 'Russian Helicopters' Holding Company.

/RA&MG/

NEWEST SECURITY EQUIPMENT AND SOLUTIONS AT INTERPOLITEX 2021

JSC Rosoboronexport (part of the Rostec State Corporation) took part in the 25-th International Exhibition of Means of State Security Provision Interpolitex-2021 at the Crocus Expo International Exhibition Center in Moscow. At Interpolitex-2021, Rosoboronexport promoted civilian and dual-use products, special equipment for law enforcement and security agencies, developed and manufactured by leading Russian companies.

'At the invitation of Rosoboronexport, over 130 guests from 30 countries will visit the exhibition in 2021. These are representatives of law enforcement agencies, emergency response agencies, private security and IT companies, as well as regional authorities,' said Alexander Mikheev Director General of Rosoboronexport and Deputy Chairman of the Russian Engineering Union. 'We, together with industrial enterprises, will show

our partners the full range of professional security equipment exhibited at Interpolitex and familiarize them with Rosoboronexport's integrated solutions to counter the main challenges and threats confronting modern society.'

At Interpolitex-2021, Rosoboronexport showcased modern personal protective equipment manufactured by NPP Klass, NR-2000 nonlinear junction detector and Larets-4 cell phone anti-eavesdrop safe-box from the YUTTA Group, non-lethal self-

defense and defense systems from the Research Institute of Applied Chemistry, a Federal Research and Production Center, stun guns from the MART GROUP, thermal and optical sights produced by Argus-NV and Dedal-NV, and screening systems and devices offered by JSC Set-1.

In addition, Lobaev Arms and ORSIS small arms and hunting weapons, as well as anti-UAV systems produced by the Avtomatika Concern (part of the Rostec State Corporation) was on display at the company's stand.

Representatives of security agencies were most interested in a line of electroshock weapons offered by Rosoboronexport, which have proved effective in practice. The Cerberus precision and easy-to-use metal detector with a built-in stun gun is ideal for use at various checkpoints, airports or secure facilities where it is necessary to screen persons.

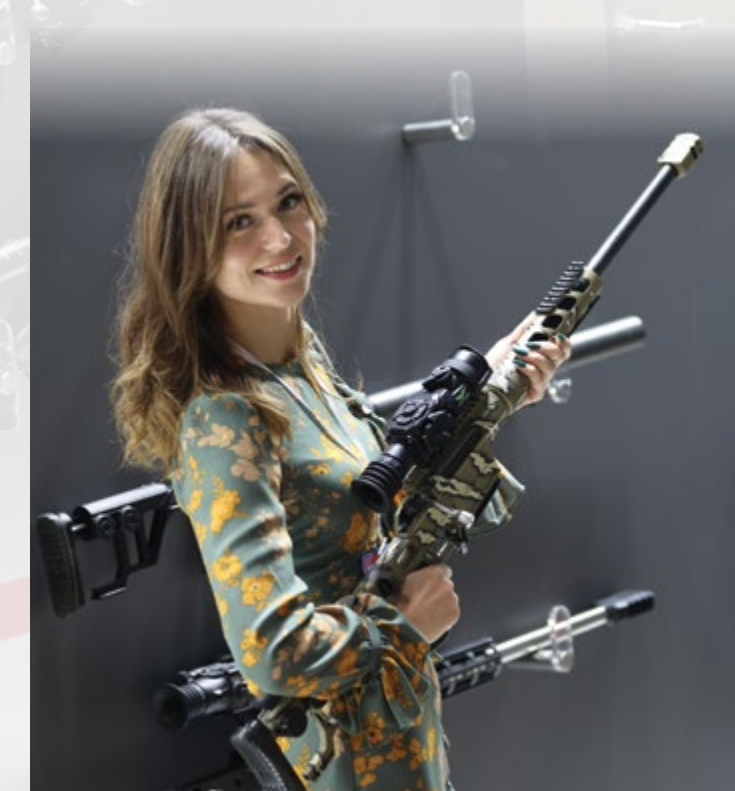
To provide VIP security, specialized law enforcement units need special precision weapons. Thanks to its modular design, Lobaev Arms DVL-10V3 Volkodav (Wolfhound) compact, light and accurate sniper rifle is suitable for various tasks. The user can change the barrel using ammunition of different calibers, including in the field. The Volkodav accurately hits a target at a range of up to 1000 m, allowing the shooter to maintain a high level of mobility.

