RUSSIAN AVIATION & MILITARY GUIDE

Special analytical export project of the United Industrial Publishing

5(73), November 2023

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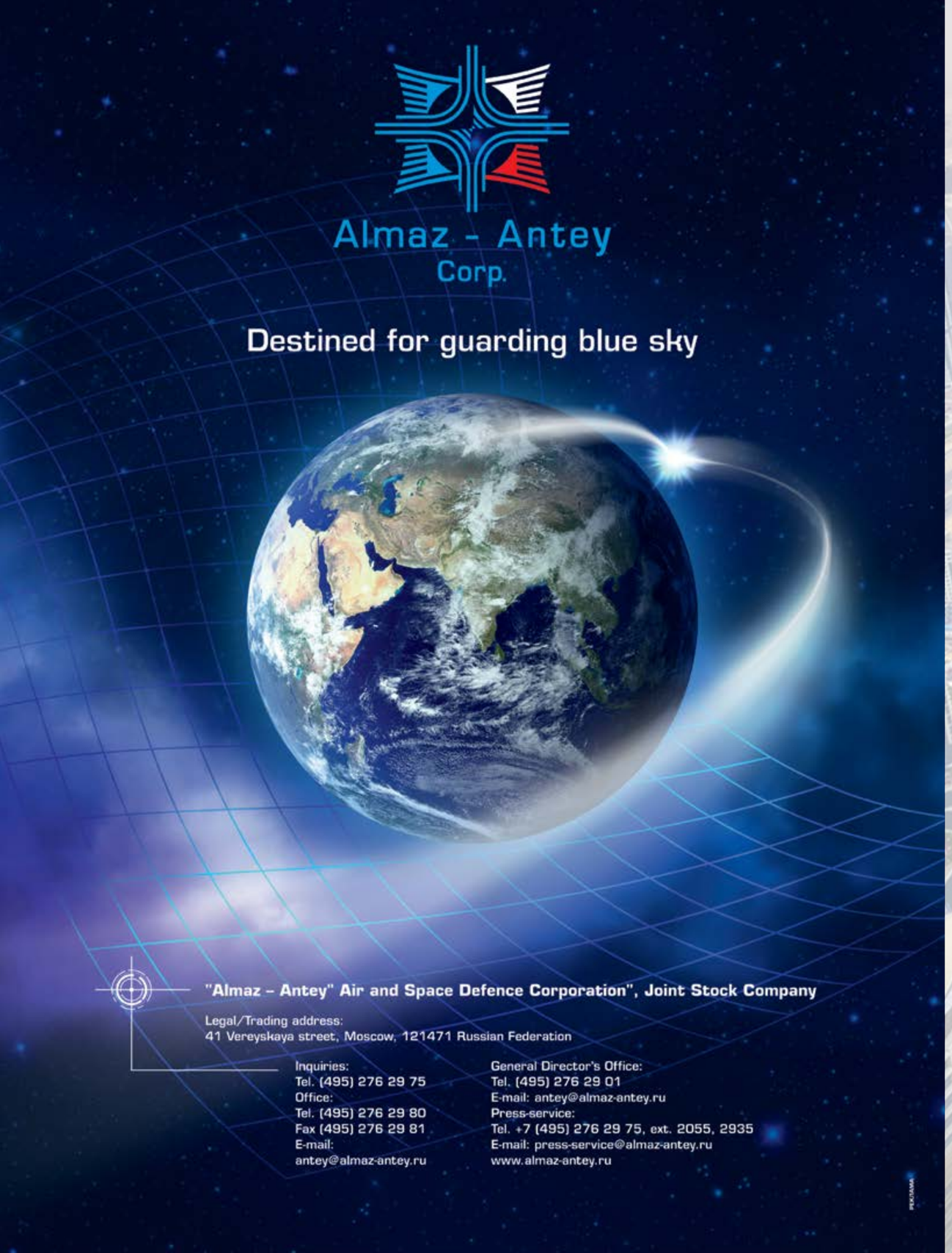
THE TECHNOLOGY OF FLIGHT



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GREAT FRIENDSHIP
Pages of mutually beneficial partnership

FSMTC OF RUSSIA
Special interview by Dmitry Shugaev

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CURRENT REVIEW
Views and assessments world's best media

The best innovations for Gulf, Middle East and global market

DUBAI AIRSHOW
SPECIAL PARTNERSHIP

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Алмаз - Антей
КУПОЛ

ТОР

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МАЛОЙ ДАЛЬНОСТИ

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OFFICIAL GREETINGS

Continuation of the open partnership policy

Dubai Airshow 2023 is definitely unique. Show is gathering in UAE obviously the best aerospace innovations that are intended for both Gulf and the other world's regions.

Political and economic situation in the world (conflicts, sanctions, threats of war and other) makes nations once again reconsider their technologies possibilities. It has become already obvious and undeniable that security is becoming increasingly important among the various values of civilization. Today, for any state, the ability to reliably and securely protect the territory, residents and values is a priority.

One can predict raise of aerospace means market in times like this. But together with developing of technologies in order to safety, rivalry increases in order to achieve such goals as increasing profits and market share. Dubai Airshow 2023 presents the best world (Russian also) aerospace innovations for global market, which are the undisputed world leaders on price and quality in their segments.

These exhibition shows that it is not serious about how many planes you have, but quality and possibilities of every single one of them is fact what leads to victory on the global market. Other significant factor is technological independence from seller – modern technologies make it possible to shut down any device from any place of the globe if you have appropriate access. With high technology products, solid aftersales service and proven reliability, Russia is honest and friendly partner for all countries, ready for mutual work. Taking part in Dubai Airshow 2023 companies from many countries (and Russian too) continues the policy of open partnership.

Valeriy Stolnikov

VLADIMIR PUTIN and MOHAMMED BIN ZAYED AL NAHYAN

The most important condition for the development of relations between the Russian Federation and the United Arab Emirates is the friendly relations between the leaders of the two countries, President of the Russia Vladimir Putin and President of the United Arab Emirates Mohammed bin Al Nahyan. Every meeting of the leaders became milestones in the development of the partnership between the countries and crucial factors in the strengthening of global stability.

So, for example, the big event in world politics was meeting President of the United Arab Emirates Mohammed bin Zayed Al Nahyan and President of Russia Vladimir Putin on the sidelines of the 26th St Petersburg International Economic Forum June 16, 2023 in St Petersburg. The UAE was participating in the forum as its main guest country. Before the talks, Vladimir Putin and Mohammed bin Zayed Al Nahyan toured the stands of the United Arab Emirates at the SPIEF 2023.

President of Russia Vladimir Putin said: 'Your Highness, I am delighted to welcome you to St Petersburg. We met at the previous forum, and you visited St Petersburg in October again. We had a very good in-depth conversation. It is a great pleasure to welcome you again, this time to the St Petersburg International Economic Forum.

We have just toured your country's pavilion – a wonderful pavilion that speaks of the prospects for the development of economic ties between our countries and the Emirates' potential in this sphere.

I know that the Emirati economy and social sphere are growing fast under your leadership, and in this sense, the UAE is definitely a very good and comfortable partner for us.

Relations between Russia and the Emirates are expanding very successfully. I will not cite specific figures now, but they are impressive. But most importantly, they benefit both Russia and the United Arab Emirates – to a large extent, of course, thanks to your support.'

President of the United Arab Emirates Mohammed bin Zayed Al Nahyan said: 'I would like to thank my friend President Vladimir Putin for the invitation, for welcoming the Emirati companies and for the assistance you are providing to us in this beautiful city.

This is excellent evidence of cooperation between Russia and the United Arab Emirates. Bridges of partnership have been built between us and we are actively cooperating.

I am delighted to see you and to be here.

We are building strong and reliable relations, and I am grateful to you for this, Mr President, and I hope the world also benefits from our cooperation. I am grateful to you, Mr President, for your attitude towards the United Arab Emirates and I thank you personally for this opportunity.

Thank you for giving Emirati companies the opportunity to speak at this forum. This forum plays a central role this year. I believe that cooperation between the private sectors of the two countries plays an important role in the expansion of our bilateral relations. For example, bilateral tourism is growing steadily: we hope that this year, we will receive a million Russian tourists.

Thank you. This is a very important stage and an important moment in the development of our relations.'

In December of last year there was a telephone conversation between Vladimir Putin and UAE President Mohammed bin Zayed Al Nahyan. The conversation covered topical issues of further development of Russian-Emirati cooperation, taking into account the agreements reached during the summit in St Petersburg on October 11. Special attention was given to the promotion of trade and economic cooperation, including in the transport, logistics and energy sectors.

The effectiveness of joint work within OPEC Plus to ensure the stability of the world oil market was highlighted. It was also noted with satisfaction that all Member States are consistently implementing the decisions they approved. In this context the sides touched upon the situation concerning the attempts by some Western countries to impose anti-market restrictions on the price of Russian crude oil, which is contrary to the principles of world trade.

In addition to his earlier message, the Russian President as once again congratulated President of the UAE Mohammed Al Nahyan and the Emirati people on the UAE's Foundation Day. Russian-Emirati contacts at various levels will continue.

It is also possible and appropriate to recall an important meeting between politicians in October 11, 2022. Vladimir Putin met with President of the United Arab Emirates Sheikh Mohammed bin Zayed Al Nahyan in the Constantine Palace (Russia, St.Petersburg). At that meeting President of Russia Vladimir Putin said: 'Ever since we established diplomatic relations 50 years ago, our contacts have been developing steadily and only going upwards. Although current international relations are complicated, relations between Russia and the United Arab Emirates are an important factor of regional and overall global stability.

Speaking of bilateral relations, as I have already said at the beginning, they are developing very successfully. Last year, prior to the crisis in Ukraine, trade volumes soared by 65 percent, and they continue to increase this year despite all the dif-

ficulties. In fact, they have expanded by 17 percent. Although this growth is not as impressive as in 2021, it is quite substantial.

We are working actively within OPEC Plus. I know your position, our actions and our decisions are not directed against anyone; we have no intention of creating problems for anyone, and we are not doing that. Our actions aim to stabilise global energy markets, so that consumers of energy resources and those supplying them to global markets would feel calm, stable and confident, and so that supply and demand would be balanced. We therefore respond to market requirements all the time, and we try to do this in line with current developments.

I find it very important to discuss the regional situation with you; a lot of problems remain there. The role of the United Arab Emirates and their influence on the regional situation are, of course, quite impressive, and I find it very important to discuss issues related to the situation in and around Syria with you.'

President of the United Arab Emirates Sheikh Mohammed bin Zayed Al Nahyan said: 'I would like to mention a range of issues that are important for bilateral relations. I would like to note that we have not seen each other for three years. It was a difficult time due to the coronavirus.

However, despite the challenging coronavirus conditions, we have achieved a lot: our trade grew from US$2.5 billion to US$5 billion. And the Emirates welcomed about half a million tourists from Russia: this is what we have achieved thanks to Russia's assistance.

This year we will also mark the opening of the first Russian school in the Emirates. There are 4,000 Russian companies working in our country. All this strengthens the bridge that connects us, the bridge of cooperation. I hope that in the coming years we will be able to significantly increase all these indicators.'

At this meeting, Vladimir Putin recalled his visit to the UAE in 2019: 'Thank you for your visit. I remember my visit to the Emirates in 2019 and will never forget it.'

A reminder of that visit. In October, 2019 in the Qasr Al Watan Palace Vladimir Putin held talks with Crown Prince of Abu Dhabi and Deputy Supreme Commander of the United Arab Emirates Armed Forces Mohammed bin Zayed Al Nahyan.

Crown Prince of the Emirate of Abu Dhabi and Deputy Supreme Commander of the United Arab Emirates Armed Forces Mohammed bin Zayed Al Nahyan said: 'First, I would like to welcome His Excellency Mr President of the Russian Federation. It is a heartfelt welcome to the second country you are visiting – the United Arab Emirates. I would like to extend warm brotherly greetings from President of the United Arab Emirates His Highness Sheikh Al Nahyan.

We very much appreciate the high- and top-level visits that our countries have exchanged in recent years. I would like to emphasise the importance and the scope of strategic relations between the United Arab Emirates and the Russian Federation and also to reaffirm that our country prioritises the efforts to promote a dialogue and relations with Russia. Our countries maintain friendly relations, as well as diverse cooperation in all areas, which has yielded tangible fruit and includes positive economic indicators.

