RUSSIAN AVIATION & MILITARY GUIDE

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Russian defense technologies for the Gulf countries

Gulf Defense & Aerospace EXHIBITION & CONFERENCE

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Defense Technologies

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 nonending 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 secure people's safety, rivalry among sellers of weapons and defense systems increases in order to achieve such goals as increasing profits and market share. The Gulf Defense & Aerospace 2017 will present in Kuwait the best weapons that price and quality are the undisputed world leaders in their segments.

This defense exhibition will show that it is not serious about how many weapons you have, but quality and possibilities of every single one of them is fact what leads to victory on the battlefield. 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 GDA-2017 Russia continues the policy of open partnership with the countries of the Persian Gulf and the entire Middle East region. Russia has a wide product line that meets all the needs of defense in all elements – on land, in air, on water and under water.

Valeriy Stolnikov

'ANSAT' IN PAKISTAN

The Russian Helicopters Holding started testing multi-purpose 'Ansat' helicopter in Pakistan. The objective of testing is to prove the ability to use the machine in high temperatures. At the moment the helicopter has already started test flights. It is planned to expand 'Ansat's' temperature regime to +50° Celsius. Thus, its temperature range will be from -45° to +50° Celsius. Ansat is a light multipurpose twin-engine helicopter serial production of which is deployed at the Kazan helicopter plant. In May 2015, the modification of the helicopter with a medical module was certified. It complies with all international standards for medical aviation and allows to save a patient's life during transporting to a hospital. According to the helicopter certificate, its design allows converting it into a cargo version or into a passenger rotorcraft that can lift up to seven people. The medevac 'Ansat' has a number of competitive advantages over rivals in its class. First of all, it requires less operational, training and maintenance expenses. In addition, the helicopter has the biggest cockpit in its class and can maintain high speed, which allows to use it for long-range trips.

PD-35 IN COOPERATION WITH CHINA

General Director of the Rostec State Corporation Sergey Chemezov said that the advanced PD-35 aircraft engine will be developed jointly with the Chinese party, and the main work on its design will be carried out by Russia. PD-35 will be installed on the long-range wide-body aircraft CR929 jointly built by Russia and China. Development of the PD-35 engine has been commenced in Summer 2016 at two plants: Perm Engines and Saturn (Rybinsk), members of the United Engine Corporation (UEC) of the Rostec State Corporation. It is expected that the PD-35 model will be distinguished by a higher thrust – up to 35 tons. The statement of work for the engine will be prepared in 2019. The PD-35 ultra-high duty bypass turbofan engine is designed for installation on prospective wide-body aircraft. It is also expected that the engine will be installed on the long-range wide-body aircraft CR929 jointly built by Russia and China. There will be three versions of the liner: minor, basic and major with designations CR 929-500, CR 929-600 and CR 929-700 respectively. Russian specialists will design the aircraft, and Chinese experts will build it. China-Russia Commercial Aircraft International Corporation will be the program operator.

T-72BZ tank: modernization

The motor is developed for installation on modernized and new serial T-72BZ tanks. The forced diesel engine V-92S2F for tanks developed at ChTZ-Uraltrak which is a part of Uralvagonzavod of the State Corporation Rostec has successfully passed all kinds of tests and received documentation for serial production.

This is the first tank engine in the last ten years specially created for installation on the modernized and new serial tanks T-72BZ with a capacity of 1130 hp. As a result of its application, the mobility and operational characteristics of combat vehicles increased significantly, and the specific capacity of T-72B3 tank surpassed the specific capacity of the best Western models.

Despite the deep modernization, the V-92S2F is maximally unified with the predecessor – the diesel engine V-92S2: it is made in the same dimensions and is installed in the engine compartment of the tank without any modifications to the machine, which makes it possible to replace V-92C2 with V-92S2F without changes in the technological process. The motor is produced on the standard equipment. V-92S2F was first introduced during the Tank Biathlon international army games. The Russian team became the winner in these competitions for several years in a row and the motor was unofficially nicknamed sporty. Assignment of the 01 letter means its acceptance into the arsenal of the Ministry of Defense.

Uralvagonzavod is a diversified machine building complex that produces about 100 types of products, in particular, military equipment, road construction machines, all-metal open wagons, specialized wagons and railway tanks. The enterprise is the developer of the main Russian combat T-90 tank, as well as the newest Russian Armata T-14 tank.

After-sales service for military equipment

Rosoboronexport (part of the Rostec State Corporation) has discussed the issues of modernization and development of the technical readiness provision system for the military equipment supplied to foreign customers. The theme of the after-sales service of materiel was discussed at the meeting of the 'Equipment and weapons of the land forces' panel of the Science and Engineering Board of the 'Oreltechmach' public company, a part of the 'Proekt-Technika' Corporation.

'The present-day market of weapons and military equipment specifies very stringent requirements to the military products as far as the support of their technical and combat readiness for the complete lifecycle is concerned. This results in the desire of foreign customers to conclude total package procurement contracts, which clearly determine supplier's and customer's obligations on the after-sales service of purchased military equipment for the whole operating life. Rosoboronexport takes into account this trend in the global arms market and constantly develops its capabilities in relation to the offered products and services', said Rosoboronexport's Deputy Director Igor Sevastianov.

In the past several years the after-sales service of the exported military products has become a very important factor to provide a competitive ability, to which much attention is now paid both by the foreign customers and suppliers of those products. Rosoboronexport's experience in the area of foreign trade activities shows that the requirements of company's partners to the provision of successful and effective use of weapons and materiel are increasing.

Besides, Rosoboronexport is interested in the rise of attractiveness and effectiveness of the after-sale service of supplied products as fine-tuned business processes in this area are becoming a source of stable income and profit markup for the companies of the Russian defence industry.

'Today we are cooperating successfully with the 'Proekt-Technika' Corporation on the after-sales service of our supplied products. This is one of the global leaders on the development and production of solutions in the area of mobile and stationary infrastructure for special purposes. Within the concept of the comprehensive approach to maintenance, we have already successfully completed and continue to execute a number of contracts in Venezuela, the Republic of Cyprus, Uganda and the United Arab Emirates', noted Igor Sevastianov.

It was also acknowledged at the meeting that the companies of the defence industry should develop and offer to their foreign customers electronic operating documentation and electronic illustrated interactive catalogues, which now become an obligatory condition for purchasing the main nomenclature of the equipment.

SECURITY IN MIDDLE EAST

The Russian Defence Minister General of the Army Sergei Shoigu and the King of Saudi Arabia Salman bin Abdulaziz Al Saud discussed issues of regional security in the Middle East in course of their meeting in Moscow. According to Sergei Shoigu, Russian military department paid much attention to development of bilateral cooperation between two countries in military and military-technical fields. 'I suppose that issues of regional security in the Middle East could be discussed in course of the meeting. Today, cohesion of the international community in fighting against international terrorism is required,' stressed the Russian Defence Minister. 'I hope that out meeting will promote strengthening of friendship between armed forces of two countries,' stated Sergei Shoigu.

TARIFFS AND TARGET INFLATION

At the meeting of the Government Russian Minister of Economic Development presented Social and Economic Outlook for 2018-2020 years. Russia's Social and Economic Outlook 2018-2020 is in general approved by the Government, said the head of the Ministry of Economic Development Maxim Oreshkin during the briefing on the outcomes of the Cabinet meeting. Maxim Oreshkin: Among the recent changes that were made at the meeting of the Government related to clarifying the latest economic trends, it is, first and foremost, a reduction in the inflation rate to 3.2% for this year. This was certainly included into the Outlook. In addition, there were changes caused by a slightly higher oil price over this year and a slightly stronger Ruble reflecting the actual trends of the last month. The forecast takes into account, among other things, an increase in the rate of economic growth for the three-year period, which we have already mentioned and which is stimulated by industrious activities of the Government in implementing changes in different fields including investment support and launch of a variety of priority projects.

Russian brand new weapons at the exhibition in Kuwait

ROSOBORONEXPORT

Rosoboronexport (member of state Corporation Rostec) is to take part at International arms and equipment exhibition and conference Gulf Defense & Aerospace 2017, which is going to be held between 12 and 14th of December in Al Kuwait. The exhibition is to be held under the auspices of Kuwaiti Ministry of Defense. The Russian official delegation is headed by Deputy Director of Russian Federal Military and Technical Cooperation Service Alexey Frolkin. The Rosoboronexport is headed by Deputy General Director Sergey Goreslavskiy.

'This year marks 40 years since the beginning of military and technical cooperation between Russia and Kuwait. Over the last years the special exporter and its predecessors have delivered many weapons primarily for Kuwaiti ground forces. These weapons were repeatedly highly appreciated by the nation's military. By taking part in Gulf Defense & Aerospace 2017 Rosoboronexport shows its great interest in further development of military and technical bilateral relations between our countries,' said Sergey Goreslavskiy.

Rosoboronexport is to organize the integral Russian display at Gulf Defense & Aerospace 2017. Its exposition stand 607 located in exhibition hall 8 provides information about over 200 military products. Besides the special exporter the Russian exposition involves 6 Russian weapon and equipment manufacturers.

'Many of exposed products have been battle tested during antiterrorist operations in Syria. They proved reliable and highly efficient weapons. Besides, the weapons and equipment offered by us fit local climatic conditions. It is very important for our partners,' Sergey Goreslavskiy added.

Tanks T-90S and T-90MS, armored personnel carrier BTR-82A as well as anti-tank missile system Kornet-EM are considered as the most promising for Kuwaiti ground forces.

Among the Rosoboronexport-presented aircraft the special attention is paid to multi-purpose supermaneuverable fighter Su-35, multifunctional tactical fighter MiG-29M/M2 and operational trainer Yak-130. The foreign customers are as much interested in combat helicopters Ka-52 and Mi-28NE, transport Mi-35M as well as transport Mi-171Sh.

The Rosoboronexort's near-eastern partners are traditionally interested in Russian air defense systems like AD missile and gun Pantzir-S1, AD missile systems Tor-M2KM and Buk-M2E, man-portable Igla-S and certainly Russian bestseller AD missile system S-400 which is also to be shown at the exhibition in Al Kuwait.

The attention of Navy representatives may be attracted by corvette 20382 Tigr, patrol boat 14310 Mirazh, high-speed patrol boat 12150 Mangust, diesel-electric submarine 677E Amur-1650 and missile systems Club.

Army and special force units are very interested in fire arms and close combat weapons such as AK assault rifles 100, automatic grenade launcher AGS-17 and anti-tank grenade launcher RPG-27.

In Kuwait Rosoboronexport is also to show an integrated product Russian-made Security Systems which involves the whole range of decisions to administer law, fight terrorism, provide infrastructural, state and cybersecurity.

'The issue of fighting terrorism is very important both in the Near East and the rest of the world. The special attention is paid to all-level security in this regard. We are ready to support the fight against one of the most challenging problems in 21st century and offer our new integrated product being very popular in the world which has proven itself during large-scale operations in Russia,' said Sergey Goreslavskiy.

DEVELOPMENT OF MILITARY-TECHNICAL COOPERATION

President of Russia Vladimir Putin in recent years has paid much attention to the development of military-technical cooperation with foreign countries. In November in Moscow Kremlin he held a special meeting of the state Commission for Military Technical Cooperation with Foreign States. In addition, the issues of military-technical cooperation and arms exports became one of the themes of Vladimir Putin's autumn meetings with the leadership of the Russian Defense Ministry and enterprises of the country's defense-industrial complex.

Vladimir Putin began the meeting of the Commission for Military Technical Cooperation with Foreign States from the current situation in this sphere and then map further steps to strengthen Russia's positions on the global market of weapons and military equipment.

Vladimir Putin marked that based on the results of January to September 2017, Russian military-technical contracts portfolio exceeds $45 billion. Under the 2017 plan, Russian military export deliveries will amount to $15.3 billion.