The modern Taktika versatile bulletproof vest is designed to perform a wide range of tasks. Its unique feature is the opportunity to adapt to any conditions encountered by law enforcement agencies. A set of removable ballistic inserts and an ergonomic design provide reliable protection and a wide variability of optional equipment, whereby the vest can be easily adapted to specific needs. The officer chooses the

level of necessary protection, which is provided by removable ballistic inserts. The basic bulletproof vest with installed front, back and side armor panels can be fitted with Level II to V removable ballistic inserts. Rosoboronexport introduced these products in detail during public presentations at the company's stand: 'Personal Armor', 'Equipment for Law Enforcement Agencies' and 'Anti-UAV

Weapons'. In the conference hall of the exhibition, the company gave the 'Comprehensive Presentation of Russian Security Equipment'. In parallel with its offline activities at the exhibition, Rosoboronexport promoted its products online. Presentation broadcasts and product reviews were available on the company's website and social media accounts.

/RA&MG/



Sergey Kulik

SECURE RESCUE AT ANY HEIGHT



Unique autonomous rescue parachuting back-pack system for emergency escape

The innovative Russian private Space Rescue Systems Ltd. (SRS Ltd.) company (www.cosmic-rs.com) proposes a unique and unrivalled emergency rescue vehicle SPARS® – an Autonomous Rescue Pneumo Transformable Chute Back-pack System – a validated forefront rescue solution for guaranteed secure individual emergency escape from nearly any high elevation structure (skyscrapers, offshore platforms etc.). The SPARS® project is resulted in a creation of a brand new pneumo-framed aerodynamic devices technology. There is no doubt in the near future this solution is going to be a must-have in skyscrapers construction all over the world.

The SRS Ltd. proposes a SPARS® high rise escape technology that has a global nature. It is uncovered market niche with an obvious but unrealized human requirement to be and to feel safe while living or working in high elevation buildings. In case of emergency than traditional evacuation is impossible or ineffective those people all over the world have practically no means of urgent secure rescue from the height and need an alternative solution.

Actually the technical reviews shows that at present there are practically no means for secure alternative escape starting from 60÷80 m height and higher available on the market. But according to the said firefighter's statistics about 3÷5% of people being caught in alarm situation on the high-rise building used to try escaping from the windows and

usually perished. On the other side homeland security analytics says that in average an every skyscraper in the world is expected to be subjected to a fire case (terroristic attack or other emergency) once in every 47 years.

So the SRS Ltd. has decided to resolve the problem in finding an alternative to traditional evacuation methods technical solution. It takes about eight years of R&D to resolve the task. Finally it is resulted in creation a brand new escape technology – an Autonomous Rescue Pneumo Transformable Chute Back-pack Solution for secure personal rescue from high-elevation structure in case of emergency than traditional evacuation methods are impossible.

The SRS Ltd company in outsourcing cooperation with 18 leading Russian and foreign aerospace companies has fulfilled full-scale research and development activities to devel-

op the project from conceptual proposal stage to releasing operating prototypes unparalleled anywhere in the world.

The SPARS® escape technology is based on a synergy of sophisticated aerospace technologies such as Air-Aspirator Rapid Inflation; Elastic Pneumo-Frame Catapult Ejection; Air-Drag Deceleration; Air-Bag Shock Absorbing and others. Such technologies were invented for space probes deceleration during descent in atmospheres of Solar system planets and its landings on surfaces.

The SPARS® device provides a secure individual escape of untrained person or valuables cargos with weights 45÷120 kg. from about any of existing high-rise (50÷1000m) facilities (skyscrapers; towers; offshore platforms etc.) with guaranteed safe landing on any underlying surface in urban terrain or water in

case of emergencies than traditional evacuation methods are impossible.

The SPARS® solution meets the Russian Ministry of Emergency Situations (EMERCOM) requirements for high-rise emergency escape apparatus (GOST R 22.9.08–2005; GOST R 12.4.206–99) and provides for the following unique capabilities, never implemented before:

1. Alternative of emergency escape (so-called 'last resort rescue')
2. Emergency evacuation of an untrained person having weight of 45÷120 kg, from heights of 50÷1,000 m;
3. Ready-for-use in 45÷60 sec;
4. Self-sustained operation and independently selected escape route;
5. User-friendly operation for untrained persons and fully automated rescue procedure right from start;
6. Personal protection against external hazards during evacuation;
7. Appropriate weight of a back-pack-type carried device;
8. Secure injury-free landing on any underlying surface.

The SPARS® unit for individual use had required a special certificate basis. In this regard the National Standard (GOST) 4240-001-2012 specifying medical and technical requirements for injury-free operation by untrained persons rescued by means of new type SPARS® shock-

absorbing systems entered into force in 2013.

To have certification tests performed a special Hybrid-III (USA) crush test dummy-based anthropomorphic (bionic-like) instrumentation station has been developed and created by the SRS Ltd., which has no equals in Russia.

A full cycle of comprehensive calculations and testing to validate design properties and performance has been performed. Up to now the SPARS® device technical operational reliability is 98.7% but further testing is under way.