Dear brother and friend, I am happy to meet with you after more than a year since our last meeting in Moscow. I consider Russia to be my second home and I would like to once again thank you for the warm reception.

I would also like to express my gratitude to you for your commitment to strengthen the bonds of friendship and cooperation that we are tied together by – a friendship that exists between the peoples of the two countries and the governments of the two countries, as well as the personal friendship between the leaders of the two countries.

The United Arab Emirates is honoured that you are visiting this country and it is a historical visit. We would also like to reaffirm that our two countries are tied together by deep strategic relations. The United Arab Emirates sees brotherly, friendly and strategic relations with Russia as a priority.

Mr President, we welcome and appreciate our mutual desire to bring bilateral relations to the strategic partnership level. This agrees with our common vision and our common concept and, in keeping with this vision, we are poised to further strengthen this strategic partnership in the interests of our countries and peoples.

Mr President, I would like to praise the outcome of the 9th Russian-UAE Intergovernmental Commission Meeting, which was held ahead of your visit. I would also like to thank the Russian Government for its successful efforts to hold the third edition of Aqdar World Summit in September 2019.

Also, Mr President, I would like to express my gratitude and appreciation for your support for the project that the United Arab Emirates sees as a historical one – the space expedition, in which the first cosmonaut from the United Arab Emirates, Hazza Al Mansouri, took part. Sending the first ever cosmonaut from the United Arab Emirates to the International Space Station is a historical achievement that had long been a dream of the founder of our country Sheikh Zayed and it has come true.

Mr President, dear friend and brother, I would like to yet again welcome you and the high-level delegation that is accompanying you. Hopefully, this visit will leave a deep impression and will be a qualitative breakthrough in developing our strategic partnership and taking it to a new level. I am also looking forward to meeting you again before too long.'

President of Russia Vladimir Putin: 'Your Highness, friends, first of all, I would like to thank you for this invitation. I am really delighted to be once again in the hospitable land of the United Arab Emirates. I could see from the window of the car I was being driven in for the short journey from the airport how quickly your country is developing and how it is looking better and better.

Relations between Russia and the United Arab Emirates continue to develop successfully in a friendly and constructive manner in accordance with the Declaration on Strategic Partnership signed in Moscow back in 2018. We are expanding ties in the trade, economic, cultural and humanitarian fields and we are maintaining close coordination on major global and regional affairs, primarily regarding Syria, Libya, Yemen and the situation in the Gulf.

Our political dialogue is regular and substantial. Our foreign ministers are in close contact. We have developed cooperation between our security councils, special services and defence ministries. I would like to ask you to convey my best regards and to wish good health to the President of your country, Khalifa bin Zayed Al Nahyan.

We continue developing trade, economic and investment cooperation. Last year our trade amounted to $1.7 billion, having increased by 3.6 percent.

We are grateful for your personal support of the partnership between the Russian Direct Investment Fund and the Mubadala Investment Company that are jointly investing in the Russian economy. These investments have already reached $2.3 billion. Your Russian partners are not letting you down: profits from these investments are much higher than on the markets of other countries.

We continue investing and cooperating in start-ups, in the energy sector and in the peaceful nuclear development. We continue coordinating our efforts and policy on the global hydrocarbon market, in part, owing to the OPEC plus agreement.

We are now working together in the car industry. Our cooperation in space exploration has reached a new level. I would like to congratulate you once again on the successful flight of the first astronaut from the UAE to the International Space Station. This event became possible owing to our friendship and your efforts to promote this idea. We are ready to continue rendering the necessary assistance to the United Arab Emirates in space exploration, includ-

ing in such fields as satellite navigation and launching space vehicles into space.

We are developing humanitarian ties. The UAE is a popular destination for Russian tourists. Last year the tourist flow increased by 23 percent. According to the Central Bank of Russia, our tourists spent over $1.3 billion in the Emirates, which is comparable with the scale of our trade. Mutual exemption of visa requirements is designed to expand contacts between our citizens. This intergovernmental agreement was signed at your initiative and entered into force last February.'

The leaders of both states have met many times before, which strengthened ties between the countries. For example, in June, 2018 meeting in the Kremlin Vladimir Putin with Crown Prince of Abu Dhabi Mohammed bin Zayed Al Nahyan, who was in Russia on a working visit, was called also historic. They discussed the further development of trade between Russia and the UAE, economic and investment cooperation, the current energy situation, and pressing international and regional issues.

In addition, Vladimir Putin and Mohammed Al Nahyan signed the Declaration on Strategic Partnership between the Russian Federation and the United Arab Emirates. Following the meeting, Vladimir Putin showed the Crown Prince the new Cortege limousine produced in Russia.

At that meeting President of Russia Vladimir Putin said: 'Your Highness, colleagues, friends, I wholeheartedly welcome you in Moscow. We had a meeting one year ago. The situation in the region, as well as across the world in general, is rapidly changing. I am glad to be able to have this meeting with you so that we can discuss bilateral cooperation and regional developments.

The United Arab Emirates is Russia's reliable and long-standing partner in the Middle East. Today, we will be signing a memorandum on strategic cooperation and partnership. I think this would be a good step towards even stronger bilateral ties.

There is positive momentum in the relations between our countries in all areas, including political contacts, economic cooperation and security. Last year, trade increased 31 percent, and added another 70 percent in the first quarter of this year.

With your support, the UAE investment fund is working closely with the Russian Direct Investment Fund in Russia, with already over $2 billion in total investment. We are grateful for your trust. At the same time, I do not think you have any reason to be disappointed, since the return on this investment is way above the market average, reaching 15–17 percent.

We will carry this momentum forward, while also continuing to work in the energy sector, where our combined efforts, including by our friends from Saudi Arabia and all OPEC members in general, are yielding positive results in terms of rebalancing the oil and gas market.

We are especially grateful for your initiatives to promote cooperation in high technology, including your initiatives for the industrial sector in the context of the Innoprom Industrial Trade Fair in Yekaterinburg.

In other words, we have quite a few joint projects, and our interests converge in many areas. strongly hope, I am convinced that today's visit will help strengthen bilateral relations.'

Crown Prince Mohammed Al Nahyan of Abu Dhabi said: Thank you, Mr President. I am glad to be in Moscow today. This is a good opportunity for us to meet with you and discuss the strengthening of bilateral relations. We consider them to be extremely important, and I hope that we will continue to strengthen them with you.

As you correctly pointed out, trade between us is stronger since our previous meeting. I expect that it will continue to grow stronger. I think that our cooperation will expand, thanks in part to the signing of the declaration on strategic partnership. Our relationship is very important, and we always strive to strengthen it with you.

Indeed, as you said, since our last meeting, there have been many developments in the Middle East. The United Arab Emirates seek to cooperate with the entire world community, with all our friends, and are working to ensure a prosperous future for our region. And we also look forward to a detailed discussion of this topic with you, Mr President.' /RA&MG/

FSMTC OF RUSSIA

Dmitry Shugaev: 'Cooperation with Arab countries at the present stage has a special, trusting character and is progressively developing in various areas of mutual interest'

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. Before Dubai Airshow 2023 Dmitry Evgenyevich Shugaev, FSMTC of Russia Director 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.

- Mr Shugaev, what do you think are the main principles of Russia's military-technical cooperation with foreign countries today?

- As you know, military-technical cooperation is one of the components of the foreign policy pursued by our state. The main principles of our foreign policy remain the same for military-technical cooperation. They are: mutual respect and cooperation on the basis of equal rights, non-interference in the internal affairs of other states, compliance with international laws and commitments. Naturally, at the same time we are against the use of threats, blackmail, coercion, use of force and any kind of restrictions in international relations.

All of the above allows us to build cooperation not only with states that share the views and foreign policy of the Russian Federation, but also with countries that are under serious Western influence.

- In your opinion, why does Russia confidently maintain its leading positions in the world market of weapons, security equipment and systems?

- Indeed, over the past several years the Russian Federation has been confidently holding the leading positions in the world arms market. This is due to the fact, that all parts of a well-functioning system professionally work together within the military-technical cooperation between the Russian Federation and foreign countries.

Specifically, when our foreign partners make contracts with Russian suppliers for the purchase of military products, they understand that they will get high end equipment that meets their needs and has the characteristics of the world's best models, tested in real-world combat conditions. Besides, Russian suppliers are always ready to discuss any issues within the framework of contract performance.

Of course, foreign customers of Russian military products planning to develop military-technical cooperation with Russian Federation, along with other factors, also take into account our historical background, and see us as a reliable supplier capable of providing its partners with top level products.

- What makes Russia's commitment consistent and reliable? What are Russia's unconditional advantages as a military-technical partner?

- Certainly, Russia is willing to honor the wishes of foreign customers to the maximum extent possible, as long as this does not pose a threat to national security.

We make no political nor legal demands, except as set forth in recognized international instruments.

Furthermore, our commitments to protect the interests of our partners remain strong, especially in the context of the US illegal anti-Russian sanctions policy and Washington's cross-border approach to the Countering America's Adversaries through Sanctions Act.

For the sake of the common interest, we use alternative payment solutions for the products delivered and increasingly use national currencies for payments. It is imperative that we take into account the requirements of the national legislation of foreign customers.

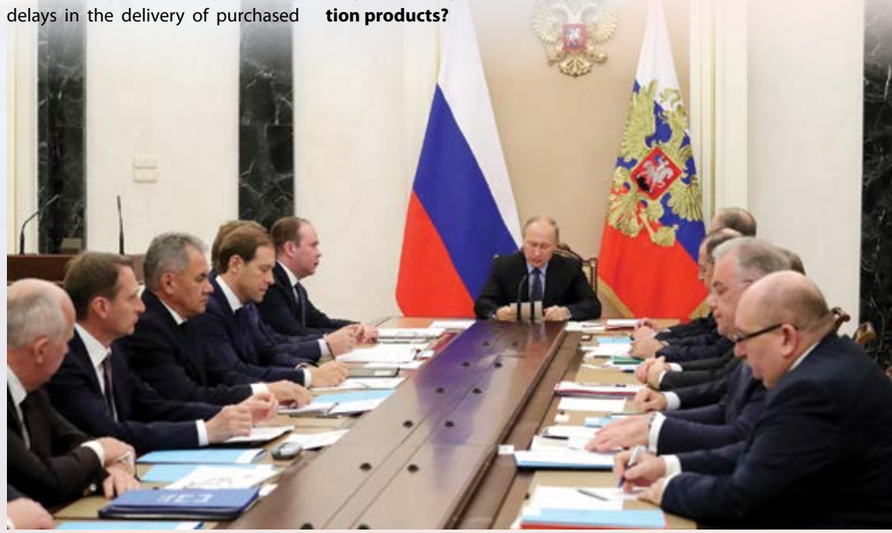
Traditionally, we offer high-end weapons products on the international market with characteristics comparable to, and in some cases surpassing, those of their foreign peers, including in terms of price-performance ratio.

We are committed to preventing delays in the delivery of purchased

equipment. We are actively developing an after-sales service system for previously supplied equipment, arranging licensed production and cooperating in high-tech areas.

Overall, throughout a long period of time, the Soviet and, after that, the Russian system of military-technical cooperation has systematically strengthened its global credibility both as a reliable partner and supplier of military products. And now, in the face of unprecedented sanctions pressure, we continue to honestly and efficiently carry out the work entrusted to us – to develop military and technical co-operation with foreign countries.

- Mr Shugaev, how large is a share in Russia's defence exports historically and today taken up by aviation products?



- If we talk about history, it is known that the Soviet Union, of which the Russian Federation is the legal successor, was part of a small club of countries that were capable of building aircraft of all classes using the capabilities of the national industry alone. Soviet-made aircraft were operated by a large number of countries. The quality of Soviet aircraft met the most rigorous international requirements, while the technical solutions used in the design and construction of aircraft were often ahead of the times.

Specialists of the Russian Federation, despite the difficulties endured by the country, have preserved the best traditions of Soviet aircraft construction. The high scientific and technical potential in the basic models of the MiG-29 and Su-27 fighter jets laid down by Soviet aircraft designers has enabled Russian specialists to create new models of aircraft that have become a global sensation and have been recognized on the world arms market. Our helicopters Mi-8, Mi-24 and their modifications are in high demand. The international prestige of modern Ka-50, Ka-52, Ka-27, Ka-29 helicopters is growing.