'Russia is firmly committed to its obligations in the fight against terrorism, chooses its counteragents scrupulously and closely monitors the use of our equipment and weapons by our clients,' said Vladimir Putin. 'We must implement our plans in full, and we must also continue to enhance our efficiency in the sphere of military technical cooperation, including by tightening control over the implementation of our contractual obligations.

At the same time, I would like to point out that the Russian producers and suppliers of weapons and military equipment have to operate in difficult conditions and amid unfair competition, which has become obvious and includes hampered financial settlements, logistical obstacles and problems with protecting intellectual rights. Taken together, this results in increased spending and complicates the work of the Russian parties to military technical cooperation.

Arms exports are a huge responsibility for any country. Despite this, we have strengthened the economic and financial stability of our defence companies and increased their technological and production capacities over the past few years, which allows them to increase exports and improve the quality of exports, both military goods and high-tech civilian goods. In this context, I would like to remind you about the importance of diversifying our defence sector.

Of course, we must strengthen ties with our strategic partners, but we also need to develop contacts with new clients. We certainly want to profit commercially from the sale of our military products, yet the interests of global and regional security and stability will always be our top priority.

Russia is firmly committed to its obligations in the fight against terrorism, chooses its counteragents scrupulously and closely monitors the use of our equipment and weapons by our clients.

'In 2017, Russian arms have been delivered to 59 countries. Stable military contracts have been concluded with 80 countries. What is important is that the stock of orders of Russian military products is not declining. This is a result, among other things, of the timely steps taken by the government to fund military-industrial companies, issue loans or otherwise assist them.'

Vladimir Putin

Russian producers and suppliers of weapons and military equipment have to operate in difficult conditions and amid unfair competition.

Meanwhile, we have taken note of several alarming trends, which have been growing stronger lately. I am referring above all to the frequent violations of international law by some players on the weapons market, as well as direct threats made to sovereign states.

We see an imitation rather than a real fight against terrorist groups, and uncontrolled arms deliveries are growing in scale. Weapons that are delivered to the so-called moderate opposition here or there today can resurface in the hands of radicals and terrorists tomorrow.

It appears that the hot spots and conflict zones have become a profitable business for certain parties and links in the ramified grey network of arms deliveries to counties and regions with unstable military and political situation. As I have said, arms exports are a huge responsibility for any country, and all players on the global arms market must be aware of this.'

It should also be noted that the issue of arms exports was raised in Sochi at the meeting on resource support for Armed Forces technical refurbishment, which was the final session in a series of meetings Vladimir Putin with Defence Ministry and defence industry officials. President of Russia said about MTC:

'The potential of our military-industrial complex and the ongoing arms improvement, which I just touched on with regard to the use of such weapons in combat, is the reason Russia remains a leader in military exports and why it can strengthen its cooperation in military technology with other nations at a faster pace.

In 2017, Russian arms have been delivered to 59 countries. Stable military contracts have been concluded with 80 countries. What is important is that the stock of orders of Russian military products is not declining. This is a result, among other things, of the timely steps taken by the government to fund military-industrial companies, issue loans or otherwise assist them.

Still, we need to plan for the risks and assess the negative impact of the possible use of the external limitations that are already in place, and of the possible imposition of new limitations. We need to plan and undertake measures that will help us to respond to such a scenario quickly so that no harm comes from this possible outside influence.' **/RA&MG/**

SOLUTIONS FOR A WIDE RANGE OF TASKS

Dmitry Shugaev: 'The countries of the Middle East and North Africa altogether make up almost 50% of Russian total defense exports'

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.

– Mister Shugayev, 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.

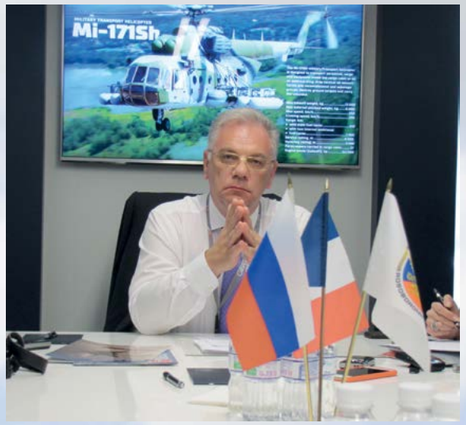
Federal Service for Military-Technical Cooperation is an agency that controls and supervises all the activities related to military-technical cooperation and issues licenses. From strategic point of view the FSMTC of Russia plays the role of government policy 'conductor' in the field of military-technical 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 last year our defense exports exceeded $15 bln. The major part of this export is 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



The countries of the Middle East and North Africa are our time-tested partners in various fields including the military-technical one. Therefore, they have been using almost all types of Russian military purpose products. Armored machinery, aviation equipment, air-defense systems and naval equipment of Russian (Soviet) origin are in high demand in this region. And in all the above mentioned directions we cooperate closely.

Russian weapons and military equipment have made a good showing in the world. Today experts state that our weapons are: first, highly technological; second, proving their 'mission survivability'. In addition, it is relatively easy to maintain our weapons. Combination of the above mentioned factors explains why our products are so popular in the world. At the same time today we offer the best value for money in the global market. This is recognized by many, including our competitors. Therefore, I state it proudly and not for the sake of advertising, but because it is common knowledge.

products (MPP) is a very specific market having cyclic nature. A number of factors should be taken into account, including modernization programs of defense ministries, financial solvency of countries that in its turn depends on their general economic health. Therefore, defense exports can hardly be expected to soar. Russia is aimed at building long-term relationships that will provide for sustainable growth of our export supplies.

It is important to participate in long-term programs, providing 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 is the share of the Middle East and North Africa in Russian defense exports and the country's export order portfolio? What military and defense equipment is in demand among the countries of the region?

– The countries of the Middle East and North Africa altogether make up almost 50% of Russian total defense exports, which is a considerable share. Our country's military- and dual purpose products are traditionally in great demand with the countries of the region. We are totally satisfied with the current state of our military-technical cooperation with these countries as well as with the pace at which we are moving forward. As for specific types of equipment that are popular with our partners in the Middle East and North Africa one cannot but mention armor materiel, air defense means, anti-tank missile systems and small arms.

– What main competitive advantages does Russian equipment have in terms of its operational capabilities in this region?

– No doubt, the main competitive advantage of the Russian equipment, from the point of view of any foreign customer, is its quality-price ratio. As for its operation in the countries of the Middle East and North Africa I will add another important factor highly assessed by our partners after many years of usage. This is high efficiency and excellent capabilities of our weapons and equipment in extreme climatic conditions. I believe these two major advantages altogether make our military purpose products so popular with regional customers.

– How long have Russia and the countries of the Middle East and North Africa been cooperating in the military-technical field?

– We have been developing military-technical cooperation with the countries of the region since the middle of the 20th century, that is for more than 50 years. Symbolically enough, the inception of interaction in the military-technical field with the countries of the Middle East and North Africa coincided with the period when our system of military-technical cooperation was established. For our regional partners it was the time they obtained independence. Thereafter our cooperation in the military-technical sphere has developed steadily and in a constructive manner.

– What can the Russian Federation offer today to the countries of the Middle East and North Africa in this regard?

– At present, some operators of our military equipment in the region are facing the necessity to repair and modernize the equipment produced in the USSR and supplied earlier. I can say with full confidence that all those products, as well as the Russian origin military equipment, have considerable potential for renovation. As an example, there are several large-scale projects on repair of domestic armored materiel and air defense systems under implementation that are quite successful. Our country is ready to offer a comprehensive service program of maintenance, repair and upgrade of our military products according to the highest quality standards.

– What current offers of the Russian aircraft equipment and other defense solutions, according to experts of FSMTC of Russia, are more promising for the countries of this region?

– Long-term experience of successful cooperation with the countries of the Middle East and North Africa and the relationship of trust at bilateral level give us a strong cause for optimism about the future of military-technical cooperation with these countries.

Armor materiel, air defense systems and aviation equipment are traditionally in demand here because they enable our partners to optimize the protection of special infrastructural objects, which is of paramount importance.

However the need for a more integrated approach to the issues of national security amid security challenges and looming threats compels the countries of the Middle East and North Africa to actively diversify and modernize their national Armed Forces. Therefore, we consider the regional market a promising one for a wide range of military purpose products.

– Is Russia ready to consider JVs in the countries of the Middle East? Is there any existing positive experience of such cooperation?

– A number of our partners from the countries of the Middle East and North Africa show interest in establishing joint ventures (JVs). The Russian Federation is ready to consider different models of cooperation, including various forms of JV. Some projects are already under implementation. We hope that they will be successfully fulfilled to further promote cooperation between the Russian Federation with the countries of the region.

– There is much discussion about the positive influence the operation of Russian Air Force in Syria has had on Russian defense exports. Please, if you can, name any particular type of equipment that has been ordered by a foreign customer due to its successful implementation in Syria?

– Since the very start of the Russian Air and Space Forces counterterrorist operation in Syria, the demand among foreign customers for the Russian military-purpose products has significantly increased. At the same time one has to realize that signing a contract is a time-consuming multi-phased process with lots of preparatory work to be accomplished before a deal can materialize.

We are having a busy time marketing the systems that are successfully used in Syria. You might be aware that S-300 and S-400 air defense systems, Pantsyr S-1 surface-to-air missile and anti-aircraft artillery weapon system, Kornet-E antitank guided missile system and other air-launched weapons are in the top wishing-list of our customers. Of course, the increased popularity of these weapons is to an extent due to their successful performance in Syria.

– Some of the systems used in Syria are the ones that have gone through comprehensive modernization with their performance substantially increased…

– Modernization of arms and military equipment produced in the USSR is a full-fledged area of military-technical cooperation of our country with its foreign partners. Competition with Eastern Europe, CIS and China has recently become rather tense. Nevertheless, the countries that use our equipment should well understand that high quality work on improving performance and ensuring safety of defense equipment can be only carried out by certified enterprises and under the supervision of Russian experts in relevant fields. At present Su-24 and MiG-29 aircraft, Mi-8 and Mi-24 type helicopters, T-72 tanks and BMP-1 infantry combat vehicles are being successfully overhauled and modernized in the region.

– What can you say about Russian Safe City Project and its defense export prospects?

Well, Defense Ministries and their various agencies remain major customers of the Russian military equipment in the region. And there is no surprise about it since they require our state-of-the art systems to successfully carry out their basic function which is to protect their countries' sovereignty and territorial integrity.

At the same time, there is growing interest in the military-purpose products from the Ministries of Internal Affairs and other security agencies. Despite the fact that so far it has been limited to procurement of small arms we hope that our cooperation with these agencies can turn out mutually beneficial and fruitful.

As for the Safe City, we have made our presentations and respective proposals to partners. Some of them have expressed much interest in the project. Still at this stage it is too premature to talk of any specific contracts on the Safe City.

We have been developing military-technical cooperation with the countries of the region from the middle of the 20th century, that is for more than 50 years. Symbolically enough, the inception of interaction in the military-technical field with the countries of the Middle East and North Africa coincided with the period when our system of military-technical cooperation was established. For our regional partners it was the time they obtained independence. Thereafter our cooperation in the military-technical sphere has developed steadily and in a constructive manner.

– Are the countries of the region interested in producing Russian equipment under license and establishing joint ventures for maintaining and servicing Russian equipment on-site?

– It is no secret that many countries of the Middle East and North Africa are seeking to advance their defense industry. And, to our satisfaction, they consider Russia as a qualified and reliable partner that can help them do it.

Taking into account the volumes of equipment supplied to the armed forces of the region, Russia is pretty much interested in launching service centers for our equipment here. At present, we are exploring a number of projects on aviation and armor materiel, as well as air defense systems maintenance centers. Hopefully we will soon come up with some mutually beneficial solutions.