New SPARS® escape solution provides the following advantages:

1. Alternative (a 'last resort') escape mean for ordinary person in case of emergency in the high-rise structure;
2. Secure rescue of untrained personnel (18÷70 years old) from high elevations from 5 till 1000m (no practical means available starting from 50 m height);
3. Off-line capability of the system provides mobility that helps to find optimal self-escape way of out from emergency situation;
4. Smooth automated ejection from the emergency object after manual initialization of the system;
5. Guaranteed deploy of the canopy with 3÷5 m loss of height irrespective of air flow speed pressure;
6. Protection from dangerous external factors (fire, hits, smoke) during descent;

The SPARS® General Specifications

1. Total Assembly Weight – 25 kg
2. Rescue Payload Weight – 45÷120 kg
3. Descent Elevations – 5÷1000 m
4. Landing Velocity – 5÷7 m/s
5. Landing Angle – < 30°
6. Footboard Barrier Elevation – 1.5 m
7. Descent Time – 3÷150 s
8. Ready-to-use Time – 45÷60 s
9. Launch Initialization Time – 15÷20 s
10. Inflating Gas – Air;
11. General Dimensions:
 - a. Assembled – 900x450x300 mm
 - b. In Descent mode – 6,500x2,700mm (without canopy)

Actual Landing Impact Loads:

Acceleration directions:

'chest-to-back' – up to 8÷10 g

'side-to-side', 'head-to-pelvis' – up to ± 6 g

Acceleration Exposition Time – less than 0.5 s

Acceleration Growth Velocity – less than 500 1/s

User's age – 18÷70 years

7. Safe landing on any underlying surface in urban terrain;
8. Reusable and does not sink.

In packed and assembly complete mode the SPARS® system weights 25 kg with back-pack dimensions





850x450x350mm and has easy – to-use suspension system.

The SPARS® has its Technical Data Sheet (TU 801130–5047075064–01–10) and working design documents issued. Under the SRS Ltd requirements Russian gas-filling systems (GFS) manufacturing company has mastered Autonomous Two-Stage GFS for SPARS® (TU 8042–017–45307693–2013).

The SRS Ltd. Intellectual Property Rights on SPARS® and its ‘know-hows’ have been completely protected within Russia (9 Patens, 3 Trade Marks) and abroad under PCT (Patent Cooperation Treaty) procedures 2 ‘umbrella’ requests for SPARS® have entered national level in 15 countries and covered 78% skyscrapers and

95% potential SPARS® manufacturers. 13 Patents of the US, China, Japan, Canada, South Korea, Singapore, the Ukraine, Indonesia, Malasia and Australia have been already received.

Three Russian EMERCOM Certificates of Conformity were received for the SPARS®. ‘Aerospace medicine and military ergonomics’ R&D Institute of the Russian Air Force has granted an official approval for the SPARS® physical adaptability.

The SRS Ltd. company now is looking for cooperation with a strategic Partner and/or investor in order to industrialize the brand new SPARS® product; to make it commercial; to prepare and set up its production and to enter with it into a global commercial market having all nec-

essary intellectually property rights protected.

An accurate assessment of the terms, timeframes and investments required for the SPARS® industrialization it is foreseen that a Partner from the region where product itself (or its production) could be demanded (Middle East, China, US, Europe, Asia-Pacific etc.) could formulate and provide the SRS Ltd. Company with the regional authority technical requirements to upgrade the product specifications and also could determine the necessary level of licensing.

At the same time in order to reduce production costs it is desirable to find and select a local manufacturer taking into account its technical capabilities and possibility to use appropriate production process technologies.

Upon receiving necessary information from a Partner the SRS Ltd. Company could finalize the design documentation, to fabricate a prototype with specifications meeting local needs and to determine expected investments and timeframes necessary to prepare and to run mass production of the product in the region.

Shares and Conditions in the business organization is a matter of further negotiations. The SRS Ltd. Company would be ready to demonstrate its good willing approach and to meet a Partner in negotiations halfway with necessary flexibility in some critical questions aiming to achieve mutually beneficial cooperation.

Such forms of cooperation as Joint Venture, Technical, Manufacturing or License Agreements are feasible.

For a strategic industrial Partner sought who would be interested to

run mass production of the SPARS® in the region and enter an empty market with protected rights it would be necessary to have production technology experience in the fields of:

- thin coated/laminated fabric manufacturing;
- assembly from these fabrics a complex air-beam-frame air-proof inflatable structures;
- parachute canopy manufacturing;
- air-aspirator gas filling manufacturing;
- plastics (carbon) manufacturing and forming
- human field (air-borne) tests plastic forming and others.

A Partner sought may be expected to undertake part of those activities or provide financing for already SRS Ltd. Company existing outsourcing manufacturing solution in Russia on a mutually beneficial basis.