In the course of the special operation, the sphere of unmanned aviation was significantly developed. Literally within a year we managed to create a large line of UAVs and gain an advantage in the sky over the Ukrainian armed forces. This fact has been recognized by Western specialists. At present, virtually all types of Russian aircraft have confirmed their quality and effectiveness in special military operation. Moreover, taking into account the experience of combat use of aircraft, Russian designers are literally working online to improve their combat and technical characteristics.

It is known that for a number of years the Russian Federation has been one of the world's largest suppliers of military products in terms of export volumes, ranking second after the United States. At the same time, aircraft make a significant contribution to the volume of Russian military exports. Over the past few years, it has accounted for about 50 per cent of total exports.

Taking into account the combat effectiveness of Russian aircraft in real combat conditions, it is very likely that foreign partners will become more interested in acquiring our aviation assets.

- What types of Russian military aircraft are most in demand in this region?

- As for the Arabian Peninsula region, Russian planes and helicopters are most actively used here. Customers are most interested in Il-76MD-90A(E) military transport aircraft, Ka-52 and Mi-28NE helicopters, and Su-57 aircraft.

- To what extent does Russia actively offer modernization programmes for previously delivered aircraft on the foreign market?

- Russia's military-technical cooperation with the countries of the Arabian Peninsula involves after-sales service of equipment and the supply of spare parts, as well as the establishment of service centres and joint production facilities. Russia has a wide range of options that can be offered to foreign customers concerning the modernization of previously delivered aircraft. Russia is ready to co-operate in this direction. Discussions on bilateral co-operation projects in this area are conducted on permanent basis.

- How has the cooperation in the field of military-technical cooperation between the USSR/Russia and the UAE, as well as the Gulf countries, developed historically?

- Military-technical co-operation with the countries of the Cooperation Council for the Arab States of the Gulf (hereinafter referred to as the CCASG) during the Soviet era, was rather restrained.

Thus, diplomatic relations with Saudi Arabia were suspended in 1938 and resumed only in 1991. An intergovernmental agreement on military-technical co-operation was signed only in 2008.

Interaction with the United Arab Emirates has been going on for more than 50 years, and the first contacts in the military-technical sphere were established in the second half of the 1980s.

Considering the State of Kuwait, it can be noted that co-operation in the military-technical sphere developed from 1977 to 1990 and was resumed in 1991 after a short break. During this period, products were supplied to cover the existing debts of the USSR from the stocks of the Russian Ministry of Defence, as under foreign trade contracts.

As for Bahrain, Qatar and Oman, military-technical co-operation was established in the late 1980s and early 1990s. Supplies of military products have been made under foreign trade contracts.

Currently, an active dialogue is being maintained between our countries. Negotiations and consultations are held on a regular basis within the framework of meetings of intergovernmental commissions. Contracts for the supply of various types of military products have been implemented and are being fulfilled. In general, we have good prospects for increasing co-operation in this area.

- What is the special nature of Russia's military-technical co-operation with Arab countries?

- Given the current situation characterized by the reorientation of the Russian Federation's strategic interests from the West to the East, military-technical cooperation with Arab countries is acquiring a special nature.

The leadership of many countries in the region is ready to develop mutually beneficial relations with Russia. We, in turn, are taking measures to maintain and build on the achieved performance targets of bilateral co-operation with partner countries. Military-technical cooperation with the Arab states is of a diversified nature. Bilateral consultations are being held in all areas of cooperation of mutual interest.

- What types of Russian armaments are traditionally of high interest from the UAE and Arab countries?

- Arab states have traditionally shown interest in virtually the entire range of Russian military products. These include, among others, aviation equipment, various air defence systems, land forces materiel, anti-tank missile systems, and small arms.

- To what extent is Russia ready to talk about the establishment of arms and military equipment production on the territory of Arab countries?

- The Russian Federation is aware of the fact that in order to build an

independent national defence industry, Arab countries are interested in technology transfer, the organization of licensed production of Russian military equipment on their territories, and the training of competent personnel.

The Russian Party always listens to the views and wishes of its partners and, in order to develop cooperation, is ready to discuss various forms of cooperation, without forgetting its own national interests, including those related to the protection of the results of intellectual activity.

- How does the leadership of the Federal Service for Military-Technical Cooperation of Russia assess the DUBAI AIRSHOW site? What are the key advantages of this show and its importance for the promotion of promising Russian aerospace products?

- The Dubai Airshow is one of the most authoritative in the world, and participation in it provides an opportunity to solve many tasks: to strengthen and expand partnerships, to promote Russian aerospace products on the world market, as well as to get acquainted with the novelties in the sphere of defence. At the International Aerospace Exhibition Dubai Airshow 2023 Russia will present a large number of domestic novelties of advanced weapons, which will undoubtedly cause a great resonance.

- What is the basis for the Federal Service for Military-Technical Cooperation of Russia's confidence in the constructive prospects and progressive development relations in the field of military-technical cooperation with the UAE and other Arab countries, despite the current difficult situation?

- The confidence of the Federal Service for Military-Technical Cooperation of Russia in the development of relations in the area of military-industrial co-operation with the United Arab Emirates is based on the principles of mutual respect and friendship of sovereign states. The UAE has been a reliable partner of Russia in general, including in the area of military-technical cooperation for many years. The current stage of relations in the area of military-technical cooperation is characterized by the development of bilateral interaction with an emphasis on its cooperative component.

Cooperation with other Arab countries at the present stage has a special, trusting character and is progressively developing in various areas of mutual interest. **/RA&MG/**

RUSSIAN SYSTEM FOR COUNTERMEASURES AGAINST SMALL-SIZED RPVS

Alexander Mikheev,
General Director of JSC ROSOBORONEXPORT

JSC ROSOBORONEXPORT (part of Rostec State Corporation) will present a new product at the Dubai Airshow 2023: Russian automated system for countermeasures against small-sized remotely piloted vehicles (RPV). The new export product is designed for outfitting specialized units in order to counter RPVs.

'Latest military conflicts showed a tremendous role of the remotely piloted vehicles of all classes in reconnaissance, surveillance of the situation and destruction of manpower, materiel, installations. On the tactical level, small-sized vehicles are mainly used on a massive scale. These are cheap, but capable of inflicting serious damage,' said Alexander Mikheev, General Director of JSC ROSOBORONEXPORT. 'JSC ROSOBORONEXPORT will unveil in Dubai an advanced system with a high degree of automation; a product able to detect, neutralize or destroy on the battlefield popular modern small-sized FPV-drones, quadcopters, unmanned aerial vehicles of the aircraft type. Its characteristics and high effectiveness were confirmed under the battlefield conditions.'

The new export product is designed for outfitting specialized units in order to counter RPVs. The eyes of the system are a portable small-sized radar 1L122-1E made by KRET (Concern Radio-Electronic Technologies, part of Rostec State Corporation), which makes it possible to detect a RPV at a range sufficient for its interception or destruction.

The radar transmits air situation data via a radio channel to the portable automated control module from the set of the automated control technical aids. It was developed by the Ruselectronics holding company incorporated into Rostec State Corporation. The automated control module may be located at a range up to 5 km from the radar. It is actually a small tablet the commander of the anti-drone unit is equipped with. Data on the RPVs designated for destruction or electronic effect (target designation) is transmitted to the anti-aircraft gunners of the "Verba" man-portable air defence system made by the High Precision Systems holding company included into Rostec State Corporation or to the operators of the anti-drone rifles fitted with an individual automation package.

The operator's individual automation package includes special goggles with visualization capability, a headset and communications means. This set provides automation of guidance at an air target. It is used for visualization and transmission of the voice commands to the anti-aircraft gunner, electromagnetic rifle operator, sniper or to a shooter armed with other weapons (if needed).

An electronic effect on the RPV's communication and navigation channels or its physical destruction constitute the final stage of the process. At the Dubai Airshow 2023, JSC ROSOBORONEXPORT will present the 'Argument-2' anti-drone rifle as an electronic warfare (EW) asset. At the Customer's request, it can be replaced with any other portable anti-drone system.

JSC ROSOBORONEXPORT is prepared to consider requests of the foreign customers for the supply of the said system. /RA&MG/

RUSSIAN SMALL ARMS: DEVELOPMENT AND SUCCESSES

Rosoboronexport JSC (part of Rostec State Corporation) has significantly expanded its export catalog of Russian small arms over the past 5 years.

'Over the past 5 years, Russian arms manufacturers have significantly expanded the range of their products. Rapid development of design-and-engineering competencies is due to a high level of competition in the global market, market diversification into narrower segments, production management optimization, as well as the emergence of new players in the national arms market. Thanks to this, today Rosoboronexport can offer its partners more than 90 models of small arms that fully meet the demand from any army and special operations units,' said Alexander Mikheev, Director General of Rosoboronexport. 'Moreover, there are over 50 models of civilian and service weapons in our export catalog, which are in high demand from police and special agencies of our partner countries. We offer precision rifles, carbines, pistols and hunting rifles on the market.'

Among the latest models promoted by Rosoboronexport on the world market are products from the Kalashnikov Group and JSC High Precision Systems, both are Rostec's subsidiaries: Kalashnikov AK-308, AK-19 assault rifles, Chukavin SVCh sniper rifle, Lebedev PLK pistol, Kalashnikov PPK-20 submachine gun, Kord 6P68 and 6P67 balanced-action assault rifles, Kord-338LM bullpup precision rifle and the SHAK-12 heavy assault rifle system.

Among civilian and service weapons, precision rifles such as the ORSIS T-5000, ORSIS F-17 and a heavy ORSIS 12.7 model from Promtechnology, the Raptor, Phantom and Elegance Exclusive rifles from Bespoke Gun that debuted in 2023, as well as Lobaev Arms' DXL-5 Devastator, TSVL-8 M5 Dominator and DVL-10 M3 Wolfhound precision rifles occupy top positions in their market segments.

Traditional manufacturers of small arms for the armed forces are also present in the civilian arms market. In particular, High Precision Systems offers the MTs-566 and MTs-560 carbines, and the Kalashnikov Group – the Saiga-9 self-loading carbine, the MR-135 Taktika pump-action shotgun and the MR1 self-loading hunting carbine.

All modern models of Russian civilian and service small arms are high-quality, convenient and high-tech products. They combine excellent ergonomics, adaptability to the user and high performance characteristics. Their design allows convenient and easy mounting of sights and tactical accessories, ensuring their effective use in various conditions. In addition, thanks to unique design solutions, they enable you to fully implement your shooting skills, regardless of anthropometric data and the availability of a variety of clothing, gear and equipment.

Rosoboronexport offers foreign customers small arms systems suitable for the most challenging combat and special missions. They include a wide range of day, night, thermal imaging and holographic scopes manufactured by Shvabe, a Rostec subsidiary, Infratech and Dedal, as well as a range of Russian-made sniper, armor-piercing, armor-piercing incendiary and tracer ammunition.

'Many models of small arms presented by Rosoboronexport on the world market have already been tested in real conditions and improved by manufacturers with regard to feedback directly from the battlefield. They meet the requirements of modern combat operations in terms of performance, operational characteristics and ergonomics to the maximum extent possible,' Alexander Mikheev stressed. 'At the same time, Russian manufacturers continue to expand the range of their models. One of the new products from Kalashnikov Group will be unveiled by Rosoboronexport at Dubai AirShow in November 2023.'

/RA&MG/

INTEGRATED AIRCREW SURVIVAL AND SELF-DEFENSE SYSTEM

JSC Rosoboronexport (part of Rostec State Corporation) will present an aircrew survival and self-defense system at Dubai Airshow 2023. The new export product is intended for the aircrews that ejected from their aircraft or found themselves on the ground after an emergency landing. It was configured by Rosoboronexport in cooperation with pilots of the Russian Aerospace Forces, as well as specialized equipment manufacturers drawing on lessons learned from actual combat operations.

'The survival of helicopter and fixed-wing aircrews in emergencies before the arrival of search-and-rescue units largely depends on the level of equipping them with the necessary life-support and self-defense items. Rosoboronexport has studied the real experience of recent military conflicts and chosen the most optimal set of equipment and gear enabling the crews to survive and maintain combat capability in the most extreme conditions. At Dubai Airshow 2023, we are unveiling this unique product consisting of entirely Russian-made components that have been tested in combat conditions,' said Alexander Mikheev, Director General of Rosoboronexport.