As for license production of Russian military equipment, we proceed from the premise that at first partners have to procure large consignments of finished products. Only after that we can start a reasonable discussion of production under license.

– Is Russia open today for new cooperation ties?

– Yes, we are open to new partnerships and we understand that this is the trend. Of course, the approach 'buy it as it is or search for it elsewhere' is becoming obsolete. Naturally, sales of the final product is our main priority, but our partners increasingly aim at building their national manufacturing facilities to develop their industries.

The relationship with partners within the pattern 'end products only' is being gradually replaced by comprehensive cooperation in the field of high-technology products. And we are ready for this kind of cooperation as a country that has built its own defense industry. We are ready for cooperation and we will help our partners to create systems they need today.

– Can you give any particular examples worldwide?

– A case in point is the joint venture to manufacture Ka-226T helicopter, which is registered in India in accordance with appropriate intergovernmental agreement. It will start its active work soon. Another example of technological cooperation is BrahMos joint venture established in India.

In addition, the establishment of a chain of maintenance stations in Latin America, in particular, in Peru and in Brazil can be invoked here too. We have a lot of cooperation projects with Chinese companies etc.

Therefore, our foreign partners can be sure that we are ready for technological cooperation based on many years of experience and strong reputation of Russian weapons in the world.

– Is it really strong?

– Yes, it is. Russian weapons and military equipment have made a good showing in the world. Today experts state that our weapons are: first, highly technological; and, second, proving their 'mission survivability'. In addition, it is relatively easy to maintain our weapons. Combination of the above mentioned factors explains why our products are so popular in the world.

At the same time today we offer the best value for money in the global market. This is recognized by everybody, including our competitors. I state this proudly and not for the purpose of advertising, because it is not only our opinion, but assessments of experts of the global market of military purpose products.

As for license production of Russian military equipment, we proceed from the premise that at first partners have to procure large consignments of finished products. Only after that we can start a reasonable discussion of production under license.

– And did Soviet equipment prove its high efficiency?

– Yes, it did. And it is still doing so. For example, Vietnam has been our partner in the field of military-technical cooperation for a long time for one reason only: Vietnamese army uses soviet military equipment for decades and is satisfied with it and with Russian products supplied in replacement of older soviet equipment.

– Does it ring true amid the evidently growing competition in the weapon market…

– We live in the real world and we clearly understand that competition is strong. Russian manufacturers take into account the trends of the global military equipment market.

Today Russia is a manufacturer of a large number of advanced and very expensive weapons, including some most innovative pieces. But this is not to say that we shall offer exclusive solutions only. Russia is aimed at active expansion of its niches in the global market participating in many international tenders for both state-of-the art weapons and traditional products. This stimulates national industry to manufacture the best products at most competitive prices.

– During the Saudi monarch's recent official visit to Russia the two countries reached agreement on such Russian weapons S-400, TOS-1A, AK-103, AGS-30, Kornet-EM). Is Russia open to technology transfer or is it just about finished products supplies?

– Yes, our countries have agreed on supplies of S-400 «Triumph» anti-missile defense system, TOS-1A anti-tank guided weapon system, Kornet-EM anti-tank guided missile system, as well as AGS-30 and AK-103. At present we are discussing the practical implementation of the agreements reached. And, to our full satisfaction, talks are proceeding in an utterly constructive and open manner.

– What is impact (if any) of sanctions of some Western countries on the MTC of Russia with foreign countries?

– Sanctions is a bad notion in principle, they contradict the logic of free market per se. Suffice it to say that WTO, of which Russia is a member, upholds freedom from any restrictions. Unfortunately, many international institutions intended to strengthen mutually beneficial cooperation are failing today. And in this particular case we are witnessing politically motivated and absolutely unjustified discrimination. However, being realists, we have to work and find solutions.

There is also a downside of the medal for European companies that are forced to follow the sanctions. It is not only that they are bearing considerable losses as a result of this. It will also be extremely difficult for them to return to the Russian market after the sanctions are lifted. Perhaps, it will be even impossible as all the niches they used to have already been taken by their rivals.

Our partners complain that they have a kind of a 'fatigue' about the sanctions. Everybody understands that this should be stopped, because nobody gains from it. We shall see how things turn out. The Russian Federation has never shut any doors or burnt down bridges. We take the situation in a pragmatic and unimpassioned way.

– So we are still to see who suffered from the sanctions more, aren't we?

– Those who lost the Russian market have suffered most. In a longer term our industry can gain from sanctions. Russian manufacturers due to the imports substitution program and new cooperation ties are at minimum risk of contractors refusing to supply parts or equipment because of some politically motivated reasons. They are not at risk of having to delay supply dates or to negotiate new conditions with their customers. If a MPP is manufactured completely within the country, it is a guarantee for its national army that everything will be done in a time. And it is a big competitive advantage in the opinion of foreign customers.

/RA&MG/

FOR LAND FORCES

Around 1000 items of land forces equipment to the foreign customers

Rosoboronexport (part of the Rostec State Corporation) notes an unfailing interest in the Russian military products for land forces and the increase in orders for the civilian and dual use equipment.

'Land forces materiel and military equipment produced in Russia are very popular and have a well-deserved authority among foreign armies. Our military equipment turns out to be much more attractive than foreign equivalents due to its characteristics, 'effectiveness-cost' criterion and a capability to operate in difficult environmental and climatic conditions. The total volume of its export since 2001 until now has reached nearly 25 bln US dollars, and today we note the increase in demand in the countries of South-East and Central Asia, Central and Western Africa and Latin America,' said Rosoboronexport's Deputy Director Igor Sevastianov.

Russian military products for land forces take stable leading positions practically in all segments of the market. They correspond to the present-day requirements, keep up and, in many aspects, outperform competitors' products. Very much in demand are the small arms, close combat weapons, armoured and automotive vehicles, artillery, anti-tank missile systems and ammunition.

'Today Rosoboronexport offers a variety of land forces equipment and materiel to the foreign customers. The list of offered products includes around 1000 items. They are mostly designed for the armed forces, but there is a substantial part of civil and dual-use products in our portfolio of orders. For instance, over 18 thousand KAMAZ, URAL, GAZ and UAZ based vehicles designed for the transportation of cargoes and personnel have been supplied to the Asian, African and Latin American countries since 2001,' added Igor Sevastianov.

Besides, after the adoption of changes to the Federal Law 'On Weapons' in 2017 Rosoboronexport received the right to export non-military and service weapons. 'Given the fact that Rosoboronexport has all the necessary competences and a solid experience, these changes will allow us to increase the portfolio of orders and come to the new markets. We are also launching cooperation on this issue with the countries, which did not have an opportunity to buy Russian non-military and service weapons before due to different reasons. And we are already engaged in negotiations with a number of customers,' Igor Sevastianov noted.

/RA&MG/

HIGH-PRECISION WEAPONS

The Russian Holding creates the best innovative weapons

Products of the High-Precision Weapons Holding (part of Rostec Corporation) are well known all over the world, including in the Gulf countries. Russian brands like 'Pantsir-S1', 'Kapustnik-B', 'Konkurs', 'Metis-M1' and others made by High-Precision Weapons Holding are determining technological and combat future of high-precision systems all over the world. This Russian holding is the primary designer and manufacturer of Russian high precision weapons is engaged in producing the world's best types of high precision weapons. Professionals and guests of the Gulf Defense & Aerospace 2017 in Kuwait may fully realize it on the scene. Professionals and guests of the Gulf Defense & Aerospace 2017 in Kuwait may fully see it in the exhibition.

Leader in its segment

Russian High-Precision Weapons Holding (was founded in 2009) includes 19 enterprises being mostly world leaders in their production and technology segments. The holding consists of a number of largest leading defense enterprises that are well known on the world arms market. It is sufficient only to mention such brands as Shipunov KBP Instrument Design Bureau, Tula Arms Plant, Tulatochmash, Tactical Missiles Corporation, Nudelman Precision Engineering Design Bureau, Kovrov Electromechanical Plant, V.A. Degtyaryov Plant, All-Russian Scientific Research Institute Signal, and others. Most of them are national and international leaders in their segments.

Holding is the world largest science and technology complex engaged in developing and creating high-precision weapon systems for combat tactical zones. The company being a member of Rostec Corporation, the world largest engineering corporation, is among the leading designers of state-of-the-art weapons in the world.

The weight of the holding company and its products in terms of strengthening defensive power of Russian army and delivery of the newest weapons to word markets can hardly be overestimated. There is a fast growing number of high precision systems and importance of tasks performed with them in the biggest armies of the world. Thus, over the recent five years Russian Armed Forces have had increasing purchase volumes. Export volumes of the latest weapons are also increasing. According to Alexander Denisov, Director General of High-Precision Weapons, JSC 'in view of defense and industrial sector mission we are considering well-timed and full fulfillment of purchase obligations as a priority task.'

According to military experts among the calling cards of the company is first of all the above-mentioned 'Pantsir-S1' air defense gun and missile system made by Tula instrument design bureau (KBP), ship-based 'Palma' air defense artillery system armed with 'Sosna-R' missiles, 'Kapustnik-B' fire control system, 'Kornet-E', 'Konkurs', 'Metis-M1' antitank missile systems, 'Krasnopol', 'Arkan' guided missile systems and others. The majority of weapons being exported by High-Precision Weapons is second to none in the world in terms of performance and efficiency.

An average annual increase of the company's export deliveries is 25-40% that is certainly a world record in the sector of high precision weapons. Middle East, North Africa, Arabian Gulf countries and India are among the most stable importers of the company-made products. Recently there has been also increasing export activity in the markets of Southeast Asia, Latin America, Central and South Africa. Besides, according to military experts there is every reason to believe that by 2020 export delivery volume of

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High-Precision Weapons Holding may have been increased twice. It is clearly seen at nearly every international armament exhibition where the holding company takes part, its products (both at displays and open sites) are leading objects of regard for experts and ordinary visitors. This is also because everybody wants to take a closer look at famous 'Pantsir-S1' or 'Kornet-E' and meet the people who create the most efficient and advanced weapons in the world.

At the world arms market

High-Precision Weapons Holding plays an increasingly important role on the world arms market. The holding is the Russian largest developer and manufacturer of the most modern and innovative high-precision weapons. The importance and potential of the Russian holding increase worldwide as well: On a scale of the top 100 weapons manufacturers in the world, the Stockholm International Peace Research Institute (SIPRI) rates the High-Precision Weapons Holding from Russia at 39.

Such a success can be explained by increasing deliveries both to the Armed Forces of the Russian Federation and to the foreign market. According to an SIPRI expert, 'the Russian companies ride the ground-swell of boosts in military spending and arms export. Eleven companies from the top 100 list are Russian ones. Their income has increased by a total of 48.4%'. It also can be noted that the High-Precision Weapons Holding belongs to the top 10 world's defensive rankings by an overall production and supply increase rate.

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'Pantsir-S1' and 'Pantsir-ME'

It is no coincidence that currently 'Pantsir-S1' is among the top 10 rated ground weapons in the world. Escalation of tensions, military operations in unstable regions, all this only adds the Russian air defense system a fair-minded attractiveness to strengthen defensive power of many countries. Besides, its geographical application is extending. Military exercises and tests show that 'Pantsir-S1' can be properly used both in sand storm and severe conditions of polar night. In addition to that, being equipped with many heavy weapons 'Pantsir-S1' remains highly maneuverable, all-terrain, easy-to-use. Besides, it is capable of steady killing the wide range of targets including low-flying air ones.