As for the SPARS® solution operation such a potential entity sought (hotels, profitable houses; skyscraper’s management company; offshore platform management; air-borne attractions & entertainment companies etc.) should only require a free window exit sized 1000x500 mm at the appropriate height to use Autonomous Pneumo Transformable Escape Chute and propose to its clients an additional exceptional secure service with limited warranty.

General market estimations shows there are over 7,303 finished and 2,500 under construction skyscrapers worldwide with the heights of 100÷828m, over 100,000 buildings having height of 50÷100m and more than 800 offshore platforms. Taking that analysis into account the SPARS® may have potential market capacity of up to \$700-850 million annually.

Furthermore, the SPARS® estimated potential market capacity is worth over \$3.5 billion in commercial sector alone. The Governments market is bigger but for accepting that new technology implementation it may require some updates of the appropriate local norms and regulations.

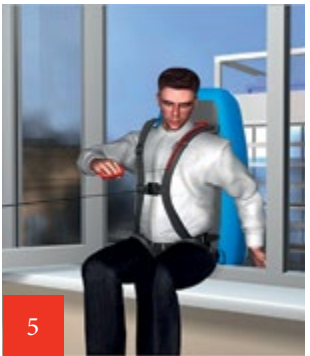
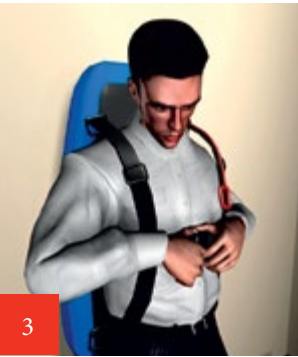
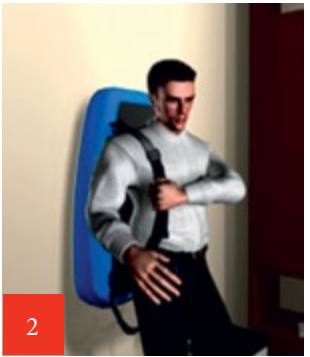


There are following innovations in the proposed SPARS® technology:

1. A brand new free parachuting technology (means and escape method) was created for emergency escape from heights higher than 50 m where practical methods for safe evacuation of a person are not available on the market.
2. Sinergy solution based on specially designed and produced from film-laminated fabric a rapid inflatable air-beam single volume frame structure for:
 - Elastic catapult ejection of a human from a window of an emergency object;
 - Forced deploy of the canopy with only 3÷5 m loss of height and irrespective of air flow speed pressure for deployment (usual parachute requires of 25÷100 m free fall and/or 250÷350 km/h speed of airplane to be deployed);
 - Guaranteed safe landing with 5÷6 m/s vertical velocity on any underlying surface in urban terrain using integrated air-frame shock absorbing pneumo dumper.
3. Fully automatic mode of usage (after manual initialisation of the apparatus) and all the descend envelope accelerations bearable for an ordinary person make the escape solution available for use by untrained people from 18 till 70 years old;
4. New type of light weight air-proof film coated fabric for air-beam inflatable frame structure was created.

The Special National Standard (GOST) for shock acceleration limits for untrained human using new type of lodgment Rescue Parachuting Systems was issued.

The Crash test dummy Hybrid-III 50% percentile was instrumented, calibrated with the help of centrifuge, certified and used as anthropomorphic instrument for human acceleration checking during field tests and validation of the Autonomous Pneumo Transformable Escape Chute.



SRS Ltd. (OOO 'KCC')
25A Leningradskoe HWY
Khimky, Moscow Region,

The Russian Federation, 141400
t. +7(495) 617-1731
f. +7(495) 617-1732

E-mail: info@cosmic-rs.com
www.cosmic-rs.com

RUSSIA AND EGYPT – THE DYNAMIC OF COOPERATION

Relations between Russia and Egypt are developing rapidly. The parties actively interact in the international arena, in the economic and military fields. Russia is a major participant of the EDEX defense exhibition in Cairo, where it demonstrates the unique technologies of its military-industrial complex. The topic of Russia and relations between Russia and Egypt is also traditionally in the focus of the Egyptian mass media.

Old Friends

Diplomatic relations between the USSR and Egypt were established on August 26, 1943. Since then cooperation of the two sides have witnessed dramatic changes, but they have always been based on mutual trust and respect, emphasizes the Russian Ministry of International Affairs in its official materials. Nowadays the Russian Federation and the Arab Republic of Egypt are partners in both bilateral relations and on international arena.

Cooperation between Moscow and Cairo was launched by the first economic agreement signed in 1948, according to which the Soviet Union exported grain, timber and other goods in exchange for Egyptian cotton. In the 1950-60s the Soviet-Egyptian partnership was at its peak. Thousands of Soviet specialists were sent to Egypt to assist in building factories, plants and infrastructure facilities including the famous High Dam in Aswan. At the same time many Egyptians were receiving education in Soviet universities and institutes.