The aircrew survival and self-defense system, offered by Rosoboronexport for foreign markets, is thematically divided into 4 clusters: functional personal items, individual protection and survival equipment, communications and surveillance equipment, as well as self-defense weapons.

The first cluster includes combat trousers, shirt and shoes. The proposed configurations for all climatic and weather conditions are designed for a temperature range from +50 to -50 °C. In addition, the personal items cluster also includes a tactical pouch for a survival kit and a webgear with ammunition, life support, first aid kit pouches and a holster for a Lebedev compact pistol.

Individual protection and survival equipment includes a plate carrier and two types of armor plates for it, ceramic and UHMWPE, as well as a ZSh-7 upgraded protective helmet. A survival kit, tailored taking into account the experience of pilots' survival in real combat conditions, is offered in the same cluster. It contains a first aid kit, dry ration, a hook with a fishing line, a knife and other equipment.

For communications and surveillance purposes, the system includes an R-187 Azart software-defined radio with a headset, PN-21K night vision monocular, GEO-ONV1-01M night vision goggles for piloting helicopters.

In the self-defense equipment cluster, Rosoboronexport, on advice from Russian Aerospace Forces specialists, proposes to equip the aircrews with a 5.56mm Kalashnikov AK-19 shortened assault rifle, presented abroad for the first time, or a 9mm Kalashnikov PPK-20 submachine gun with a PKU-2 collimator sight, as well as a 9mm Lebedev PLK compact pistol.

Rosoboronexport is ready to consider requests from foreign customers for the supply of the presented system. In addition, in case of interest, the company's specialists can offer relevant options for replacing its individual components with those available from partners and give recommendations on the use in real conditions.

/RA&MG/

CHECKMATE AND DRONES: UAC MOVING FORWARD

Among the key promising projects of the United Aircraft Corporation (UAC) is the creation of the Checkmate light tactical aircraft, as well as the development and production of unmanned aircraft for civil and special purposes. It is noteworthy that the world premiere of the Checkmate project took place here in Dubai during the DUBAI AIRSHOW – 2021.

Checkmate

There is great interest in The Checkmate project. For example, according to TASS, Dmitry Shugaev, Director of the Russian Federal Service for Military-Technical Cooperation, said at the Army-2023 defence forum held in Russia that the Federal Service for Military-Technical Cooperation of Russia is holding consultations with a number of foreign customers on cooperation within the framework of the Checkmate light tactical aircraft project.

'I'm not ready to say yet who will be the first customer to order the Checkmate. Potential Checkmate customers are located on different continents, in different regions of the world. I can only confirm that consultations are currently underway with a number of foreign customers on the issue of cooperation within the Checkmate project,' Dmitry Shugaev said, noting that the cooperation involves not only the delivery of the aircraft, but also technological cooperation.

According to Dmitry Shugaev, Checkmate has to go a certain way before becoming an export product, although its competitiveness is already obvious. 'Taking into account the expected competitive price, I believe that it will be in demand in its segment,' the Federal Service for Military-Technical Cooperation of Russia Director noted.

Also as part of the Army-2023 forum, a model of an unmanned version of the Su-75, a promising fifth-generation single-engine light tactical aircraft (LTA Checkmate) being developed by Sukhoi Design Bureau (part of UAC), was presented at the demonstration base of the Kubinka airfield.

A full-size prototype demonstrator of the Checkmate fighter was presented two years ago at the MAKS – 2021 air show, and its foreign premiere took place at the DUBAI AIRSHOW – 2021 in the UAE in November of the same year. It was already announced then that, in addition to the basic single-seat version of the light single-engine fighter, two versions – two-seat and unmanned – are planned.

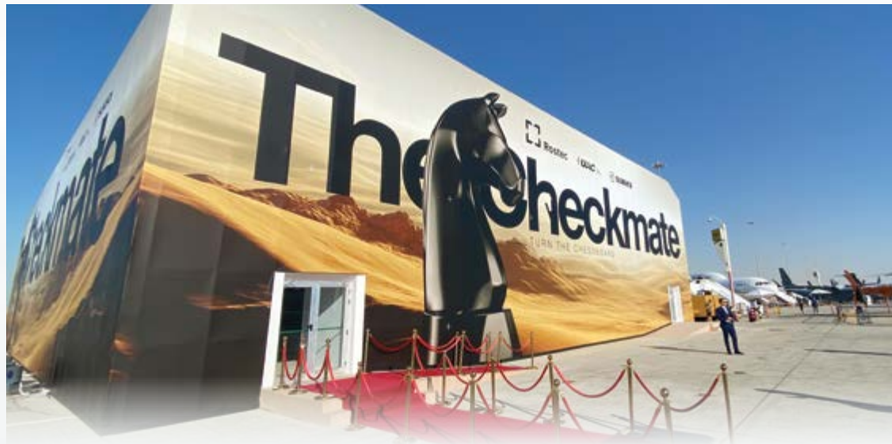
Since the project presentation, work has been organized to obtain feedback from potential customers. In addition, work has been carried out on cost optimization and analysis of individual technical solutions, which has significantly improved competitiveness, commercial attractiveness, and reduced technical risks in the development of a domestic single-engine aircraft.

On the basis of these works, changes were introduced to the project, which also adjusted the timing of the first flight. At the same time, the modularity principle and modern digital technologies made it possible to make these changes in the shortest possible time. Today, the design documentation has been transferred to the manufacturing plant, and preparations for the production of the first prototypes have begun. The collaboration of all Rostec enterprises is necessary to implement the project in a fairly short period of time.

This year, it also became known that over the past couple of years the aircraft's appearance has undergone certain changes, mainly affecting the tail section of the machine: the area of the wing differential ailerons has been significantly increased, the sweep angle of which along the trailing edge is about -45° (it was about -10°), the configuration of the tailbooms and the control surfaces with which they end has become different.

On 21 June 2023, the Federal Service for Intellectual Property published three patents issued by it to the United Aircraft Corporation for designs of a low-observable, single-engine aircraft in single-seat, two-seat and unmanned versions with a similarly altered appearance.

The Checkmate light tactical aircraft (Su-75) is a fifth-generation single-engine fighter. It combines innovative solutions and technologies, including artificial intelligence support for the pilot's work, as well as tested solutions that have already proven themselves in practice. The fighter has low visibility and high flight characteristics. Supercomputer technologies are widely used in the Checkmate LTA project.



Drones

UAC has established a joint venture with one of the leading Russian UAV suppliers to develop and manufacture unmanned aircraft for civil and special purposes.

The parties have defined the format of joint work, agreed on a promising product range and are conducting corporate procedures to establish a joint venture operating in the fast-growing segment of unmanned aircraft systems.

The partners plan to organize the production of a range of aircraft-type drones with vertical take-off and landing capabilities. The potential of a number of solutions in the payload weight range from 20 to 200kg is being assessed.

'UAC is consistently developing its competences in the field of unmanned aircraft systems. Today, we are working on a number of projects for transport drones for off-airfield location. Cooperation between UAC, which has considerable experience and expertise in aircraft construction, and a leading Russian UAV manufacturer, which has expertise in light UAVs, will allow us to form a demanded line of solutions and claim for a significant position in the Russian market,' UAC CEO Yury Slyusar said. /RA&MG/

BEST TECHNOLOGIES

HEAVY TRANSPORT AIRCRAFT IL-76MD-90A

The IL-76MD-90A heavy transport aircraft developed by Ilyushin Design Bureau, part of the United Aircraft Corporation, is a deep modernization of the well-proven IL-76MD aircraft. Despite the external similarity with its predecessors, the new modernized version of the IL-76MD-90A aircraft is fundamentally different from them.

More than 70% of aircraft systems and assemblies have been updated on the aircraft, which made it possible to increase the payload from 40 to 60 tons, increase the flight range and improve flight safety. Thus, the IL-76MD-90A makes it possible to solve assigned tasks at a qualitatively new technical level.

The aircraft implements the 'glass' cockpit principle, which reduces crew load. Information is displayed on the digital cockpit on 9 multifunctional screens, which replaced the analogue instruments installed on the previous generation of transport aircraft.

The new communications complex provides high quality communications and data exchange, including through satellite systems, and the latest defense complex provides protection against various enemy weapons.

The IL-76MD-90A is equipped with new, more powerful PS-90A-76 engines, which provide improved takeoff, landing and cruise performance, increased payload and flight range, increased efficiency and high environmental requirements for noise and emissions of harmful substances.

The aircraft also features a new strengthened wing with reduced weight and increased service life. The new design allowed to simplify the manufacturing technology. On the previous modification of the Il-76, the wing panels were made of two parts. In the new version of the aircraft, the wing panels are made in one piece, 25 meters in length.

The IL-76MD-90A also has a modernized landing gear, which is now designed for a take-off weight of 210 tons (including 60 tons of load). Thanks to this, the aircraft can operate from equipped and unequipped airfields, on concrete and dirt runways. New KT-199M wheels with increased energy intensity are used, which allows the aircraft to operate in the most severe climatic conditions at extremely low and high temperature conditions. The new upgraded landing gear system has also improved its characteristics, including indication and control on the ground and in flight.

The IL-76MD-90A has a unique set of airborne transport equipment, which has been improved through the automation of loading systems and the use of an auxiliary power unit TA-12A of increased power with an increased period of continuous operation and automatic control. The new set of transport equipment does not require any auxiliary mechanisms or people for loading and unloading cargo. All functions can be provided by a crew of 6 people.

The IL-76MD-90A is also equipped with a new wireless mobile control panel for cargo loading and securing system. Now the operator is not constrained in his movements, he can come close to the cargo or carry out loading and unloading operations outside the cargo compartment.

As a result of the modernization, a video recording system was installed, which allows increasing the situational awareness of the crew during the flight or on the ground. Several surveillance cameras record everything that happens in the cockpit, in the cargo compartment, and on the ramp.

If necessary, the IL-76MD-90A can be equipped with fire extinguishing equipment, as well as medical modules for evacuating people in emergency situations with the ability to provide qualified medical care. Re-equipment does not require a large amount of work and can be carried out at the airfield.

Currently, United Aircraft Corporation in cooperation with Russian component suppliers, is conducting serial production of these aircraft and is implementing a program to increase its pace.

A unique feature of the IL-76MD-90A is its versatility. The use of new design methods and production technology provides the opportunity for further effective modernization of the aircraft and the creation on its basis of a whole family of special-purpose aircraft that meet all existing international requirements and meet the special requirements of customers.

The aircraft as a universal transport platform ensures the creation of aircraft for various applications – tanker, hospital, flying laboratory, search and rescue, firefighting, AWACS, Airborne Control Post (ACC), etc.

Today, IL-76 aircraft are in demand more than ever and are successfully used for a variety of tasks, including special operations and paratroopers. They are capable of transporting armed forces personnel anywhere in the world, transporting cargo for various purposes both within the country and around the world, and extinguishing natural and man-made fires. /RA&MG/

ALMAZ – ANTEY WILL TAKE PART IN DUBAI AIRSHOW 2023

From 13 to 17 November Almaz – Antey Air and Space Defence Corporation, JSC will take part in the International Aviation and Space Exhibition Dubai Airshow 2023, which will be held in the United Arab Emirates. The Corporation will present models of S-350E Vityaz medium-range air defence missile system, Viking medium-range and Tor-E2, Tor-M2K, Tor-M2KM short-range air defence missile systems, as well as the Typhoon-PVO(E) anti-aircraft manpad gunner's combat vehicle. In the airspace control area it will be possible to see models of Kasta-2E2, Podlet-K1KE and Gamma-S1TE radar stations. In addition, the Corporation's stand will demonstrate an airborne missile-type target (MB-R) from the Adjutant universal target-and-training system.

The ADM system S-350E Vityaz has a destruction range of up to 120 kilometers and is designed for the defence of administrative, industrial and military facilities against massive strikes by modern and advanced air assault weapons. The system is capable of repelling air attacks simultaneously from any direction. The ADM system S-350E includes a Command and Control Center, up to two Multifunctional Radars, up to 8 launch or Launch-Loading Vehicles, each of which carries up to 12 anti-aircraft guided missiles. The ADM system S-350E is operated by a three-man crew. The advantage of this system over other air defence systems is the absence of a crew during combat operation in the Multifunctional Radar, Command and Control Center and Launch-Loading vehicles. The increased survivability of the system is ensured by the spread of combat assets over a sufficiently large distance, as well as the ability to maneuver and change position in a short time. S-350E has the ability to operate both autonomously and under the control of higher command centres. Interaction with information and combat assets of other systems is possible.