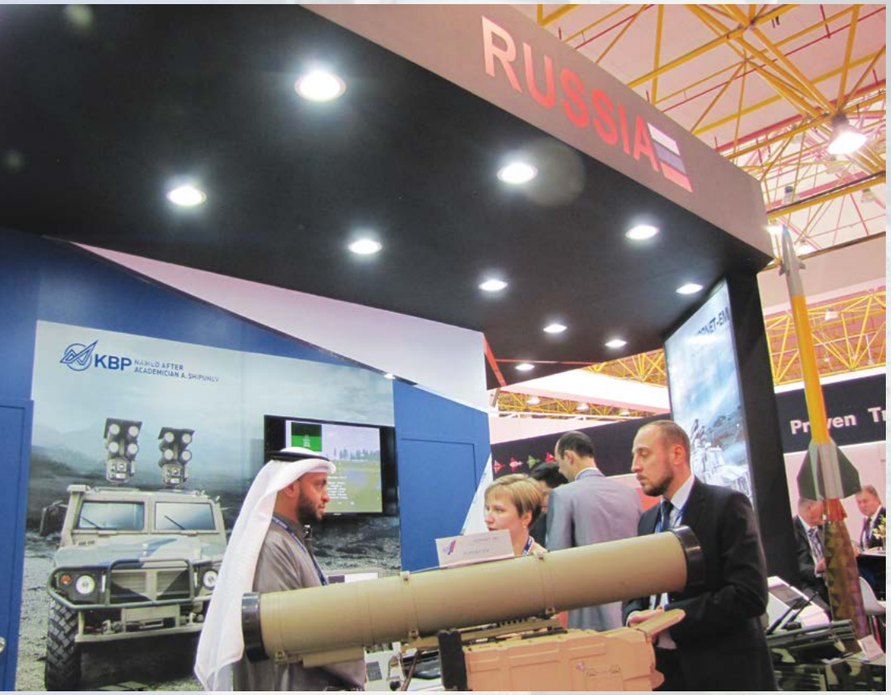
It goes without saying that when you talk about Tula KBP you should anyway mention its famous 'Pantsir-S1' air defense gun and missile system designed to defend military, administrative and industrial assets and districts against airplanes, helicopters, cruise missiles and high precision weapons, smart air bombs and remotely-controlled vehicles as well as to augment air defense forces when repelling air strikes and kill light-armored vehicles. Today 'Pantsir-S1' is possibly the most famous and popular weapon not only in its class but among all other defensive means generally.

The newest defensive sensation from High-Precision Weapons Holding was the presentation of anti-aircraft artillery weapon system 'Pantsir-ME' in Saint-Petersburg (the end of June this year). The creation of new innovative defense complex confirms the fact that Russian High-Precision Weapons Holding is one of the world leaders in creating modern weapons.

There was an absolute sensation in the world of military innovation. The system provides the ultimate protection against modern air threats, including small-size unmanned aerial vehicles. The naval missile and anti-aircraft artillery weapon system 'Pantsir-ME' developed by the Tula KBP (part of the High-Precision Weapons Holding) provides the ultimate protection against modern air threats, including low-flying and small-size unmanned aerial vehicles.

The naval weapon systems 'Pantsir-ME' and its forerunners 'Kashtan' and 'Kashtan-M' developed by the Tula KBP (part of the High-Precision Weapons Holding) are the only systems in the world that combine a powerful artillery armament, an effective multimode missile armament and an integrated radar-optical armament control system in a single turret mount. Equipped with two types of armament (which is already a considerable advantage), these systems have better characteristics of each individual armament type as compared to their analogues.

The creation of the new weapon system 'Pantsir-ME' provides reliable protection for ships against air threats with absolute probability virtually equal to 1, including protection against low-altitude anti-ship missiles and unmanned aerial vehicles. The key feature of the systems created by KBP is that they can first



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open fire on a target with missiles and then, in the dead zone of anti-aircraft missiles, use artillery armaments, if the target is not destroyed.

High engagement effectiveness is determined by the new features implemented in the 'Pantsir-ME' system. The modular design remains intact: 1 command module and up to 4 combat modules depending on ship type, which allows a flexible defence. The combined missile and artillery armaments ensure an effective engagement of all types of targets within the whole range of field conditions and counter-weapons with a potential for further development until 2020-2025.

The combat module of 'Pantsir-ME' includes a multifunction radar station with a phased antenna and an intercept missile with an engagement range of 20 km, which ensures simultaneous engagement of 4 targets, as well as an engagement of new types, updated anti-ship missiles and small-size air threats and surface targets. The combat module can work autonomously and as part of a cell of 4 modules. The system can be installed on ships with a displacement of 300 tonnes and more.

'Kornet-EM'

Among absolute masterpieces acknowledged by experts is 'Kornet-EM' long-range antitank missile system, which in term of versatility, efficiency and reliability is considered to be a unique product of today. This multipurpose 24-hour high precision system is designed to engage ground and air targets. It is capable of killing both modern and advanced tanks including those equipped with reactive armor. As a matter of fact 'Kornet-EM' is a versatile defensive and offensive mean which can be also used during local conflicts with fast moving battles. In addition to engaging any tanks 'Kornet-EM' can easily fight any light-armored equipment, ensure crossing fortifications, provide protection against air weapons (UFV, helicopters and so on) at a distance of up to 10km.

'Kornet-EM' features the modern 'fire and forget' principle, where targets are killed almost automatically to reduce psychophysical load, skill requirements and preparation time. 'Kornet-EM' is also popular for its mobility and easy-to-use capability. It is manufactured in two versions, they are tripod-mounted hand-held version (to augment antitank defense of attacking and defending ground troops and field artillery) and version mounted on small vehicles (car, APC, IFV and others).

'Kornet-EM' multipurpose missile system provides for engagement of modern and future tanks, various fortifications (pillboxes, bunkers) and low-velocity aerial targets (helicopters, assault aircrafts and UAVs) in day&night and adverse weather conditions under enemy ECM and optical jamming at ranges up to 8-10 km.

The 'Kornet-EM' system comprises: combat vehicle with two automatic launchers and operator's panel with a display; battery commander's reconnaissance and control vehicle, equipped with combined surveillance system including TV, IR and radar reconnaissance aids, navigation, communication and data exchange systems, automated control suite and weapon system ('Kornet-EM' ATGM and PKTM machine-gun), guided missile with HE warhead with impact and proximity fuses and firing range of up to 10 km; an antitank guided missile with a maximum firing range of 8000 m and shaped charge warhead armour penetration of 1100-1300 mm which enables the Kornet-EM system to engage modern and future tanks bearing in mind the tendency to growth of their armour protection.

Such performance specifications endow 'Kornet-EM with the highest target handling capability among similar existing and future systems – min. 3-4 targets per minute at ranges up to 5 km. Thus, in case the weapon systems are positioned at a stand-off range from enemy tanks (more than 4 km) a single Kornet-EM battery of 9 combat vehicles is able to repulse an attack (i.e. destroy min. 50% of targets) of enemy tank (M1A2 class) battalion (58 tanks). Actually, such mission may be accomplished by two battery salvos, destroying 32-34 tanks, i.e. 55-60% of the battalion. The time required to accomplish the mission will not exceed 1 minute, allowing to avoid casualties, since the enemy tanks will not be able to to reach their effective firing distance.

UAV on a reconnaissance mission lets enemy well in advance disclose defence, give accurate target designation for firing over-the-horizon munitions, record and transmit information on army relocations both during operations near the line of contact with enemy and in the rear. This results in significant increase in casualties and possible failures of combat mission performance. From the point of view of engagement, UAVs are difficult targets due to low altitude of flight. Moreover, in case of mass application they are a teaser for the air defence assets, causing high consumption of expensive surface-to-air missiles.

'Krasnopol-M2'

The well-known 'Krasnopol' artillery guided projectile (AGP) developed by KBP Instrument Design Bureau (Tula, Russia) is in service with the Russian Army and with armies of several other countries. 'Krasnopol' showed itself very well at demonstration tests, battle exercises and local conflicts when fired from both the152 mm artillery systems (D-20, 2S3, 2S3M, 2S19) and foreign-made 155 mm artillery systems (M109 family, G5, G6 and Bofors).

Both Russian-made (1D20, 1D22, LTsD-3M developed by Polyus, Moscow) and foreign-made (DHY307 made by CILAS, France) laser designators/rangefinders are used for the 'Krasnopol' system.

Despite of the fact that a number of countries have been conducting intensive research work aimed at development of self-contained mm-waveband and IR-wave band seekers, the artillery ammunition load should comprise highly precise ammunition with semi-active laser homing head because main task of conventional artillery is to engage observed targets, including obscured and low-contrast targets – firing points, engineering constructions, concealed vehicles and equipment.

This fact is also confirmed by foreign specialists. As reported by US sources, 75% of combat operations in Iraq involved guided ammunition firing against targets with low thermal signature. As noticed by the US specialists "The use of "fire-and-forget" ammunition in this situation is complicated and expensive".

Therefore, in foreseeable future the systems with semi-active laser homing will be in demand, as judging by the experience gained during the recent years nature of probable armed conflicts has changed and artillery missions, in particular, are accomplished not by means of a massive attack but means of engagement of selected targets, including urban warfare operations in presence of civilians. Accomplishment of such missions requires participation of a human being in selection of a target.

The field experience of the 'Krasnopol' system, new demands made by the future operational tactics for artillery guided weapons with laser semi-active homing became the reason to produce a new generation high precision artillery system, which is characterized by the following improvement directions:

- Extension of firing range;
- enhancement of AGP lethality providing for total engagement of strongly fortified targets;
- increase of relative frequency of combat use under conditions of wind, cloudiness, night;
- use of automated FCS;
- simplification of AGP handling in terms of fire preparation and loading;

With the said purpose KBP developed the 'Krasnopol-M2' system that provides the following advantages over the standard 'Krasnopol' system: the firing range of the new system is significantly extended; new projectile lethality is almost two times higher than that of a standard 'Krasnopol' projectile and provides unconditional kill of future tanks and strongly fortified fire positions; does not require mating of two sections unlike in the 'Krasnopol-M2' projectile; provides flexible cyclogram of onboard systems activation on the trajectory to ensure optimal guidance trajectories; the 'Krasnopol-M2' FCS provides automated fire control and input of the projectile flight time cyclogram into projectile; FCS ensures day-and-night combat application and automated calculation of the system's firing settings.

Small-size grenade-launcher system 'BUR'

The rocket-assisted grenade launchers earned a reputation of convenient, efficient and popular close range engagement asset. Further, the introduction of various types of warheads has considerably broadened their application range. Their high combat power (comparable to that of artillery projectiles), as well as small dimensions and low weight, allowing employment as shoulder-weapon, turns them into one of the main infantry fire support means in a wide range of missions.

The experience of law enforcement and counter-terrorist operations shows that in most cases such missions take place in urban areas or separate buildings. This eliminates the possibility or hampers the employment of combat vehicles for engagement lightly-armoured vehicles and low-vulnerable targets concealed in shelters or terrain and unreachable for the small-arms. Under such circumstances the weapon should be extremely light-weight (to allow higher ammunition carrying capacity), highly maneuverable (small dimensions) and accurate, as well as possess long firing range and powerful warhead.

KBP Instrument Design Bureau have been over a long time involved in the researches aimed to extend the firing range and enhance accuracy of grenade-launching (flame-thrower) system rounds, as well as increase the payload relative to the total weight of the weapon. The R&D resulted in rocket-assisted infantry flame-thrower of increased range and power with thermobaric warhead (RPO PDM-A), adopted for service with Russian Army in late 2003, which proved the efficiency of the solutions implemented by KBP into the new method of grenade-launcher (flame-thrower) rounds propulsion.

Further, based on the design of RPO PDM-A, KBP developed a small-size grenade-launcher system (SGLS) 'BUR'. The wide range of missions and specific requirements of a number of defence and law enforcement agencies, for which this multifunctional weapon was intended, determined a need for system approach to its development.

The launcher features a metal plate with a dove-tail side-rail for mounting the sights which are zeroed with a particular launcher. The grip incorporates a miniature generator providing an electric pulse required for launch. The grenade-launcher rounds comprise a launch container, motor and grenade itself. The container and motor are uniform for all types of rounds, whereas only a grenade payload varies. However, the warhead is designed in such a way that the payload variation does not affect the exterior ballistics, allowing employment of optical sights for firing all types of grenades.