Nikita Khrushchev, President of the Council of Ministers of the USSR, conducted the first official visit to the United Arab Republic in 1964. Four years later Gamal Abdel Nasser, President of the UAR, was in Moscow with a return visit.

With the assistance of the Soviet Union 97 industrial objects were built in Egypt, including the High Aswan Dam, Helwan Steel Works plant, Nag-Hammadi aluminum plant, which continue to play an important role in the Egyptian economy.

After a period of relative decline in bilateral ties in the 1970s, starting with the 1980s the cooperation between Moscow and Cairo once again was on the rise. In May 1990 the Soviet-Egyptian Declaration and the Long-Range Programme of economic, trade, scientific and technical cooperation were signed.

In December 1991 Egypt officially recognized Russia as a successor state to the Soviet Union.

With Abdel Fattah el-Sisi being the President of Egypt the dynamics of bilateral contacts at various levels increased significantly. The first meeting of the leaders of Russia and Egypt took place in Sochi on August 12, 2014. On February 9-10, 2015, Russian President Vladimir Putin paid an official return visit to Egypt. On May 8-10, 2015 President el-Sisi took part in the celebrations on the occasion of the 70th anniversary of Victory in the Great Patriotic War.

From 23 to 25 October 2019, Sochi hosted the Russia-Africa Economic Forum and Summit, co-chaired by Vladimir Putin and Abdel Fattah el-Sisi.

Cooperation between Russia and Egypt in the military-technical sphere has a long history, says the official website of the Rosoboronexport. Egypt became the first country in the Arab world to

buy weapons from the USSR. The first agreement in the military sphere was signed in 1955 and until 1973 Egypt remained the leading buyer of Soviet military equipment and weapons in the Middle East.

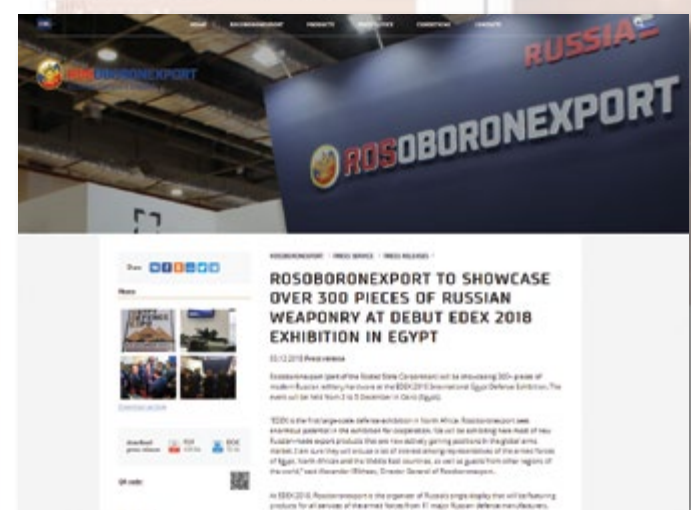
Until the mid-90s of the last century, cooperation was practically curtailed and only in 1997 a new contract was signed. The following years saw the revival of military-technical cooperation. On June 23, 2009, in Cairo an Agreement on Strategic Partnership between Russia and Egypt was signed. It was providing for the development of military-technical cooperation. Since March 2005, a joint Russian-Egyptian commission on military-technical cooperation has been operating.

Russia at the first EDEX

The Rosoboronexport showcased 300+ pieces of modern Russian military hardware at the EDEX 2018 International Egypt Defense Exhibition.

'EDEX is the first large-scale defense exhibition in North Africa. Rosoboronexport sees enormous potential in the exhibition for cooperation. We will be exhibiting here most of new Russian-made export products that are now actively gaining positions in the global arms market. I am sure they will arouse a lot of interest among representatives of the armed forces of Egypt, North African and the Middle East countries, as well as guests from other regions of the world,' said Alexander Mikheev, Director General of Rosoboronexport.

At EDEX 2018, Rosoboronexport was the organizer of Russia's single display that will be featuring products for all services of the armed forces from 11 major Russian defense manufacturers. A full-size Russian Ka-52 Alligator scout/attack helicopter was demonstrated at the exhibition.



Russian military products presented by the Rosoboronexport included the Yak-130 trainer (combat trainer) aircraft, Su-35 multi-purpose super-maneuverable fighter, MiG-29M/M2 multirole front-line fighter, Mi-17, Mi-26, Mi-28NE, Mi-35 and Ansat helicopters; the S-400 Triumph air defense missile systems, Tor-M2E and Buk-M2E SAM systems, Pantsir-S1 self-propelled anti-aircraft gun/missile system, as well as the Igla-S and Verba MANPADS; the T-90MS main battle tank, BMP-3 infantry fighting vehicle, BMPT Terminator tank support combat vehicle, BTR-82A armored personnel carrier, Khризantema-S and Kornet-E ATGM systems, as well as small arms and close combat weapons.