The all-weather, multi-channel, highly mobile Viking ADM system is designed for the defence of troops and facilities. It is capable of destroying modern and advanced tactical and strategic aircraft, including those using Stealth technology, tactical ballistic and cruise missiles, helicopters, reconnaissance and strike systems and UAVs, radio-contrast ground and surface targets. The system's combat assets include a Command and Control Center, a Three-Coordinate Target Detection Station, up to six Self-Propelled Guns or Illumination and Guidance Radars in any combination, attached launchers and anti-aircraft guided missiles. Viking can be coupled with the automated air defence control systems possessed by the customer. At the same time, the Command and Control Centers can provide direct interaction with short-range SAM combat vehicles, radars and battery command posts, allowing to organize an echeloned air defence. Command post elements are built into the Self-Propelled Gun and Illumination and Guidance Radar, which makes it possible to organize operational mobile air defence groups without a Command and Control Center. The system can effectively perform tasks in conditions of electronic and fire countermeasures, and its combat vehicles can be manufactured on both caterpillar and wheeled chassis of high cross-country capability. All of the system's combat vehicles can be remotely controlled from remote workstations.

The Typhoon-PVO(E) anti-aircraft manpad gunner's combat vehicle based on the KAMAZ-4386 armoured vehicle is designed to provide direct cover for units in all types of combat, including on the march, against air assault weapons. Typhoon-PVO(E) is equipped with the Akveduk family radio station, Azimut navigation equipment, and a station with a sighting system for the Kord type machine gun. The combat vehicle provides transport for five men: a squad leader, two anti-aircraft gunners, a machine gunner, and a driver-electrician.

The radars presented by the Corporation at the exhibition are successfully used for detection, coordinates measurement, tracking, identification of air objects and promising means of air attack, including those based on Stealth technology, under the influence of intensive active, passive and combined interference, as well as fire suppression.

The Adjutant universal target and training complex is designed to train anti-aircraft systems by creating a complex airborne target environment and is distinguished by the possibility of multiple use of targets simulating the main modern means of air attack.

Vyacheslav Dzirkaln, Deputy CEO of Almaz – Antey Corp. for Foreign Economic Activities, said on the eve of the event, 'our participation in the Dubai Airshow provides an opportunity to familiarize numerous foreign guests of the exhibition with modern Russian air defence equipment and other exclusive defence products of the Corporation.' He emphasised that 'our products today successfully protect the sovereignty and security of many purchasing countries.'

'During the Dubai Airshow 2023, the Corporation's representatives will inform potential partners about the Corporation's capabilities in the field of development, manufacturing and service maintenance of manufactured products, as well as extension of their service life, modernization and utilisation,' Vyacheslav Dzirkaln said. According to him, video materials and media presentations on technical capabilities of manufactured products will be demonstrated at the Corporation's stand, specialists of the Corporation will hold a number of business meetings and negotiations. 'The Corporation's stable functioning is based on the powerful scientific, technical and production potential of its member enterprises,' concluded Vyacheslav Dzirkaln. /RA&MG/

Almaz – Antey Air and Space Defence Corporation, JSC is one of the largest integrated companies in the Russian defence industry, comprising over 60 high-tech enterprises. The total number of employees of the holding is about 140 thousand people. The Corporation's products are supplied to more than 50 countries of the world. Almaz – Antey has the right to carry out independent foreign trade activities with respect to military products, including the supply of spare parts, repair and modernization of previously supplied equipment.

The Corporation pays special attention to the training of customer specialists, operation and maintenance of the supplied equipment, and offers after-sales service, repair, modernization and utilization services.

Almaz – Antey is the lead contractor for the modernization of the Unified Air Traffic Management System of the Russian Federation, within the framework of which the holding creates modern surveillance, control and communications equipment, and also uses the entire domestic scientific, technical and industrial potential.

VIKING SAM SYSTEM

The world's best in its class

HYBRID wars, based on terroristic techniques, form qualitatively new requirements for armament systems and ways of warfighting. Combat operation in new conditions requires integrated procedure to meet requirements of protection against reconnaissance; of prompt reaction, and mobility with use of respective up-to-date air defense facilities. Newest Viking SAM system that significantly excels its predecessors in the characteristics and capabilities.

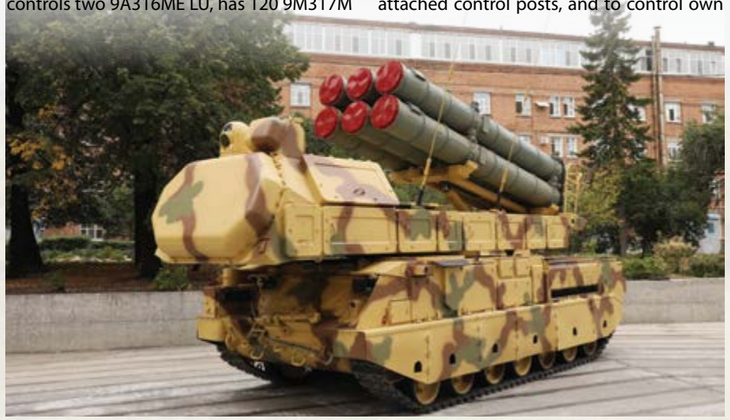
First of all, the range of air reconnaissance with the 9S38E Target Acquisition Radar (TAR) increased up to 200 km, and up to 30 km in altitude. The 9S510ME Combat Control Post expanded its capabilities in data processing and fire control channels. The 9A317ME Self-propelled Firing Unit (SPFU) increased its killing range and types of engaged targets:

- strategic and tactical aviation airplanes in slant range up to 65 km;
- airborne vehicles produced with use of Stealth technology up to 40 km;
- tactical ballistic missiles in slant range up to 25 km;
- cruise missiles up to 20 km;
- fire support helicopters, including the hovering ones, up to 12 km;
- water surface, ground radar-detectable targets;
- precision weapon carriers and precision weapon attacking facilities – with SSKP 0.6-0.8.

The Viking SAM system ammunition stock has increased. The SAM system consisting of the 9S38E TAR, 9S510ME CCP, four fire channels of the 9A317ME that in its turn controls the 9A316ME Launcher Unit (LU); two fire channels of the 9S36ME Target Illumination and Guidance Radar (TIGR) that controls two 9A316ME LU, has 120 9M317M SAMs ready for launch. The number of target channels has increased up to 6, thus allows engaging up to 36 targets. The SAM system has capability of integration into Customer's State Air Defense (automated) Control System.

Directions of development of SAM systems – longer range, more accuracy, more ammunition – are clear and foreseeable. The history of development of air defense systems confirms this trend: Kub, Buk-M, Buk-M1, Buk-M2E. All these predecessors of the Viking SAM system participated in local combat actions and confirmed their high efficiency. Taking into consideration capabilities of up-to-date air and space attack facilities with centralized control and demands of Customers that prefer Russian-origin weapons, experts and employees of the Instrument-making Research Institute named after Tikhomirov have provided the Viking SAM system with such intellectual characteristics that other air defense facilities in the world have never possessed.

Nowadays, the Viking SAM system is an open information & distribution system able to receive data of air situation not only from standard TAR, but from external sources as well, and to generate optimum solutions of target engagement independently or to transmit part of functions to attached control posts, and to control own firing channels and subordinate air defense facilities of low and long ranges.



The 9S510ME provides six data directions with subordinate firing channels, one data direction with standard 9S38E TAR and up to seven data directions providing interaction with the following sources:

- Russia-origin radars: 55Zh6ME, 1L119, 1L126, 96L6-AP, 9S18M1-3E;
- the 9S932 Universal Battery Command Post (UBCP);
- the 9A331ME Combat Vehicle (CV) of the Tor-M2E SAM system;
- foreign-origin radars used on the territory of a Customer provided interface compliance;
- the Polyana-D4M1 Russian-origin High-Level Command Post (HLCP);
- Air Defense control system adopted in a Customer's country, including the automated one.

The 9A317ME SPFU and the 9M38E TIGR are able to control the standard 9A316ME Launcher Unit and attached firing facilities:

- the 9A383E LU equipped with 9M83ME SAM of the Antey-2500 SAM system;
- the 9A316E Launcher & Loader Unit (LLU) of the Buk-M2E SAM system;
- receive air situation data from the 9S18M1-3E TAR or any other Russian-origin surveillance radar without the 9S510E CCP participation.

The main advantages of Viking SAM system is creation on this base a system in stage-by-stage increase of air defense power. At initial stage, a Customer buys combat facilities of the Viking SAM system, followed by purchase of attached air defense facilities dependent on Customer's demand. At that, minimum set of the Viking SAM system will include: the 9S38E TAR, the 9A317ME SPFU (or 9S36ME TIGR), and the 9A316ME LU (or 9A316E LLU, 9A383E LU).

Thus, the Viking SAM system, is a universal platform for creation of the Air Defense system in different countries of the world. /RA&MG/

RELIABLE AND EFFECTIVE SPAAG 'SHILKA'

Self-propelled Anti-Aircraft Gun (SPAAG) 'SHILKA' (ZSU-23-4) is a reliable and effective system designed for air defence of stationary objects, units of motorized rifle and armored regiments in all kinds of combat actions and on the march at any time of day and in any weather conditions. Today the world-famous self-propelled anti-aircraft gun ZSU-23-4 'SHILKA' has been upgraded up to the level of ZSU-23-4M4.

SPAAG 'SHILKA' is capable of carrying out combat activities including target detection, automatic target tracking, aiming of anti-aircraft guns, and effective target engagement at a fire rate of not less than 3400 rounds per minute both from stationary position and on the move. Also it is possible to fire at targets on head-on and pursuit courses with 'Strelets' launching modules set equipment and 'Igla' SAMs.

As a result of the upgrade, 'SHILKA' has obtained digital computing system and improved its performance characteristics. Now it is possible to integrate the SPAAG into automated combat control system with external target designation. The SPAAG engages targets flying at altitudes up to 3500 m and at ranges up to 6000 m. The crew habitability conditions have also been improved; besides the ability to train the crew on simulated targets has been introduced.

The ZSU-23-4M4 radar has also undergone modernization: it has increased jamming resistance and stability of target tracking. Implementation of protection of angle automatic channels and rangefinders against passive jamming and ability of target tracking under multiple repeater pulse jamming provides high effectiveness of the radar operation. Due to the replacement of the cathode-ray indicators with LCD displays, color rendering and brightness of the range and circular scan indicators have been improved. The radar performs target search in circular scan, sector scan and antenna manual control modes. It tracks targets in three modes: automatic, semi-automatic, and manual tracking by angular coordinates and range. According to the type of echo-signals processing there are amplitude, phase and moving target selection modes implemented in the radar.

No least important in the upgrade of ZSU-23-4M4 'SHILKA' is the new element base and the system of secondary power supplies which ensures reliable operation and improved accuracy of predicted target coordinates generation.

At the same time performance characteristics of SPAAG 'SHILKA' are constantly being improved: for example, optical sighting device has been replaced with optoelectronic system (OES) which increased target detection range up to 12 km and automatic target tracking range up to 10 km. Optoelectronic system has got two channels of artificial vision: television, thermovision and also it has got a laser range finder which allows to lock-on and track targets in thermo-television mode and use OES as an alternative to the radar system.

ZSU-23-4M4 'SHILKA' is a result of application of modern technologies and experience gained in the actual combat. Its technical specifications meet the modern requirements and allow effectively fighting air threats. /RA&MG/

THE AUTONOMOUS COMBAT MODULE TOR-M2KM IS THE BEST CHOICE FOR AIR DEFENCE OF STRATEGIC FACILITIES AND INFRASTRUCTURES

Almost from the very beginning of military aviation, it was used for strikes against large cities and other strategic facilities. Already at the beginning of World War I, German Zeppelins bombed London and British Avros bombed Friedrichsgafen. In World War II, strategic bombing reached a colossal scale – a number of raids simultaneously involved more than a thousand aircraft. Along with the development of means of attack, defence measures were also strengthened. It was during World War II that the idea of creating special blockhouses to house anti-aircraft artillery – the German 'flaktrum' – was born and realised.