The governmental testing of 'BUR' SGLS is successfully completed. The small-size grenade-launching system is intended for: engagement of manpower in urban environment, inside buildings, fortifications, as well as exposed on various terrain (including mountainous areas); inactivation of soft-skinned and lightly-armoured vehicles. The system allows firing from limited space rooms. The system ensures reliable firing within the whole operational temperature range: from minus 40oC to plus 60oC and in adverse conditions.

While developing the SGLS the designers managed to create a highly accurate rocket assisted grenade launcher allowing effective engagement of wide range of targets depending on the mission scenario at ranges up to 650 m. To guarantee high accuracy of firing a 'reactive-active' grenade propulsion principle was introduced, since standard methods, e.g. increase of the booster motor power or employment of sustainer motor running during the flight, lead to increased size and weight of the weapon or higher dispersion respectively.

The "reactive-active" propulsion principle implies jet thrust acceleration of the grenade placed in a barrel fixed to the jet engine and simultaneous active acceleration in the moving barrel due to gas bleeding from the engine chamber. Further, the barrel and engine stop, inducing additional acceleration to the grenade.

Thus, the energy induced to the grenade is increased (doubled) and accordingly grows the muzzle velocity compared to that of the conventional design grenade launchers with similar container length. However, high grouping of shots is maintained.

The efficiency rate was practically proved in the course of the system testing at KBP and by subcontractors.

Creation of highly efficient and at the same time easy in operation grenade launching system allows engagement of most targets in close-range battle, as well as flexible response to the changing combat environment due to employment of various warheads.

The system may become a demanded light weapon for various services of defence and law enforcement agencies.

/RA&MG/

An average annual increase of the company's export deliveries is 25-40% that is certainly a world record in the sector of high precision weapons. Middle East, North Africa, Persian Gulf countries and India are among the most stable importers of the company-made products. Recently there has been also increasing export activity in the markets of Southeast Asia, Latin America, Central and South Africa. Besides, according to military experts there is every reason to believe that by 2020 export delivery volume of High-Precision Weapons Holding may have been increased twice. It is clearly seen at nearly every international armament exhibition where the holding company takes part, its products (both at displays and open sites) are leading objects of regard for experts and ordinary visitors.

KORNET-EM

MULTI-PURPOSE LONG-RANGE MISSILE SYSTEM

Multi-purpose long-range missile system 'Kornet-EM' is designed to engage existing and future combat tanks protected by explosive reactive armor, light armored vehicles, fortifications, surface low-speed air targets (helicopters, UAVs, assault aircrafts) by day and at night in adverse weather conditions as well as in optical and radio jamming environment.

Advantages and Operating Features

- Targets engagement in automatic mode reduces psychophysical stress of operators, requirements to their skills as well as reduces their training period.
- Simultaneous salvo firing at two targets greatly increases rate of fire and firing effectiveness of the system.
- Firing by two missiles in one beam to engage extra dangerous targets including those protected by ERA.
- Two times (up to 10 km) as compared to 'Kornet E' ATGW increase of firing range and guidance accuracy increases up to 5 times.
- Wider possibilities for ATGW thanks to engagement of small-size air targets (helicopters, UAVs, assault aircrafts).
- 'Kornet EM' system can be installed on wide range of carriers with small loading capacity (1 pc AL 0.8-1.0 t; 2 pcs AL 1.2 -1.5 t).

System provides firing by all missiles of 'Kornet E' family.

ROSOBORONEXPORT: 17 YEARS OF SUCCESS

One of the major operators in the world market for arms and military equipment

On November 4, JSC Rosoboronexport (part of the Rostec State Corporation) celebrated its 17th anniversary. The company was set up by the Russian President's Decree in 2000 as Russia's state intermediary for importing and exporting a full range of military and dual-use products, technologies and services. Rosoboronexport is a 100% state-owned company. In 2007, the management of its stocks was transferred to the Rostec State Corporation.

'Over 17 years, Rosoboronexport has become one of the leaders in arms supplies, having sold products worth a total of over $140 billion. We show good results in foreign trade, and the country's leadership doesn't leave this success unnoticed. For their great contribution in developing military-technical cooperation with foreign countries, 34 Rosoboronexport employees were awarded by Russian President Vladimir Putin,' said the CEO of Roctes, Sergey Chemezov.

In 2017, Rosoboronexport did a lot to expand export geography of Russian armament and military equipment, as well as to increase the range of Russian military and dual-use products, supplied to foreign customers. Rosoboronexport is actively cooperating with more than 50 countries worldwide; and their number will further increase by the end of 2017, despite unscrupulous actions of some countries, competing with Russia in the global arms market.

'Rosoboronexport's order portfolio currently amounts to about $45 billion, which proves high competitive edge of Russian defense products on the global level. A considerable share of the portfolio are contracts to purchase Russian high-tech systems, primarily aircraft and air defense systems. In addition, Rosoboronexport is discovering new market segments, developing exports of civilian and sporting weapons and making turnkey national security systems that use cutting-edge information security solutions. For hundreds of Russian companies Rosoboronexport became a guide to international success, an indispensable assistant, and sort of a one-stop service, which has powerful governmental support, respect from foreign partners, expertise accumulated over tens of years, and latest marketing technologies,' said the CEO of Rosoboronexport Alexander Mikheev.

At the International military-technical forum Army-2017 Rosoboronexport will present their exposition in the framework of the demonstration center of the Rostec Corporation in the joint exhibition of the Corporation. Rosoboronexport's stand will be 222 sq. m, and will use the modern multimedia tools (a table with the effect of levitation, video wall, touch panels, etc.), where will be presented for a wide range offered for export military products from Russia. There is the latest exhibition technology, also with holographic multimedia catalogs and many other innovations.

The first Soviet state intermediary agency for military-technical cooperation with foreign countries was created on 8th May 1953 after the USSR Council of Ministers had decided on forming the General Engineering Department within the then Ministry of Domestic and Foreign Trade. Other special foreign trade bodies were created later on to provide for further expansion of military-technical cooperation activities. In the late 1990s there were two federal state unitary enterprises in Russia acting as state arms exporters Rosvoorouzhenie State Corporation and Promexport.

In November 2000 the two enterprises were merged into a single one – Rosoboronexport Federal State Unitary Enterprise, the sole state intermediary for export/import of defence products, by the Presidential Decree No. 1834 dated 4th November 2000 aimed at restructuring the system of military and technical cooperation of the Russian Federation with foreign states, and improving its performance. Since September the 1st, 2014 Rosoboronexport has been operating as a joint stock company.

Rosoboronexport pursues a marketing strategy targeted to expand the geography, range and volume of export deliveries. A number of special programs and projects for exporting products to specific countries have been developed based on a comprehensive analysis of the arms markets and foreign partners' needs. Rosoboronexport seeks to operate flexibly and efficiently in the market, using modern and advanced marketing and customers' settlement methods.

Rosoboronexport – the sole Russian state intermediary agency, which is responsible for import/export of the full range of defense and dual-use end products, technologies and services. Only Rosoboronexport has the right to supply the world market with a full range of arms and military equipment manufactured by Russia's defense industrial complex and approved to be exported. Rosoboronexport accounts for more than 85% of Russia's arms exports. Rosoboronexport is among the major operators in the world market for arms and military equipment.

The official status of the exclusive state intermediary agency gives Rosoboronexport unique opportunities to expand long-term mutually beneficial cooperation with foreign partners, provide guaranteed state support of all export-import operations, and strengthen Russia's leadership in the world arms market.

The main result of biography of Rosoboronexport, despite the difficult economic conditions and fierce, often unfair, competition in the global arms market, that company have managed not only to carry its sales, but also significantly enlarge its footprint in the traditional and new arms markets. Through integrated marketing strategies, company have ensured that order book today exceeds US$ 46 billion.

The special exporter makes painstaking efforts on a daily basis to increase Russian arms exports resulting in more than a thousand contract documents signed with foreign customers every year. Over the period of its operation in the international market, Rosoboronexport has delivered hundreds of thousands of units of military equipment and weapons worth more than US$ 120 billion to 115 countries.

Rosoboronexport pays great attention to both major billion dollar contracts and small deals. The company seeks to operate flexibly and efficiently by using modern and advanced marketing and customer settlement methods. The special exporter cooperates with more than 700 Russian defense-industrial enterprises and organizations, which enables it to offer partner countries the comprehensive and cost-effective solutions for strengthening their defense capability and national security.

By concluding export contracts, Rosoboronexport supports the Russian defense industry, which is especially important under difficult conditions in the global market. High-tech products are in increased demand in the world arms market today and thus the company is interested in developing smart manufacturing in Russia.

In addition, Rosoboronexport is actively involved in a number of charitable and sponsorship projects. The company provides assistance to military hospitals, military historical museums, and children's educational institutions. Rosoboronexport supports major sporting events and various sports federations, acts as sponsor and partner of the largest industrial exhibitions and cultural events held in Russia and abroad.

Rosoboronexport pursues a marketing strategy targeted to expand the geography, range and volume of export deliveries. A number of special programs and projects for exporting products to specific countries have been developed based on a comprehensive analysis of the arms markets and foreign partners' needs. Rosoboronexport seeks to operate flexibly and efficiently in the market, using modern and advanced marketing and customers' settlement methods.

Foreign customers are offered package solutions for national systems intended to defend land, air and seaside borders, which feature the optimal trade-off between cost and performance. These solutions may include both the supply of military products and services and organization of licensed production in customer countries, the setting-up of joint ventures to manufacture and maintain equipment, as well as joint R&D efforts. Rosoboronexport widely uses the optimal offset programs. With regard to foreign customers' interests and the opportunities of the Russian defense industrial complex to increase its exports, Rosoboronexport pays much attention both to major billion-dollar contracts and small deals worth the hundreds of thousands to several millions of dollars.

/RA&MG/

Only Rosoboronexport has the right to supply the world market with a full range of arms and military equipment manufactured by Russia's defense industrial complex and approved to be exported. Rosoboronexport accounts for more than 85% of Russia's arms exports. Rosoboronexport is among the major operators in the world market for arms and military equipment.

CORE AREAS OF ACTIVITIES OF ROSOBORONEXPORT

- **Export / import of all types of conventional weapons, military and dual-use equipment and services.**
- **Organization of licensed production of armaments and military equipment abroad, joint R&D efforts with foreign partners.**
- **Maintenance and repair of earlier supplied weaponry and military equipment.**
- **Modernization of Russian-made weapons and military equipment.**
- **Training foreign specialists in Russia and customer countries in the operation and maintenance of supplied military equipment.**
- **Technical assistance in the construction of military infrastructure facilities: defense plants, airfields, depots, ranges, training centers.**

BIDEC-2017

The first edition and the first success

On October in Bahrain International Exhibition & Convention Centre (city of Manama, the capital of the Kingdom of Bahrain) had been the first edition of Bahrain International Defense Exhibition and Conference (BIDEC), was organize under the patronage of His Majesty King Hamad bin Isa Al Khalifa, the Supreme Commander. BIDEC is tri-service defense exhibition, it covers land, sea and air.

BIDEC provided a unique opportunity to meet experts, specialists and representatives of major defense equipment companies and all three services in one place. It was also serve as a platform for the world's leading companies to showcase the latest defense systems and modern technologies. BIDEC was also provide the military authorities with the opportunity to access the latest technology, equipment and hardware.

Participation of the largest international companies of the defense industry in BIDEC-2017 indicated BIDEC's unparalleled success: 189 exhibiting companies from 39 countries. with the participation of 189 exhibiting companies from 39 countries. Held under the patronage of His Majesty King Hamad bin Isa Al Khalifa, the Supreme Commander and chaired by HH Brigadier-General Shaikh Nasser Bin Hamad Al Khalifa, the three-day conference from 16 – 18 October also hosted the Middle East Military Alliances and Coalitions Conference (MEMAC) for two days.