Rosoboronexport also unveiled at EDEX such advanced products as the BT-3F armored personnel carrier, Karakurt-E and Sarsar class missile ships, 76.2-mm AK-176MA-01 automatic naval gun system, as well as the Orion-E UAV.

Russia and Egypt Aiming High

The Al-Ahram newspaper's article Cairo and Moscow aim high, published on September 1st 2021, starts with the confirmation, that military and business cooperation between Egypt and Russia is 'scaling new heights'.

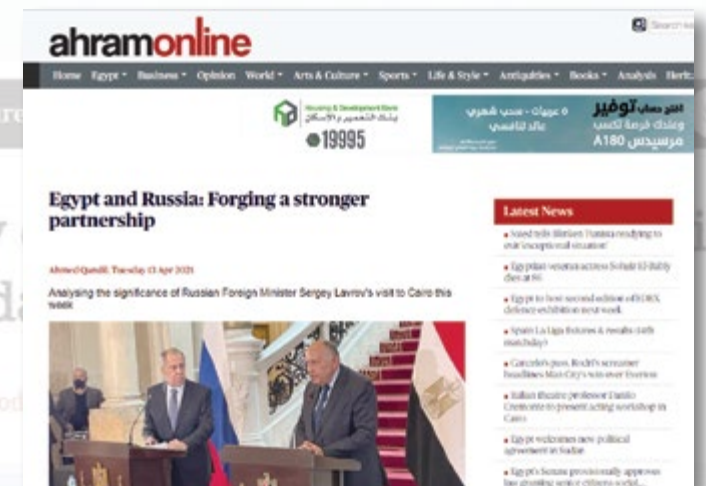
The newspaper then reports on the four-day official visit to Russia of General Mohamed Zaki, commander-in-chief of the Armed Forces and Minister of Defence and Military Production. A statement released by the Ministry of Defence said that Zaki, leading a high-profile military delegation, attended the seventh meeting of the Egyptian-Russian Joint Military Committee. The committee is tasked with fostering military cooperation between Cairo and Moscow.



Zaki and Russian Minister of Defence Sergey Shoigu reviewed military and security developments on the regional and international scenes, discussed existing military cooperation and the exchange of expertise, and agreed on the importance of conducting joint military exercises between the Armed Forces of both countries.

The Comprehensive Partnership and Strategic Cooperation Agreement signed between Russia and Egypt in Sochi on 17 October 2018 came into effect earlier this year.

'Egyptian-Russian relations are progressing on multi-pole fronts. Early in August a high-level Egyptian technical delegation, led by Minister of Electricity and Renewable Energy Mohamed Shaker, visited Russia to discuss the building of Egypt's Dabaa Nuclear Power Plant (DNPP). In the same month direct flights between Russia and Egypt's Red Sea resorts of Hurgada and Sharm El-Sheikh resumed after a six-year ban, imposed by Moscow following the downing of a



passenger plane carrying more than 200 Russian tourists over Sinai, was lifted', – says Al-Ahram.

The Al-Ahram's *Egypt and Russia: Forging a stronger partnership* April article analyzed the significance of Russian Foreign Minister Sergey Lavrov's visit to Cairo.

'This week's visit highlighted the opportunities that the Egyptian-Russian partnership will create to advance security, stability, and development in the region. The Egyptian foreign minister noted that Russia, a permanent member of the UN Security Council with extensive diplomatic resources, understands Egypt's position on the GERD and that Moscow has indicated that it is ready to continue to coordinate with Cairo to promote an agreement on it that would benefit all three parties, Egypt, Sudan, and Ethiopia', – said the newspaper.

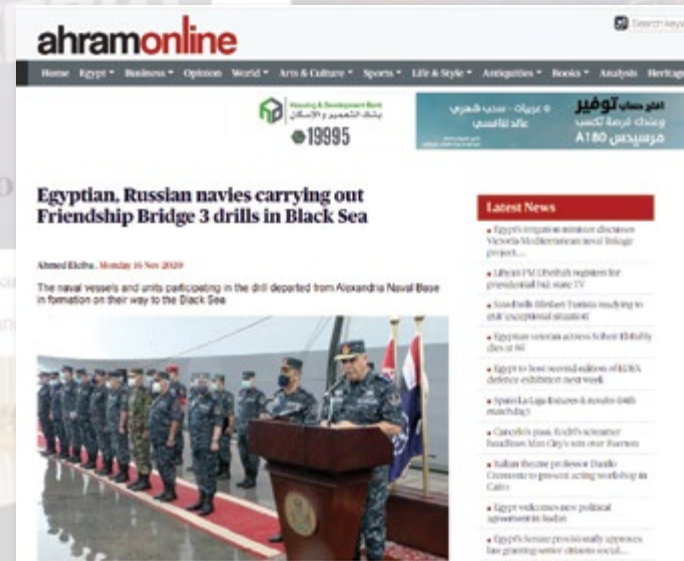
Al-Ahram points out, that Lavrov's visit reaffirmed Egypt's and Russia's determination to forge ahead with agreed projects, such as the Dabaa nuclear electricity plant, the Russian industrial zone in the Suez Canal Economic Corridor, and deliveries of new railway cars to Egypt.