Problems of air defence of strategic facilities and infrastructures and ways to solve them

When creating air defence of large cities, German specialists faced a number of problems. Location of anti-aircraft guns along the perimeter of the city required a large number of guns. At the same time, only a part of them – those that were on the direction of the strike – participated in the battle. But even they could not work on the bombers that broke through the air defence line – the city centre remained unprotected. When the air defence was placed directly in the city quarters, the guns were hampered by houses and even trees and, as a consequence, they could fire only narrow sectors, which again – either left part of the object unprotected, or required a multiple increase in the number of barrels, most of which again remained inactive. The 'Dusky Teutonic genius' found a solution to this problem in the creation of special anti-aircraft towers, on which the guns were raised almost in line with the roofs of city houses and had the possibility of circular firing.

This decision was forgotten for many years after World War II due to the changed tactics of air attack on strategic targets. After the creation of the nuclear bomb, it became the main threat. And its carrier was the high-flying strategic bomber. The fight against which was technically more difficult, and organisationally – easier. For example, to provide air defence for such a large industrial centre as Izhevsk, it was not without reason that one or two positions of ADM system-75 placed a kilometer away from the outskirts of the city were considered sufficient – the missile approached the high-altitude target at a high angle, gained altitude over a clear field, quickly leaving the urban area far below, and the range was sufficient to intercept the target on the approaches to the opposite outskirts.

Today, however, the situation has changed again. In practice, the main threat is posed by low-flying air assault weapons- cruise missiles and UAVs. Detection and interception of such targets can be seriously hampered by houses and trees, which makes one think of the idea of raising air defence systems above urban areas. Moreover, it is not at all necessary to build special warehouses – Russian designers have created an ADM system that can be placed on the roofs of standard houses.

On the roof of one's house

The Izhevsk Electromechanical Plant Kupol has proactively developed an autonomous combat module of the ADM system Tor-M2KM. Abandoning the chassis allowed to significantly reduce both the cost and weight of the product. The weight of the module is more than half of the basic caterpillar version and is only 15 tons. According to one of the mandatory regulations, the same weight of snow a flat roof of a 100 m^2 house should be able to withstand in areas with average snow load. That is, Tor-M2KM can be placed on the flat roof of any house built in accordance with the rules and regulations (perhaps – the simplest system of weight distribution is required, and of course – regular snow removal is necessary). The Tor-M2KM can be lifted to the roof by a Mi-26 helicopter or a loading crane of appropriate lifting capacity. Wired communication between the combat modules and with the battery command post (it is located on the ground) can be provided by means of conventional masts and towers, including those built on the roofs of neighboring houses. Thus, there are no serious difficulties in implementing the old idea of flaktrums on a new technical level.

Taking into account the damage radius of the Tor-M2KM autonomous combat module (up to 15 km), the heading parameter (±8 km), and the ground track parameter between the modules and the Battalion command post (5 km), it is easy to calculate that an object/city with a radius of 10 km can be reliably covered by just one battery of ADM system Tor-M2KM. At the same time, the damage radii of individual modules will partially overlap each other (including in 'dead' sectors), and within 3-5 km from the object, all the battery's combat modules will be able to work on targets simultaneously.

There may be concerns that it would be difficult for ADM system to intercept a target below, but there is no reason for such concerns. Taking into account the curvature of the Earth's surface and the fact that ADM system of Tor family are capable of firing at targets in the lower semi-sphere (up to -5°), the possibility of firing at low-flying air assault weapons is fully preserved or even increased. For example, when the combat module is raised to a height of 100 m, the short-range interception limit for targets flying at a height of 10 m is about 1 km – i.e. the usual 'dead' zone does not grow.

Placement on rooftops does not hinder, but on the contrary, increases the effectiveness of ADM system. It increases the range of detection, reduces the influence of terrain and urban buildings, and, ultimately, moves the encounter point of the missile with the target to the far edge of the damage zone to the maximum extent possible. The latter is an important factor, given that even the debris of an intercepted aerial assault weapon can cause casualties and destruction.

Such characteristics of the ADM system Tor-M2KM autonomous combat module as low deployment time (3 minutes – a world record), which makes it possible to repel a surprise air raid, high speed of airspace surveillance (1 antenna rotation per second – the world's best record), which makes it possible to react quickly to the changing situation, low reaction time from target detection to SAM launch – 5-10 seconds, which is especially important when working against low-flying targets, which

The Izhevsk Electromechanical Plant Kupol (part of Almaz – Antey Air and Space Defence Corporation, JSC) is one of the leading enterprises of the Russian military-industrial complex, the leading designer and manufacturer of the Tor system of air defence missile systems. The plant also manufactures airborne equipment for surface-to-air missiles, provides maintenance services to operating organizations, and repairs and upgrades previously delivered ADM system.

ADM system produced by the Izhevsk Electromechanical Plant Kupol is in service with the Russian Army and coastal units of the Navy, as well as with the armies of two dozen countries on three continents The Izhevsk Electromechanical Plant Kupol continuously searches for ways to further improve the effectiveness of its air defence systems, which allows them to successfully counter modern and advanced air attack weapons.

are detected later than low-flying air assault weapons, are also fully compliant with the tasks of providing air defence of strategic facilities and infrastructures.

The ADM system Tor-M2KM is capable of intercepting any aerodynamic targets flying at speed up to Mach 2 and above, with an effective dispersion surface of 0.1 m^2 or less.

The Tor-M2KM autonomous combat module is based on the ADM system Tor-M2U. In case the combat modules will be built on the basis of the newest version of Tor – ADM system Tor-M2 combat capabilities are significantly increased: the damage zone is extended to 1-16 km in range, 0.01-12 km in altitude and ±9.5 km in ground track parameter, the ammunition load is increased from 8 to 16 SAMs, etc.

Where there is a threat of high-flying bombers or ballistic missile attacks, the Tor-M2KM autonomous combat module can be coupled (including directly) with the ADM system Viking (a modular version of the ADM system Buk family) or with the ADM system S-300V4. In this case, the advantages of each of the combat vehicles, mutually complementing each other, will provide a reliable shield against any air assault weapons.

The Universal Soldier

Due to its peculiarities, the ADM system Tor-M2KM has a significantly expanded area of application. It can be installed on a railway platform or a ship deck, which will provide reliable air defence cover for the transport of valuable cargos. The ability of the new and latest ADM system of Tor family to operate at sea and from the shoreline against targets flying over the sea has been proven in practice. This has been achieved thanks to the introduction of new algorithms for the combat operation of the computer system, which allow levelling the impact of wave rolling.

The module can be moved from one position to another with relative ease. Transportation is carried out on any chassis (self-propelled or trailed) with a suitable load capacity (from 20 tons). Installation on the chassis and removal – by a 25-ton crane. Repositioning time – 10 minutes (at the same time, according to the total time spent on repositioning and deployment – 10+3 minutes, the system can be considered mobile by Western standards – modern Western ADM systems are deployed/redeployed in 10-15 minutes).

If necessary, the autonomous module can easily return to the air defence forces – the system can be easily integrated with any chassis of suitable payload capacity.

This breadth of applications makes the Tor-M2KM autonomous combat module a truly 'universal soldier' and provides wide maneuver of available air defence forces in accordance with emerging/disappearing threats. **/RA&MG/**

Mi-171Sh

Military transport helicopter

Up-to-date configuration of the legendary helicopter

The most modern version of the Mi-17 military helicopter with the improved flight and operational characteristics, high survivability and flight safety as well as powerful unguided and guided armament complex.

Mi-171Sh military transport helicopter is designed to perform delivery of manpower, transportation of cargoes and materials inside the cargo cabin or on the external sling as well as for airdropping of tactical troops, airlanding of reconnaissance and sabotage groups and destruction of ground objects.

The helicopter can be operated for medical evacuation, delivery of the emergency medical healthcare onboard, provision of the search and rescue missions in combat conditions. Mi-171Sh features high transport capabilities, it can be effectively employed in special operations, it is self-sufficient and has an out-of-hangar storage capability.

Main characteristics

- Max takeoff weight, kg 13.500
- Max external payload weight, kg 4.000
- Max speed, km/h 280
- Service ceiling, m 6.000
- Range, km:
  with main fuel tanks 610
  with two internal additional fuel tanks 1065
- Cargo cabin volume, m^3 23
- Paratroopers carried in cargo cabin 37

Mi-26T2

Heavy transport helicopter

The most weight-lifting helicopter

The biggest and mightiest helicopter. It outperforms any existing heavy-transport helicopter in terms of weight-lifting capability and range of cargoes delivered.

Mi-26T2 heavy-lift helicopter is designed to provide airlifting of self-propelled machinery (both wheeled and tracked) and non-self-propelled machinery, bulky cargoes weighing up to 20 tons (44,100 lbs) both in the cargo cabin and on external sling.

Moreover, it can be operated for transportation of paratroopers and medical evacuation of wounded.

The helicopter can be applied in a transport, assault, medical, firefighting and refueling tanker versions.

Mi-26T2 provides delivery of servicemen, cargoes and fuel to hard-to-reach areas with a capability of landing on unprepared helicopter pads.

Main characteristics

- Max takeoff weight, kg 56.000
- Max payload, kg 20.000
- Max speed, km/h 295
- Service ceiling, m 4.600
- Flight range with internal fuel tanks (payload – 20 t), km 590
- Cargo cabin volume, m^3 120
- Crew 2-3
- Troops carried in cargo cabin 82

Ka-52E

Combat scout-attack helicopter

Aerial leader

Highly-maneuverable helicopter is armed with powerful armament complex and is capable to execute any combat task with high efficiency.

Ka-52E Combat Scout Attack Helicopter is designed for destruction of tanks, armored and non-armored vehicles, enemy's manpower and adversary helicopters in the front line or in tactical depth. The helicopter provides transfer of target reconnaissance, target distribution and target designation data to interacted helicopters and command posts of Ground Forces.

Ka-52E has a high combat survivability and combat power, it can be operated round-the-clock, it has a wide range of aerial weapons that can be mounted on 6 hardpoints and it is the only helicopter in the world that is equipped with the Ejection & Shock absorbing System.

Moreover, there is a ship-based version of the helicopter with 4 hardpoints, blade-folding and a wing-console section pivoting mechanisms for basing on decks or in hangars of ships.

Main characteristics

- Normal takeoff weight, kg 12,200
- Max speed, km/h 300
- Maximum climb-rate, m/s 16
- Service ceiling, m 5,500
- Hovering ceiling, m 4,000
- Range (with internal fuel tanks), km 460
- Maximum payload, kg 2,942

Orlan-30

Complex with UAVs

High precision reconnaissance and targetting

It is equipped with electrooptical payload with laser rangefinder-designator that provides laser illumination of stationary and moving targets for application of high-precision weapons.

The Orlan-30 UAV system is intended for aerial reconnaissance and monitoring of ground and water objects round-the-clock under all weather conditions and implementation of target designation for high-precision weapons.

Main characteristics

- Max. takeoff weight, kg ..... no more than 40
- Flight speed range, km/h 90-150
- Max. flight endurance, h 8
- Operational radius (automatic/semi-automatic mode), km ..... up to 120

S-350E 'Vityaz'

Air Defence Missile System

Effective. Miltichannel. Multi-angle

The S-350E 'Vityaz' air defense missile system possesses high tactical and technical performace characteristics, allowing it to be used for the defence of administrative, industrial and military facilities from massive strikes of modern and advanced air attack weapons.

The air defence system is capable of simultaneously repelling strikes of various types of air attack weapons from any direction (circular mode) in the entire range of altitudes of their flight – from extremely low to high altitudes.

Types of engaged aerodynamic targets:

- aircraft of tactical and strategic aviation, including those made using the Stealth technology;
- cruise missiles;
- helicopters;
- unmanned aerial vehicles;
- aviation weapons.

Types of engaged ballistic targets:

- tactical ballistic missiles;
- operational-tactical ballistic missiles.

Main characteristics

- Range of engagement (max / min):

aerodynamic targets:

SAM 9M96E2 ..... 120 / 2.5 km
SAM 9M100E ..... 15 / 1.5 km
ballistic targets with SAM 9M96E2 ..... 25/5 km

- Altitude of engagement (max / min):

aerodynamic targets:

SAM 9M96E2 ..... 25 / 0.01 km
SAM 9M100E ..... 8 / 0.01 km
ballistic targets with SAM 9M96E2 ..... 20/2 km

- Maximum speed of engaged targets ..... 2000 m / s

- Maximum number of simultaneously:

engaged aerodynamic targets 16
engaged ballistic targets 12
guided missiles at aerodynamic targets 32
guided missiles at ballistic targets 24

P-18-2 (1RL131-2)

Surveillance and targeting radar

Accuracy. Maneuverability. Interference protection

P-18-2 radar has enhanced capabilities for detecting targets, which use the Stealth technology. It can be used by radio engineering units.