HH Shaikh Nasser praised the enormous efforts to maintain Bahrain's leading rank in hosting unique events and conferences specialised in the security and military fields. The long-standing work of preparing for BIDEC was due to the importance of this event which accommodated major security and defence service providers with senior officials in the military sector to exchange views and ideas on the latest developments in both industries and how to develop partnerships among them.

HH Shaikh Naser explained, 'The dream has always been great, but the reality has become even more beautiful after the remarkable success of BIDEC, as well as the panel discussions that took place in the Middle East Military Alliances Conference, which brought together senior military leaders and spokespersons specialising in strategic and political affairs.'

HH Shaikh Nasser praised the members of Derasat to make the first edition of BIDEC a huge success. This came during his reception to

SERGEY GORESLAVSKIY,
Deputy Director General, Rosoboronexport

'I think we can congratulate our Bahraini partners on the occasion of Bahrain International Defence Exhibition and Conference (BIDEC) which has established right framework for the long run work. Especially since we can see the attention paid by the leaders of Kingdom of Bahrain and the king himself to the preparation of the exhibition.

Although we have no very large-scale Bahrain-dedicated supplies the size of country should be taken into account. Russia has delivered to Bahrain AK assault rifles, antitank missile systems 'Kornet-E' and army vehicles KAMAZ. The fact the relations are being developed and evolved is important, so we hope this trend will keep going in future.

Today our Bahraini partners take an active interest in a wide range of Russian products such as air defense systems of various range, armored and automotive vehicles, antitank weapons and fire arms etc. Middle Eastern countries are no strangers to international terrorism threat. Special attention is paid to all-level security matters in this regard. That is why we have shown in Bahrain new Rosoboronexport-designed product 'Russian-made Security Systems' among others. It includes every aid to administer the law, fight terrorism, defend critical assets and new cyber security decisions.

Interest in Russian military products is growing really larger all around the world. We see promising outlook for growing supplies of Russian defense-oriented products in The Gulf region in particular. Besides, the target customers for our weapon systems, equipment, technologies etc. include defense ministries, different law enforcement bodies and special forces.

I would like to emphasize that we consider all the exhibitions as very important also in the context of commencing new cooperation projects, starting negotiations on various supplies as well as new sites to specify positions with those partners we have joint practical projects.'

Brigadier Sheikh Nasser bin Hamad Al Khalifa, Commander of Bahrain Royal Guard and High Committee Chairman of BIDEC 2017 noted that BIDEC was hosted a number of features at various sites across the country that will strengthen Bahrain's position as a leading destination in hosting international events and enhance the role of the exhibition, which included Parachute Demonstrations, Shooting Demonstrations, Military Vehicle Demonstrations and a Warship Display.

HE Dr Shaikh Abdulla bin Ahmed Al Khalifa, Chairman of the Board of Trustees at the Bahrain Centre for Strategic, International and Energy Studies "Derasat" and Spokesperson and Chairman of MEMAC Organising Committee and members of the organization.

HE Shaikh Abdullah further stated that "We had almost 9120 visitors from different parts of the world who visited the exhibition to see latest technology and equipment from different defence and military countries. There were further five events taking place around Bahrain where over

1000 people attended the activities. MEMAC held on the sidelines of BIDEC witnessed the participation of more than 800 military professionals, strategists, analysts, and representatives from specialised think tanks all over the world."

Dr. Shaikh Abdulla bin Ahmed Al Khalifa also said, 'Further, it was a privilege to have Islamic Military Counter-Terrorism Coalition and Arab Coalition Forces supporting Legitimacy in Yemen, Saudi Arabia as our partners, and we are very glad to sign the $3.8 billion deal for the purchase of Lockheed Martin's F-16 Block, 70's that we are most likely to receive by 2021.'

ALEXANDER VELOVICH,
BIDEC representative in Russia:

'The Bahraini exhibition is very broad-ranging in terms of capabilities and very promising as a multi-region ground. Every new exhibition is certainly a high risk, particularly in the region where the world's largest exhibition IDEX is held which is tripartite. The fact BIDEC-2017 has shown a very quick start for a new exhibition is however objective. Bahrain has inflexible intentions to compete with Dubai and Abu-Dhabi since it has managed to do it with the aviation exhibition which shows unprecedented growth of 25-30% every event. That is every successive aviation exhibition in Bahrain (next to be held in autumn 2018) is almost one third larger than the previous one.

Besides, there are additional objective advantages. Thus, due to some certain reasons one can hardly imagine an exhibition like BIDEC to be held in Saudi Arabia thanks to very conservative rules. While Bahrain is linked to Saudi Arabia with a highway (a long bridge across two islands), so at that exhibition Saudis have introduced not only the biggest display but the largest delegation too. It is no coincidence that the exhibition promoters officially state in their press releases BIDEC is a window to a very profitable and promising arms market of Saudi Arabia.

Here is another objective advantage or peculiarity. Due to intense support provided by Bahrain military authorities BIDEC includes several demonstrations in addition to the exhibition and conferences. Mobile capabilities of automotive and armored vehicles are displayed as well as shooting with fire arms is carried out etc. at training ranges in desert. There are not many exhibitions in the world which can be accompanied by such equipment shows. Besides, I can say that night firings are conducted only in Russia at International military and technical forum ARMY and in Bahrain! Frankly speaking BIDEC is a first foreign exhibition where a throughout test of night vision systems and thermal weapon sights can be carried out.

I should emphasize that Bahraini embassy in Moscow, with ambassador extraordinary and plenipotentiary of the Bahraini embassy in Russia Dr. Akhmed Al Saati who had been engaged in promoting of this exhibition, has given presentation at Rosoboronexport premises for Russian defense enterprises. Following this BIDEC was visited by Rosoboronexport and Military Industrial Company which showed its cross country armored vehicles. These vehicles sparked much interest of the exhibition hosts and many guests.'

The three-day conference also witnessed various off-site activities like Warship Display at the Mina Salman Port, Parachute Demonstrations at the Endurance Village, Military Vehicle Demonstration at the National Guard Sakhir, Shooting Demonstrations at the National Guard Sakhir and Sniper and Night Shooting Demonstration at the BDF range. The event also benefited greatly through the expertise of leading defence exhibition organisers, UK-based Clarion Events who managed the event.

Outstanding success of BIDEC 2017 will strengthen the global confidence in Bahrain's huge organisational potential thanks to its loyal and creative cadres, advanced infrastructure, political and security stability, as well as economic and media progress, in light of HM the King's leadership and patronage of the prestigious event.

His Royal Highness Prime Minister Prince Khalifa bin Salman Al Khalifa sent a cable to the Royal Guard Commander, Brigadier-General HH Shaikh Nasser bin Hamad Al Khalifa.

HRH the Prime Minister expressed sincere congratulations to His Majesty King Hamad bin Isa Al Khalifa and HH Shaikh Nasser on the outstanding success of the Bahrain International Defence Exhibition and Conference (BIDEC 2017).

The Prime Minister expressed pride in HM the King's leadership, praying to Allah the Almighty to bless HM the King with abundant health and happiness, and the people of Bahrain with further progress and prosperity, under the King's leadership.

Russia also took part in BIDEC-2017, the biggest delegations were from Rosoboronexport (part of the Rostec State Corporation) and Military-Industrial Company. 'Perspective military-technical cooperation between Russia and Bahrain features strong upward dynamics stipulated by the Parties' interest in the identification of new areas of cooperation and their implementation through the signing of contracts and supplies of military equipment under those contracts. Our partners have shown keen interest in a wide variety of Russian-made air defense systems, armored vehicles, antitank weapons and small arms", head of the company's delegation to the exhibition, Deputy Director General of Rosoboronexport Sergey Goreslavskiy said.

Rosoboronexport was the organizer of a joint Russian display at BIDEC-2017. The company provided information on 200-plus pieces of military equipment. The other participants – the Military Industrial Company and Zavolzhsky Crawler Vehicle Plant – presented at BIDEC-2017 full-size models of the SPM-233136 special police vehicle and GAZ-3344-20 tracked tractor.

Sheikh Nasser affirmed that hosting a major event such as BIDEC is a translation of the aspirations of the wise leadership, and has assumed a privileged position on the global events map in various fields, especially in the field of defense, to be known since ancient times as the crossroads of civilization and a land of peace.

BIDEC provides a unique opportunity to meet experts, specialists and representatives of major defense equipment companies and all three services in one place. It will also serve as a platform for the world's leading companies to showcase the latest defense systems and modern technologies. BIDEC will also provide the military authorities with the opportunity to access the latest technology, equipment and hardware.

'The Middle Eastern countries have first-hand knowledge of the threat of international terrorism. Special emphasis here is placed on all levels of security. That is why we are ready to present a new product developed by Rosoboronexport, namely, the Russian Security Systems. It includes the entire spectrum of law enforcement, counterterrorist and facility protection assets as well as latest cyber security measures,' Sergey Goreslavskiy added.

The agreement on military-technical cooperation between the Russian Federation and the Kingdom of Bahrain was signed in 2015. As early as 2016 Rosoboronexport supplied several batches of Russian equipment to the Bahrain Defence Force. The year 2017 saw the signing of a number of contracts for supplies of arms and military equipment.

The bilateral cooperation maintains a positive trend; the countries continuously negotiate the supplies of a wide range of military equipment to Bahrain.

'Rosoboronexport pursues fruitful cooperation with its traditional partners from the Arabic Middle East and actively expands its presence in the region, which can be illustrated by the successful summit talks with the King of the Saudi Arabia having resulted in the signing of a number of contracts important for both countries,' Sergey Goreslavskiy concluded.

Rosoboronexport made a broad business program in BIDEC-2017, including meetings with the representatives of military-political leadership and business circles of Bahrain and other Middle Eastern and North African countries.

Brigadier Sheikh Nasser bin Hamad Al Khalifa, Commander of Bahrain Royal Guard and High Committee Chairman of BIDEC 2017 noted that BIDEC was hosted a number of features at various sites across the country that will strengthen Bahrain's position as a leading destination in hosting international events and enhance the role of the exhibition, which included Parachute Demonstrations, Shooting Demonstrations, Military Vehicle Demonstrations and a Warship Display.

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Sergey Goreslavskiy

'It is time to formulate a new regional security network that presents realistic, effective and fair mechanisms capable of strengthening the security of our countries, that ensures peace and stability, protects national capabilities and the Gulf principles, creates genuine guarantees... and adopts a political dialogue and initiatives for crises in the region,' Royal Guard Commander Brigadier-General Sheikh Nasser Bin Hamad Al Khalifa said. **/RA&MG/**

DENIS TRIFONOV,
Deputy Director of Foreign Trade Department, LLC Military Industrial Company

'At exhibition held in Bahrain LLC Military Industrial Company (VPK), the largest Russian manufacturer of armored wheeled vehicles and among the largest in the world, in addition to its traditional product which is armored vehicle Tigr being its brand now also introduced a torque link marsh buggy. It is the first time such equipment has been shown in this region. We consider the Near East market to be among the key and very promising ones. Besides, it has already become quite traditional. The VPK-made equipment is well known and understood here. Thus they are ready to purchase it.

At BIDEC we showed tropicalized 'Tigr' vehicle, so it can be required by Defense Ministry, National Guard and various law enforcement agencies. As to a torque link buggy we expect it to find its client at this market since its great road performance and amphibious capabilities are actually very popular in the Gulf area including Bahrain.