Joint exercises

The Egyptian media widely covered the joint military exercises with Russia held in October 2021. The Egypt Today published the article *Egyptian army concludes joint exercises with each of Russia and Sudan*.

The Egyptian-Russian exercise Friendship Guardians 5 was concluded on the same day with the Egyptian-Sudanese exer-





cise with the participation of Egyptian paratroopers and Russian Airborne Troops. The tactical exercise included a practical airdropping of personnel and equipment.

November saw the Friendship Bridge 3 drills in Black Sea carried out by the Russian and the Egyptian navies. According to the Egyptian army's statement, this was the first time the Friendship Bridge drills were being held with Russia in the Black Sea, adding that the exercise aimed to enhance military cooperation and contribute to efforts to achieve security and stability in the Middle East region.

'The joint maritime drill Friendship Bridge 3 is one of the most important joint exercises between Egypt and Russia to transfer and exchange experiences between the armed forces of both countries,' the Egyptian army said, quoted by the Al-Ahram newspaper.

ARMY-2021

The ARMY-2021 major defense expo in Russia was also covered by the Egyptian media. For example, a set of articles was published by the Al Akhbar newspaper.

'The International Military-Technical Forum 'Army-2020' is organized by the Ministry of Defense of the Russian Federation and has proven to be the main exhibition



event in Russia in the field of advanced technologies, weapons and military equipment of the armed forces and security agencies. It is usually attracted defense ministers, chiefs of general staff, deputy ministers and highly professional delegations... The outdoor demonstration program was prepared to present weapons and equipment systems on a special firing range with live commentary and video projected on large screens to ensure the success of this presentation. These performances are highly regarded by defense ministers, professional delegations and the media,' – wrote Al Akhbar.

The newspaper added, that the forum represented a unique platform for displaying the best achievements in the field of military equipment and technologies, as well as a great opportunity for companies and organizations to demonstrate capabilities of products for further integration of cooperation within the military-industrial complex.



The Al-Akhbar paid particular attention to the presentation of the latest Russian anti-UAV systems at the ARMY expo, including those developed by the Russian Avtomatika concern and operating in the 360-degree and 180-degree directions. The latest anti-drone systems, as wrote the Al-Akhbar, are designed to influence the navigation, control and information transmission channels of UAVs to impede their operations. The systems are able to suppress the these channels.

The newspaper also covered in details the presentation at the ARMY-2021 expo of the modernized military transport helicopter Mi-171Sh Storm, intended for use by special forces.

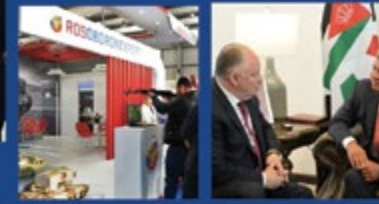
'The multifunctional special forces helicopter has become a breakthrough product in Ulan-Ude Aviation Plant's line-up,' quoted the newspaper Alexei Kozlov, the Managing Director of the Ulan-Ude Aviation Plant.

The AL-Akhbar in the days of the ARMY expo also wrote on many other breakthrough Russian products: Ka-52 and Ka-226T helicopters, Palma naval air defense system, T-14 Armata tank, Boomerang wheeled armoured platform, Kalashnikov small arms, etc. /RA&MG/