P-18-2 radar is highly mobile and able to receive additional (flight) information from airborne transponders using the integrated secondary radars. Mobile 2D surveillance and targeting radar P-18-2 is designed for:

- detection, tracking, coordinates measurement (distance and azimuth), and state attribution of various flying objects in demanding active and passive jamming environment, active noise jammer direction finding;
- data support of end users' automatic and manual control systems as well as autonomous performance in signal intelligence units.

Main characteristics

- Working frequency bandwidth ..... VHF
- Acquisition range of a flying object with radar cross-section area of 2,6 sq.m. and no interference, at least, for altitudes:

3,000 m ..... 130 km
10,000 m ..... 230 km
20,000 m ..... 320 km

- Azimuth coverage ..... 0-360 deg
- Upper limit of elevation angle of radar envelope ..... at least 30 deg

Repellent-Patrul

Complex for counteracting small-sized UAVs

Highly-effective covering infrastructure objects and columns from small-sized UAVs

Possibility of multichannel suppression of UAV communication channels and effective counteraction to a UAV swarm

Designed to detect small-sized UAVs and suppress their communication channels (control and navigation channels) in sector and circular modes.

The system provides for:

- detection, bearing and identification of UAV signals;
- generation and emission of signals for jamming of UAV command and satellite navigation channels.

Can be supplied in both mobile and stationary versions. Has advanced capabilities for identifying and countering commercial UAVs.

Main characteristics

- Range of electronic reconnaissance of UAV communication channels, km 25
- Range of suppression of UAV communication channels in sector mode, km 20
- Range of suppression of UAV communication channels in circular mode, km 4

'Verba'

Man-portable air defense system

Easy-to-use. Efficient. High jamming-protection

Unique MANPADS with high protection against modern types of interference and the implementation of the 'shoot-and-forget' principle.

'Verba' MANPADS is the latest Russian MANPADS with enhanced capabilities when firing at targets with low levels of thermal radiation and a reduced consumption of missiles when destroying various targets.

'Verba' man-portable air defense system is designed to defeat visible fixed- and rotary-winged aircraft, unmanned aerial vehicles, and cruise missiles on head-on and in pursuit courses under intensive optical interference.

Main characteristics

- Range ..... 500 to 6000 m
- Altitude.....10 to 3500 m
- Target speed:
  on head-on course .....up to 400 m/s
  on pursuit course .....up to 320 m/s
- Ready for operation on a signal while on the march 12 seconds
- Ready for launch after activation .....5 seconds

Missile features tracing, passive, infrared three-spectral seeker

TMC: MILITARY-TECHNICAL COOPERATION DESPITE SANCTIONS

Boris Obnosov
Director General of 'Tactical Missiles Corporation'

The Tactical Missiles Corporation (TMC) is a recognized leader in the global market for high-precision weapons of various bases. This is confirmed by the high efficiency of using weapons with the Corporation's logo in real combat operations in various climatic and meteorological conditions, day and night, under intense counteraction from the enemy air defence.

The Corporation's share in the global market for aviation precision weapons is about 10%, and for naval weapons is up to 20%.

The association of leading enterprises of the Russian military-industrial complex is headed by Hero of Russia Boris Obnosov.

The exhibition activities may give an impetus to military-technical cooperation and showcase military products to potential customers. The international aerospace exhibition Dubai Airshow is one of the main exhibition venues in the region, where TMC traditionally introduces its best export models.

This year, at the joint Russian exhibition site, the Corporation's enterprises are presenting new aircraft weapons – the RVV-BD (long-range) and RVV-MD2 (short-range) air-to-air guided missiles, as well as the new generation multifunctional stealth high-precision missile Kh-69.

The Kh-69 missile is designed to destroy a wide range of stationary ground targets with known coordinates. These can be communications facilities, railway stations and hubs, ground-based warehouses, command posts and communications hubs, naval targets at their bases etc. The missile can be used as part of the weapons systems of a promising multi-role fighter (PAK-PMI), aircraft such as Su, MiG and others. The square cross-section design of the X-69 ensures its placement on the external and internal hardpoints of aircraft-carriers. It is much cheaper than its foreign counterparts, while being almost invulnerable along the flight path. The launch range is up to 290 km.

The RVV-MD2 air-to-air missile is a modification of the well-known RVV-MD model and is designed for close-in, highly maneuverable air combat. It hits targets at any time of the day, from any direction, against the background of the ground, under active enemy opposition. The launch range has increased by a quarter – up to 50 km. The new modification became slightly longer, increasing by 18 cm (from 292 to 310 cm) and became heavier by 11 kg (117 versus 106 kg). The dimensions allow the product to be used from the intra-fuselage suspensions. The missile has increased noise immunity and is completely digital. These and other innovations made it possible to increase the probability of hitting a fighter-type air target to 0.8.

The RVV-BD long-range guided missile is one of the world leaders in the air-to-air class in terms of range and power. It is designed to destroy almost any air targets at any time of the day, from all angles, in conditions of electronic countermeasures, against the background of the earth and water surface, incl. with multi-channel fire according to the fire-and-forget principle. The launch range is up to 200 km, warhead weight is 60 kg. The RVV-BD is quite capable of hitting an aircraft moving at a speed of up to 2.5 thousand km/h at an altitude of 15 m to 25 km. The probability of destroying an enemy fighter is 80%.

The Corporation's arsenal includes many more types of high-precision weapons, in particular, anti-radar, anti-ship and multi-purpose missiles, other models of air-to-air missiles, and adjustable aerial bombs. The potential customers may be interested in coastal and ship-based missile systems, unique in their characteristics, torpedo and mine weapons, anti-torpedo and anti-mine systems, systems and equipment for aviation and navy. At the same time, research and design teams are constantly developing new technologies in the field of advanced structural materials, thermal protection, engines, guidance systems, and software.

The Tactical Missiles Corporation is carrying out work to improve high-precision weapons in order to increase range and flight speed, increase combat load and noise immunity, all-weather capability and round-the-clock use. The principles of using artificial intelligence in control and target recognition systems are being improved.

Currently, the military-technical cooperation of Russia in general, and the Corporation in particular, is undergoing an inevitable transformation under the conditions of unprecedented sanctions from the collective West, which is trying to squeeze Russian weapons out of the world market by any means. Despite this, TMC continues to create new models of high-precision weapons, which are in high demand among foreign customers. /RA&MG/

INNOVATIVE PRODUCTS OF SRPE REGION

According to a respected international arms analyst, the Stockholm International Peace Research Institute (SIPRI), the total global military spending has increased for the ninth year in a row. In 2022, they increased by 3.7%, reaching a record of $2,240 billion. At the same time, the share of precision weapons in the structure of arms sales on the world market is growing at a faster pace, adding (according to various experts) from 5% to 8% annually. Among the undisputed leaders of the world market of high-precision weapons is the Russian SRPE Region (part of the Tactical Missiles Corporation, JSC, TMC), which products are well known in all regions of the globe, including the Gulf states.

As one of the key developers and creators of high-precision weapons in the structure of TMC, SRPE Region (State Research And Production Enterprise Region) provides the Russian innovative weapons with a leading position in the world market. Among the highly sought-after products of the enterprise are guided aircraft weapons: adjustable aircraft bombs, guided aircraft bombs, guided gliding aircraft bombs and other products.

The guided aviation weapons created by SRPE Region include the latest technologies and advantages of modern high-precision weapons, while in terms of their effectiveness, accuracy of destruction, range and a number of other characteristics, these Russian products are noticeably superior to similar-class products of global competitors. Among the distinctive advantages of the products of the Russian enterprise is the possibility of high-precision destruction of ground and surface targets, including small-sized durable and especially durable objects. Targeting accuracy is from 5 to 10 m.

At the same time, it is known, that the adjustable aerial bombs are not only one of the most reliable and effective, but also the most inexpensive aviation weapons, which explains the widespread use of these products by aviation all over the world, including in situations of real combat conflicts, when, when achieving their goals, carrier aircraft remain virtually outside the enemy's air defense coverage area.

Based on vast experience (the company has been operating since 1969), as well as special design and production competencies, SRPE Region provides the highest innovative level of its products, guaranteeing impeccable quality and reliability. These characteristics equally apply to the new generation gliding ammunition created at the enterprise (250, 500 and 1500 kg calibers).

The most popular examples of such high-precision weapons include, for example, the KAB-250LG-E adjustable aerial bomb (index K047E) with a laser homing head and a high-explosive fragmentation warhead. The bomb is designed to destroy (in a single or salvo fire) from front-line aviation aircraft a wide range of ground objects (equipment, warehouses, structures, etc.) with laser illumination by a carrier aircraft or a ground-based laser illuminator. Providing target designation for this bomb can also be provided from ground reconnaissance groups and from UAVs. The KAB-250LG-E bomb can be used in the altitude range from 1 to 10 km from a wide range of carriers, including unmanned aerial vehicles.

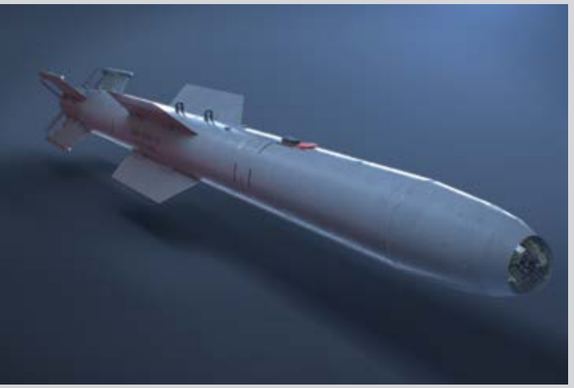
The K08BE guided aerial bomb (500 kg caliber) is a high-precision development of SRPE Region with an inertial-satellite guidance system and a high-explosive warhead. The bomb is designed to destroy a wide range of stationary targets in simple and adverse weather conditions, at any time of the day. The main targets of destruction are enemy troops and military equipment, warehouses and buildings, road transport and military-industrial infrastructure. K08BE is used as part of weapon systems for operational-tactical aircraft. The bomb can be dropped from a height of up to 14 km and has a maximum gliding range of 40 km. The warhead has an intelligent fuse with three detonation delay modes.

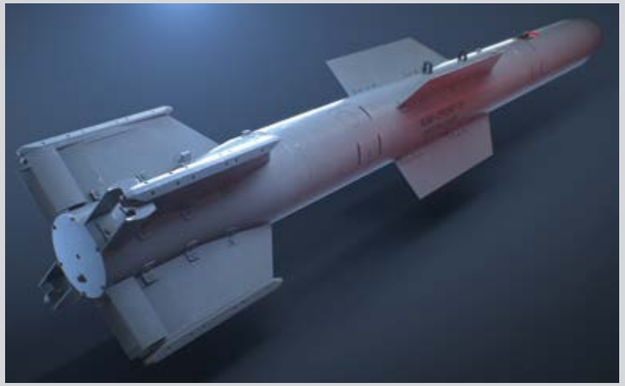
An example of a new high-precision product from of SRPE Region is the UPAB-1500B-E guided glide bomb (index K029BE), which is successfully used as part of the weapon systems of aircraft of the 4++ generation (Su-35, MiG-35) and the 5 generation (Su-57). Application altitude is up to 15 km.

UPAB-1500B-E is a clear and convincing embodiment of the 'drop-and-forget' ideology. The range of targets hit by the bomb is quite wide, including strong and deep enemy targets of high defensive importance. The warhead of the bomb – a high-explosive concrete-piercing one with a mass of more than a ton – ensures reliable penetration of reinforced concrete barriers several meters thick. This bomb uses a special inertial-satellite guidance system, which provides increased accuracy and the ability to drop a bomb at a distance of up to 50 km from the target.