An advantage of Military Industrial Company over many other armored vehicles manufacturers is that it strives for ideal combination of mobility and protection. We develop a vehicle as an integral whole from chassis to armored body. Our company makes the most components and chassis assemblies by itself. That is the vehicle is made as an integral whole unlike construction kits involving components made by outside manufacturers. Thus, our vehicles have no trade-offs like mobility and protection meanwhile many other manufacturers reduce protection in favor of mobility and vice versa. Besides, to produce armored vehicles many manufacturers as a rule use civil chassis which usually fail to meet all requirements for armored vehicles. It appears that today it is LLC VPK who guarantees the best combination of mobility and protection with the highest reliability provided.

Besides, we provide full-scope service maintenance. One of our advantages is that we do not depend on other suppliers, thus no international political and economic tensions can disturb us from guaranteeing delivery of equipment, spare parts and service maintenance conditions.'

UAC, RUSSIA

High prospects in the civil and military segments

The United Aircraft Corporation (UAC) is the major Russian aircraft manufacturers and one of the biggest in the world. This Corporation unites more than 80 per cent of design and production assets of Russian aircraft industry. She also manages all key and most promising programs of development of the industry. UAC, which under one company represents the most well-known Russian aviation brands such as Sukhoi, MiG, Tupolev, Yakovlev and others, is today one of the world's biggest manufacturers and suppliers of aircraft.

Thanks to the success of its products UAC is one of the world's leading aircraft manufacturers. UAC's revenues have been lately growing on average more than 30% per year. Sukhoi Superjet 100 civil airliners, Su-30 and MiG-29 fighters, Yak-130 operational trainers are among the most popular aircraft exported by UAC. The document received by UAC is to much more simplify foreign market procedures, which is good news for present-day and future UAC's partners worldwide.

Moreover, one year ago as part of an effort to expand foreign presence UAC was given a military-dedicated foreign trade license to be implemented on a direct basis. The military-dedicated foreign trade license has been issued by Federal Service for Military and Technical cooperation. This helps UAC improve maintenance and repairs of equipment previously delivered abroad, which includes every Su, MiG, Il, Yak and Tu airplanes.

Alongside with the right for direct maintenance and repairs of the equipment previously delivered abroad, the document also specifies UAC's capabilities to update such equipment and train foreign personnel to maintain and repair UAC products. Besides, the license authorizes UAC to establish joint ventures abroad which can maintain and repair aircraft.

The license enables UAC to proceed to coordinated efforts in this area, develop a single enterprise after-sale service system based on current experience and ensure the most efficient activities at markets with several brands available.

The new capabilities confirm there is a steadily growing demand for UAC aircraft. Moreover, operational reliability and relatively low prices become increasingly significant. In this regard there is a reasonable increase of export of Russian aircraft having better reliability, up-to-dateness and well-balanced prices both for airplanes and further maintenance.

According to experts, it is Russian aircraft which in terms of life-cycle cost appear today as the most attractive in international markets.

UAC products include many aircraft which are proven international bestsellers. Thus, Su fighters exported by Russia number in the hundreds making these fighters come second and first worldwide. In 2011-2014s Su planes were the first in amount: in four years customers have received 139 aircraft, while Lockheed Martin delivered only 89 and Boeing delivered 60 planes.

UAC places big stakes on supplying fighter planes given that many countries plan to have their aircraft fleets upgraded. Among the most world popular planes is Yak-130 operational trainer which has been already delivered and being delivered to many countries. This is a top-class aircraft. It can be upgraded as a light fighter or close support plane which is highly demanded by Indian Air Force.

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However, Russian aviation export is notable not only for military aircraft. In recent years rather good results have been shown by civil segment for which UAC has been making big plans. Among Russian civil aircraft the Sukhoi Superjet 100 regional aircraft of a new generation is the most popular at foreign markets. The aircraft combines new aircraft engineering technologies, passenger convenience, significant economic advantages for airlines, proper environmental specifications.

The key advantage of Sukhoi Superjet 100 is lower operational costs as compared to its 100-seat

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competitors. Operational costs are minimized due to higher fuel efficiency and lower take-off weight. According to the aircraft operation study, its ownership cost is averagely 15-20% lower than the other similar class aircraft. The highly competitive lease rate supported by a state guarantee of depreciation value is also worth being taken into account.

SSJ100 capable of carrying 98 passengers is the first in its class aircraft featuring five-across seating, with big 32 inch distance between seats. Thanks to a combination of wider seats and higher cabin (over 2 meters) SSJ100 has more cabin space and bigger stowage bin capacity than such of competitors. The airplane has been built with the use of the latest design procedures and technologies by leading manufacturers such as French Snecma (engines) and Thales (avionics), US Goodrich (wheels) and Honeywell (APU). The interior has been designed by Italian office Pininfarina. In February 2012 the aircraft was certified by European Aviation Safety Agency (EASA).

According to UAC President Yuri Slyusar the Corporation has stable rate of mass production of Sukhoi Superjet 100. There are plans that every year more than 30 such aircraft shall be delivered to customers. Today about one hundred SSJ100s are being operated including those in other world regions, from South America to Southeast Asia.

Currently with available manufacturing capacities UAC enterprises are capable of producing up to sixty Sukhoi Superjet 100 per year. The Russian aircraft sparkles profound interest in Southeast Asia and Latin America. Experts confirm that in the context of 70-100-seaters this aircraft is becoming the most attractive for many international airlines. When interviewed Yuri Slyusar says UAC is intended to focus on further development of the Sukhoi Superjet 100 aircraft family to offer customers a range of regional planes.

It is worth noting that today a business jet version of the SSJ100s is also available. Following the results a number of measures, including auxiliary fuel tanks installation and other engineering solutions the range of the business version of the SSJ100 is increased to about 8,000 km-long nonstop flight.

At the Dubai Airshow 2017, which was held from November 12 to 16 in Dubai, United Arab Emirates, The United Aircraft Corporation became one of the major exhibitor. UAC had a strong presence at the show with an extensive product lineup at the show's static and aerial displays.

The Corporation demonstrated its Sukhoi Superjet 100 aircraft with a VIP interior, a premiere for the Middle East is the participation in the show's flying programme of the Su-35C supermaneuverable 4++ generation fighter. The static display was also host a Be-200ES multipurpose amphibian and an Il-76 heavy transport aircraft.

The region's airlines have established very high comfort standards. The Sukhoi Superjet 100 aircraft as well as the new Russian MC-21 aircraft family that was showed at the UAC's stand both demonstrate an optimal combination of commercial effectiveness and maximum passenger comfort. The Sukhoi Superjet 100 in its VIP configuration enjoys high demand – 8 aircraft have been delivered to customers to date. After a number of enhancements such as installation of additional fuel tanks and other system improvements the flight range of the VIP-version of the Sukhoi Superjet 100 was increased to 7,000 km that should satisfy the needs of most demanding customers.

Middle East customers also show interest in the Be-200ES multipurpose amphibian that, considering the region's geographic and climatic features, can be used in a number of unique configurations. The Be-200ES capabilities allow using the aircraft with maximum effectiveness and flexibility.

The show's flying programme was also brightened up by the "Russian Knights" aerobatics group on their new supermaneuverable multifunctional Su-30SM fighters that were supplied to the group in late 2016. Before that the group that was created in 1991 was using Su-27 and Su27UB fighters.

The Middle East is one of the most important regions for promotion of UAC's civil product lineup. According to the UAC's Market Outlook the region's average annual growth rates of passenger air transportation in 2017-2036 will be around 6%. In the long term the demand for new aircraft will be largely made up of narrow-body aircraft with more than 120 seats and wide-body aircraft. The total demand for aircraft by the airlines of the Middle East is forecast at 2,975 units for the next 20 years.

The demand for UAC's military product lineup is stable, however, lately, the interest in the world and in the Middle East in particular has risen considerably after successful performance of such aircraft as the Su-35C, Su-34, Su-30SM and MiG family fighters in real combat missions. Russian-made aircraft have once again proven their high combat effectiveness and flight and technical characteristics. **/RA&MG/**

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Under the auspices of the
PRESIDENCY OF THE
REPUBLIC OF TURKEY

Dear readers,

Although the aviation industry is susceptible to the vagaries of the global economy it is still able sustain its dynamism owing to its openness to international trade and competition. This first began with the unipolar new world order that emerged several decades ago, and which enables the discovery of new regions that offer new opportunities for the aviation industry.

In this regard, Turkey is situated in a geopolitically strategic position. As is the case in all other areas of trade, Turkey also serves as a bridge between the aviation industries of the West and the East. While the global aviation industry's growth rate has been 5 per cent in the last 13 years, Turkey's aviation industry achieved 15 per cent growth during the same period. Moreover, Turkey is still far from reaching its saturation point in the aviation industry.

Once the Istanbul's third airport is completed in 2018, this investment will become a hub for global air traffic, as the world's largest airport. The airport, which will offer employment opportunities for 225,000 people, is expected to host 3,500 flights and 200 million passengers annually.

"The Eurasia Airshow brings together Global Aerospace Industries' brands and their executives in Antalya, Turkey."

Taking advantage of high potential and the developments in the Turkish aviation industry and its region, we are adding a new air show to the premiere league of international exhibitions.

The Eurasia Airshow, which will be Turkey's first biennial international commercial and military aviation exhibition, is preparing to bring together global brands and their executives in a massive event that will take place in Antalya between April 25 and 29, 2018. We expect the Eurasia Airshow to create a business volume of approximately $40 billion in the commercial and military aviation industry.

We are organizing the Eurasia Airshow under the high auspices of His Excellency President Recep Tayyip Erdoğan. Our aim is to make the Eurasia Airshow (Turkey's first show-based aviation event) one of the most important Turkish global brands in the international aviation industry, along with Turkish Airlines and Turkish Aerospace Industries.

"Eurasia Airshow brings together aviation giants of the West and East."

We will hold the Eurasia Airshow in Antalya, which is Turkey's most popular tourism destination, and one that hosts very important events, such as the G-20. At the Antalya International Airport _ which, with its enormous size and tremendous infrastructure, is one of Turkey's three busiest airports _ there will be a 50 square metre indoor area, 65 chalets, and a static display area for 100+ aircraft with a total area of 300 square metres. At the Eurasia Airshow, our aim is to host 150 military and civil delegations, 100,000 professional visitors and more than 400 distinguished companies plus many airlines and aircraft maintenance companies. Alongside the airshow there will be an aerospace summit which already has 12 senior airline executives confirmed as speakers.

The air show will serve as a business development platform, where the aviation products of our country, as well its partnerships and business models in this field, will be introduced. Furthermore, all parties concerned will come together to talk about business, learn about each other's capabilities, and establish business contacts.

The Eurasia Airshow will also be a platform that will be attended by the industry's decision makers, the producers of commercial and military aircraft, sub-components and systems.

We are honoured to invite you to attend the Eurasia Airshow, as our guest, which will be a gathering point for the aviation industries' key players, from West and the East.

Ferhat Yenibertiz
CEO of Eurasia Airshow

Under the auspices of the
PRESIDENCY OF THE
REPUBLIC OF TURKEY

Guess where they are going?

An airshow which is going to accelerate the aerospace sector!

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SPLAV: NEW POSSIBILITIES OF MRLSS

Russian JSC 'SPLAV SPA' is the leading Russian enterprise in development and organization of production of the Multiple Launcher Rocket Systems (MRLS) for the Army, Navy, and Air Force.

Over its history from the time of its foundation in 1945, such outstanding systems as GRAD, URAGAN, SMERCH for the Army, GRAD-M, UDAV-1M, OGON', DAMBA, RPK-8 for the Navy have been developed at JSC 'SPLAV SPA', dozens of unique techniques for the rocket projectiles, the artillery shell cases of calibers from 24 to 152 mm made of various materials have been elaborated. Nowadays our engineering developments and production techniques in the field of the rocket artillery and shell cases production are known worldwide.

The distinctive feature of the Russian MRLSs development is striving of their designers to constantly enhance the rocket artillery combat capabilities through development of the new types of the rocket projectiles fitted with different-purpose warheads, as well as upgrade of the launch vehicles for the army-accepted systems.