ANNUAL PHOTO ALMANAC FOR MILITARY-TECHNICAL COOPERATION



Achievements and prospects



RUSSIAN MILITARY TECHNICAL COOPERATION ANNUAL PHOTO REPORT

Main partners and projects



Special directions of development



New export products



ISSUE	DEADLINE	SPECIAL PARTNERSHIP
-------	----------	---------------------

'GUIDE' №01 (62)	February 18th	World Defense Show 2022 (06-09.03.2022, Saudi Arabia, Riyadh)
'GUIDE' №02 (63)	February 22th	DEFEXPO INDIA 2022 (10-13.03.2022, India, Gandhinagar) Special analytical export project of the United Industrial Publishing
'GUIDE' №03 (64)	March 12th	Eurasia Airshow 2022 (23-27.03.2022, Turkey, Antalya)
'GUIDE' №04 (65)	March 15th	DSA 2022 (28-31.03.2022, Malaysia, K.Lumpur)
'GUIDE' №05 (66)	March 20th	ArmHiTec 2022 (31.03-02.04.2022, Armenia, Yerevan)
'GUIDE' №06 (67)	March 20th	FIDAE 2022 (05-10.04.2022, Chile, Santiago)
'GUIDE' №07 (68)	May 03th	SOFEX 2022 (16-19.05.2022, Jordan, Amman)
'GUIDE' №08 (69)	May 10th	KADEX-2022 (23-28.05.2022, Kazakhstan, Astana)
'GUIDE' №09 (70)	August 10th	ARMY-2022 (15-21.08.2022, Russia, Moscow)
'GUIDE' №10 (71)	August 20th	ADEX 2022 (06-08.09.2022, Azerbaijan, Baku)
'GUIDE' №11 (72)	September 06th	Africa Aerospace and Defence 2022 (21-25.09.2022, South Africa, Pretoria)
'GUIDE' №12 (73)	November 12th	INDO DEFENCE 2022 (02-05.11.2022, Indonesia, Jakarta)
'GUIDE' №13 (74)	November 01th	Airshow China 2022 (November 2022, Zhuhai, China)

The 'Russian Aviation & Military Guide' is English-language international magazine distributed all over the world.

The 'Russian Aviation & Military Guide' magazine subscription can be ordered after any issue of the magazine with the delivery anywhere in the world. The price of any one issue of the magazine is \$8,88 plus the cost of postal delivery.

Send your requests for invoicing for the subscription at the address ramg@ramg.info or rus.avia.military@gmail.com. The number of copies, period of the subscription, the address for invoicing and for delivery and your contacts, including information about the person who pays for the subscription, should be in the request.

The editing office send only paid subscription.

doc@promweekly.ru
promweekly@promweekly.ru
www.promweekly.ru
www.ramg.info

Media postal address:
Moscow, Russia, 123104, mailbox 29, Industrial Publishing
© 'United Industrial Publishing', 2021



ky.ru

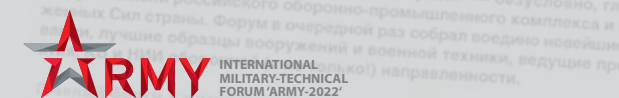
The best innovations for Egypt, Africa and the global market

mailbox 29, Industrial Publishing
ishing', 2021



SPECIAL PARTNERSHIP

48 • Russian Aviation & Military Guide



International military-technical forum 'ARMY-2022'

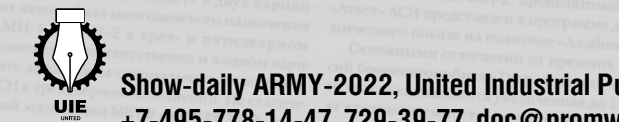
August 15-21, 2022

The Patriot Congress and Exhibition Centre with the Military and Patriotic Park of Recreation and Leisure of the Armed Forces of the Russian Federation

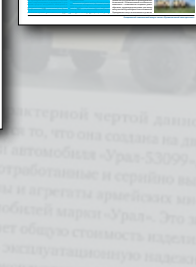
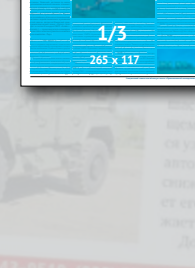
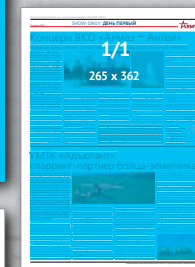
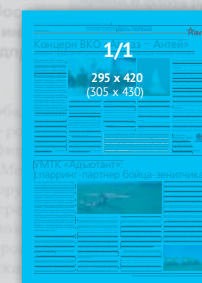
Official information analytical edition of the
forum – newspaper show-daily 'ARMY-2022'

Four issues: 'First day', 'Second day', 'Third day', 'Fourth day', 'Fifth day'

Reports on the work of the Forum, the most important current business and presentations, the representation of participants, their exposition and programs.



Show-daily ARMY-2022, United Industrial Publishing
+7-495-778-14-47, 729-39-77, doc@promweekly.ru





KALASHNIKOV



The Kalashnikov Group

PLK

Compact Lebedev pistol

Compact Lebedev pistol chambered for 9x19 round passed state technical trials in Russian Federation and already proved its reliability in a harsh environment. Great ergonomics allow both right-handed and left-handed to use PLK effectively. Picatinny rail allows mounting lights and lasers which are crucial in a low-light environment.

Basic characteristics:

Caliber	9 mm
Ammunition	9x19
Weight, empty	0,73 kg
Length	185 mm
Magazine capacity	14 rounds
Barrel length	92 mm



ak.kalashnikovconcern.com