Specialists of the enterprise have developed modernization programs for the GRAD and SMERCH systems which ensured execution of the fire missions on destruction of the enemy over a distance of, correspondingly, 40 and 120 km, enhancement of capabilities of fire engagement against the typical targets, computerization of the fire preparation and delivery, upgrade of the launch vehicles.

JSC 'SPLAV SPA', being the world leader in delivery of ammunition for the Russian-produced MRLSs, conducts active operations in the field of military and technical cooperation through Rosoboronexport, the Russian State Intermediary.

Nowadays JSC 'SPLAV SPA' offers at the international defense market upgraded GRAD and SMERCH MRLSs, including different-purpose warheads rocket projectiles with the range of fire of, correspondingly, 40 and 120 km, as well as the new generation of the 80mm unguided aircraft rocket armament, C-80FP HE-Fragmentation penetrating warhead unguided aircraft rocket projectile and a small-type high energy solid rocket propellant motor.

Presently the following systems are being offered for export:

GRAD MRLS:

1. 122mm Rocket Projectiles (RPs):

- 9M521 RP with increased power warhead;
- 9M522 HE-fragmentation separable warhead RP;
- 9M218 shaped-charge fragmentation submunitions RP.

2. 2B17-1Launch Vehicle (LV) is equipped with automated laying fire and control system (ALFCS).

Besides, the algorithm has been elaborated in order to upgrade GRAD and GRAD-1 MRLSs standard RPs by increasing the range of fire up to 40 km.

SMERCH MRLS:

1. 300mm RPs:

– 9M525 fragmentations submunitions warhead RP;

- 9M528 HE-fragmentation separable warhead RP;
- 9M529 fuel-air explosive warhead RP;
- 9M531 shaped-charge fragmentation submunitions warhead RP;
- 9M533 sensor-fuzed fragmentation submunitions warhead RP.

2. 9A52-2 LV (on MAZ chassis), 9A52-2T LV (on Tatra chassis) 9A52-4 LV (lightweight six-round launcher mounted on elongated KAMAZ chassis) equipped with ALFCS.

3. 9T234-2, 9T234-2T, 9T234-4 Transporter-Loaders.

4. 9F819 Arsenal Equipment.

5. 9F827 Training Aids.

6. 9F840 Training Set.

7. MP32M1Unified Command and Staff Vehicle.

8. 1B44 Radio Direction-Finding and Meteorological Complex.

Upgrade of GRAD and SMERCH LVs ensured the new capabilities of these systems:

- Fire delivery from the unsurveyed in the topographical respect firing position thanks to the autonomous calculation of the LV ramp longitudinal axis azimuth and plotting of the own coordinates;
- Cutting time from the moment of taking up of the temporary firing position to the moment of commencing fire by a factor of three;
- The LV ramp laying operable from the cab and without usage of the aiming points;
- Visual presentation on the computer screen of a graphical information for the LV ramp laying, the ground map with indication of the LV position, destination point, and route of advance;
- Increase in the LV survivability thanks to cutting time in the firing position;
- Increase of the operator-layer comfortability, especially in the adverse weather conditions and at night;
- Increase of the LV self-sustainment thanks to imparting to it of the navigation and topographical survey functions, which ensures shoot-and-scoot tactics, autonomous movement to the assembly point after firing, compensation of errors due to the human factor;
- reduction in the crew number up to 2 persons (GRAD MRLS), and up to 3 persons (SMERCH MRLS).

Beginning from 2003, the enterprise has been granted the right to independently carry out foreign trade activities with respect to the products for military purposes to the extent concerning delivery of spare parts, aggregates, assemblies, devices, completing units, special, training, and auxiliary equipment, technical documentation for the earlier delivered products for military purposes, carrying out of works on technical inspection, repair (including modernization subject to carrying out of R&D works), and other works ensuring complex service maintenance of the earlier delivered products for military purposes, as well as training of the foreign specialists in carrying out of the above works. /RA&MG/

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

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. Aassembled – 900x450x300 mm
    b. In Descent mode – 6,500x2,700mm *(without conopy)*

Actual Landing Impact Loads:

Acceleration directions:

'chest-to-back' – up to 8÷10 g

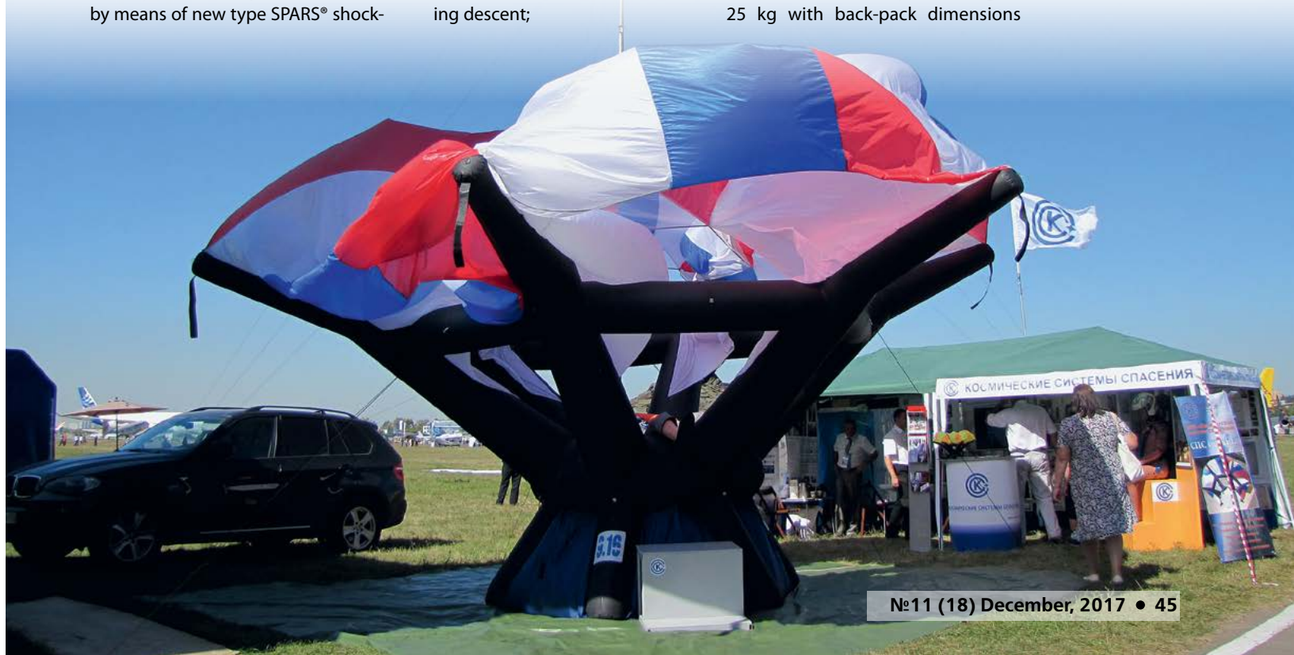
'side-to-side', 'head-to-pelvis' – up to ± 6 g

Acceleration Exposition Time – less than 0.5 s

Acceleration Growth Velocity – less than 500 1/s

User's age – 18÷70 years

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 necessary 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.

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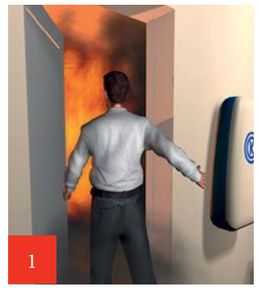

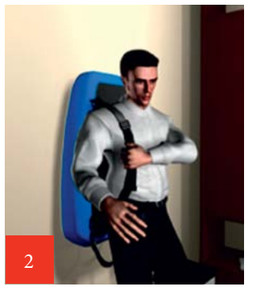

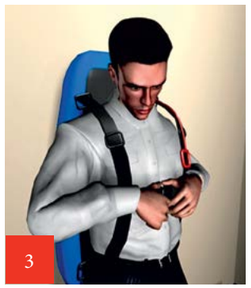

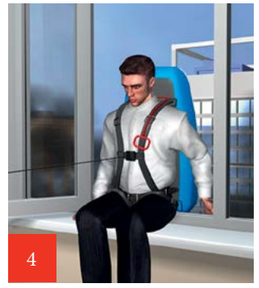

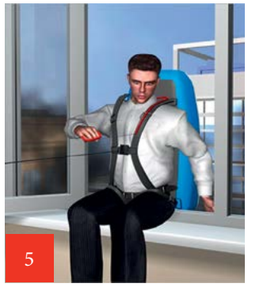

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There are following innovations in the proposed SPARS® technology:

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.

'Russian Aviation & Military Guide' 2018

	Release dates	Additional distribution
'RA&MG' №01 (19)	February 05th	**Singapore Airshow 2018 (06-11.02.2018, Singapore)**
'RA&MG' №02 (20)	February 19th	**DEFEXPO INDIA 2018 (21-24.02.2018 Goa, India)**
'RA&MG' №03 (21)	March 09th	**DIMDEX 2018 (12-14.03.2018, Qatar, Doha)**
'RA&MG' №04 (22)	March 27th	**ArmHiTec 2018 (29-31.03.2018, Armenia, Yerevan)**
'RA&MG' №05 (23)	April 02th	**FIDAE 2018 (03-08.04.2018, Chile, Santiago)**
'RA&MG' №06 (24)	April 13th	**DSA 2018 (16-19.04.2018, Malaysia, Kuala Lumpur)**
'RA&MG' №07 (25)	April 23th	**Eurasia Airshow 2018 (25-28.04.2018, Turkey, Antalya)**
'RA&MG'№08 (26)	April 25th	**ILA Berlin Air Show 2018 (25-29.04.2018, Germany, Berlin)**
'RA&MG'№09 (27)	May 04th	**SOFEX 2018 (08-10.05.2018, Jordan, Amman)**
'RA&MG'№10 (28)	May 21th	**KADEX-2018 (23-26.05.2018, Kazakhstan, Astana)**
'RA&MG'№11 (29)	June 11th	**EUROSATORY-2018 (11-15.06.2018, France, Paris)**
'RA&MG'№12 (30)	July 16th	**Farnborough Airshow 2018 (16-22.07.2018, UK, London)**
'RA&MG'№13 (31)	August 20th	**ARMY-2018 (21-26.08.2018, Russia, Moscow)**
'RA&MG'№14 (32)	September 17th	**Africa Aerospace and Defence 2018 (19-23.09.2018, South Africa)**
'RA&MG'№15 (33)	September 24th	**ADEX 2018 (26-29.09.2018, Azerbaijan, Baku)**
'RA&MG'№16 (34)	September 26th	**Istambul Airshow 2018 (27-30.09.2018, Turkey, Istambul)**
'RA&MG'№17 (35)	October 15th	**Future Forces 2018 (15-19.10.2018, Czech, Prague)**
'RA&MG'№18 (36)	October 22th	**EURONAVAL 2018 (23-26.10.2018, France, Paris)**
'RA&MG'№19 (37)	November 05th	**Airshow China 2018 (06-11.11.2018, Zhuhai, China)**
'RA&MG'№20 (38)	November 07th	**INDO DEFENCE 2018 (07-10.11.2018, Indonesia, Jakarta)**
'RA&MG'№21 (39)	November 10th	**BIAS 2018 (14-16.11.2018, Bahrain, Manama)**
'RA&MG'№22 (40)	November 26th	**IDEAS 2018 (27-30.11.2018, Pakistan, Karachi)**
'RA&MG'№23 (41)	November 27th	**JIAE 2018 (28-30.11.2018, Japan, Tokyo)**
'RA&MG'№24 (42)	November	**Iran Air Show (November, Iran, Kish)**
'RA&MG'№25 (43)	December 03th	**Expo Naval 2018 (04-07.12.2018, Valparaiso, Chile)**

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