The given examples clearly represent the technological level of high-precision weapons created by SRPE Region. It should be especially emphasized that the planning property that the company's products have allows carrier aircraft to use them without entering the enemy's air defense zone. /RA&MG/

KAB-250LG-E
Weight, kg 256
Length, mm 3200
Diameter, mm 255
Weight of warhead, kg 165
Contact explosive device with three types of deceleration
Accuracy Circular probable deviation, m ..... to 5





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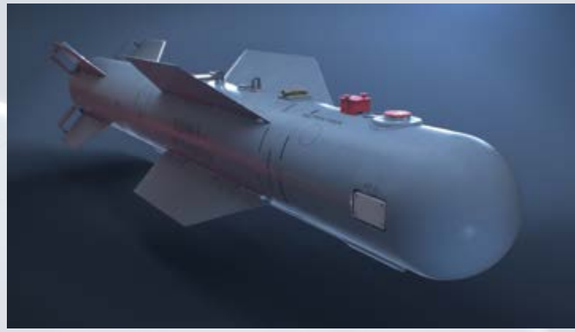
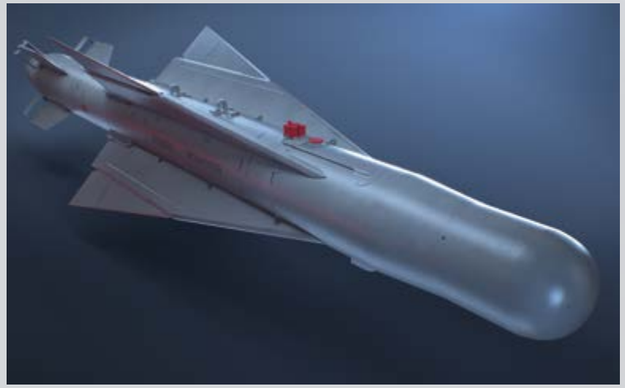
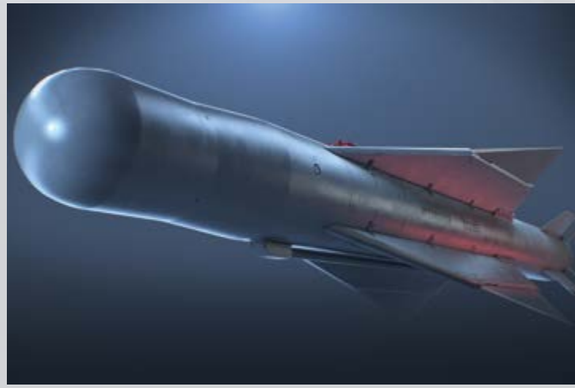
K08BE
Weight, kg 505
Length, mm 2840
Diameter, mm 355
Weight of warhead, kg 390
Contact explosive device with three types of deceleration
Accuracy Circular probable deviation, m ..... to 10



UPAB-1500B-E
Weight, kg 1525
Length, mm 5050
Diameter, mm 400
Weight of warhead, kg 1010
Contact explosive device with three types of deceleration
Accuracy Circular probable deviation, m ..... to 10





BRAHMOS

Weapon for Contemporary Warfare

The power and lethality of precision guided weapons in contemporary warfare has increased manifold. Many nations' militaries have stepped up efforts to acquire such weaponry to bolster their firepower. One weapon which has established its supremacy as a unique 'force multiplier' for modern-day battles is supersonic cruise missile BRAHMOS. Jointly designed and developed by DRDO of India and NPOM of Russia as part of a high-end military-technology partnership programme, BRAHMOS with its deadly combination of speed, precision, firepower, versatility and manoeuvrability, remains an undisputed leader among precision strike weapons worldwide.

BRAHMOS's remarkable evolution from an anti-ship weapon to a multi-role, multi-platform system having the power to knock down a wide range of strategic ground and sea-surface targets from stand-off ranges has made it a formidable military asset. With its successful operationalisation in Indian Army, Navy and Air Force, BRAHMOS has completed India's 'supersonic cruise missile triad'. The missile, during successful test firings, has also validated its precision strike capability in integrated network-centric warfare environments.

Supersonic cruise missile BRAHMOS – the 'unparalleled leader' among worldwide precision strike weapons – has strengthened its position over the years owing to its incredible features of speed, accuracy, deadly firepower, stealth and universality. A finest product of high-technology military cooperation between India and Russia, BRAHMOS has charted a spectacular journey since its inception over two decades ago.

Initiated as a Joint Venture (JV) military programme between India's DRDO and Russia's NPO Mashinostroyenia (NPOM) on February 12, 1998, the tactical missile, designed and developed by the JV entity BrahMos Aerospace, has come a long way, charting milestones after milestones. Rightfully reckoned as the world's fastest, best and deadliest precision-guided missile, BRAHMOS has evolved from being an anti-ship weapon to a multi-role, multi-platform system that has proved its dexterity and formidability in numerous test firings, having set the highest success rate no other weapon has ever recorded in the world.

Today, BRAHMOS has made India only nation in the world in possession of a supersonic cruise missile triad, ensuring the Indian Defence Forces' formidable capability to undertake modern-day, highly complex combat operations from across the spectrum of warfare. The tactical weapon has been successfully deployed by the Indian Army, Navy and Air Force on their frontline platforms.

Since its maiden successful test firing conducted on 12 June, 2001 from a land-based launcher in anti-ship mode, to subsequently being developed and tested in land-to-land, land-to-sea, sea-to-land, sea-to-sea, subsea-to-land, subsea-to-sea, air-to-sea and air-to-land configurations, the state-of-the-art BRAHMOS missile has completely redefined new-age technology involving missile science and aeronautics.

Capable of cruising at a top speed of Mach 3, the 3-tonne missile can operate in hi-low trajectory and instantly hit on its target with very high precision without giving any time or scope to the adversary's air defence system to react. The immense kinetic energy released by the powerful weapon can completely decimate high-value enemy targets within a very short time. It has also established its 'salvo' launch capability wherein more than one BRAHMOS can be fired in quick succession in one or different directions to knock down single or multiple enemy targets and positions.

The Indian Navy in 2005 became the first force to deploy BRAHMOS on its large guided missile destroyers to undertake maritime combat missions. The naval variant of the weapon continued its evolution thereafter to further bolster and expand the Navy's strike capability and outreach from both littoral and high-sea zones.

The missile offers wide-ranging strike options – sea-to-sea, sea-to-land, coast-to-sea and subsea-to-land – in modern, multi-threat maritime environment. Indian Navy has deployed the missile as the 'prime strike weapon' on its frontline destroyers and frigates.

In its anti-ship configuration, BRAHMOS can cruise at a very low trajectory above the sea-surface and can launch surprise attacks on enemy positions. Also deployed in land-attack configuration on Indian warships, the missile has proved its power to engage targets deep in-land from stand-off ranges. An underwater variant of the weapon system has also been successfully tested in 2013, thus validating its flexibility to be integrated onto conventional attack submarines in future.

On 22 November, 2017, the highly advanced air-to-surface configuration of BRAHMOS made a world-record feat when it was successfully test fired for the very first time from the Russian-origin Sukhoi-30MKI combat aircraft of the Indian Air Force (IAF) against a sea-surface target off India's eastern coast. This illustrious mission made India the first and only nation in the world in possession of a 'supersonic cruise missile triad.'

The highly coveted BRAHMOS air-launched weapon development programme was jointly undertaken by the scientists and engineers of India and Russia who modified the original anti-ship BRAHMOS configuration so as to integrate onto the Sukhoi-30 air combat platform. After validating its capability to engage naval targets from large, stand-off ranges in day & night and all-weather conditions, the formidable BRAHMOS-ALCM (air-launched cruise missile) subsequently proved its power to accurately engage and neutralise strategic land target during a successful test launch mission conducted by the IAF from India's Car Nicobar Islands on 22 May, 2019.

On 20 January, 2020, the IAF raised the 'TigerSharks' squadron consisting the BRAHMOS-armed Su-30MKI strike fighter to keep a 'strategic vigil' over the Indian Ocean Region (IOR) ensuring peace, tranquillity and prosperity. Today, BRAHMOS ALCM has become the world's most powerful conventional air-borne weapon system in terms of its outreach, lethality and combat capability.

Having recorded all these illustrious milestones to its credit, the 'universal' BRAHMOS has thus garnered a lot of interest among many nations across the world who are willing to acquire this powerful weapon for their military.

BrahMos Aerospace, meanwhile, has also initiated work on more advanced, futuristic variants of BRAHMOS, including a miniature version to be called BRAHMOS-NG (next-gen) which, owing to its smaller, smarter, stealthier dimensions, would be integrated onto a wider number of modern military platforms in near future.

BrahMos Aerospace, the JV entity between India and Russia developing, producing and marketing supersonic BRAHMOS, achieved its first export breakthrough in January 2022 when it signed a landmark contract with the Republic of Philippines to deliver shore-based BRAHMOS anti-ship missile batteries to the Armed Forces of Philippines.

'With this historic export deal, we have made our mark in the international market and now intend to expand our footprint further. As a state-of-the-art system combining cutting-edge technologies, BRAHMOS offers a very cost-effective solution for contemporary battles,' says Outstanding Scientist Atul D Rane, (DG, BrahMos, DRDO) and CEO & MD of BrahMos Aerospace. /RA&MG/

MADE IN RUSSIA: HIGH-TECH DEFENSE & AEROSPACE SOLUTIONS FOR THE GULF

Dubai Airshow in 2021 became the site of the international premiere of the Russian brand-new MC-21 airliner and other aircraft. The leading Russian producers traditionally have been demonstrating in Dubai their latest high-end technologies and innovations. Let us take a closer look at the Russian aerospace and air defense technologies, through the eyes of the Arab world media.

The Arab states and especially the GCC countries traditionally show interest in almost the entire range of Russian military products, said Director of the Federal Service for Military-Technical Cooperation (FSMTC of Russia) Dmitry Shugaev, in the interview to RAMG.

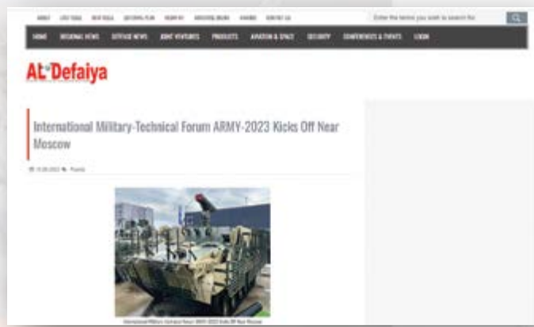
'Current stage of relations in the field of military-technical cooperation is characterized by the development of cooperation between Russia and the UAE with an emphasis on its cooperative component. Both the implementation of existing contracts and promising areas of cooperation are discussed with partners,' – said Dmitry Shugaev.

'Middle East countries are Russia's traditional and important partners. Rosoboronexport is implementing a lot of military-technical cooperation projects in the region,' said Rosoboronexport's Director General Alexander Mikheev at IDEX 2023. 'Today, we are busy working out proposals for the forms of partnership that could be of immediate interest to Middle East nations-primarily related to technology transfer, joint R&D, and application of offset programs'.

ARMY-2023

The IXth International Military-Technical Forum ARMY-2023 was widely covered by Arabic military media.

'Almost 1,500 enterprises presented about 28,000 samples of military and dual-use products. The Forum is attended by 69 foreign delegations, 29 of which are headed by Defense Ministers and Chiefs of General Staff,' reported **Al Defaiya**.



In its large analysis of the results of the ARMY-2023 **Battle Tested Weapons at ARMY-2023 Al Defaiya** noted, that Rosoboronexport signed a number of contracts for the amount of about $600 million.

Al Defaiya: 'Besides, at the ARMY-2023 forum Russia's state-controlled special exporter conducted presentations for more than 30 foreign delegations and reached agreements on industrial cooperation which includes joint production of Kalashnikov assault rifles, armored vehicles, guided missiles on the territory of customers, as well as the installation of Russian unmanned combat modules of various calibers on the partners' chassis'.

'In 2023, as part of its exhibit, Rosoboronexport has allocated a separate place for displaying such weapons. We'll be showing our partners aircraft, air defense and electronic warfare systems, armored vehicles and tanks, artillery, unmanned aerial vehicles and counter-UAV systems, small arms and combat gear and telling them in detail about the experience of their use in combat within information provided by the Ministry of Defense of the Russian Federation. The presented products have undergone necessary upgrades and have been retrofitted taking into account feedback from the zone of the special military operation,' quoted **Al Defaiya** Alexander Mikheev, Director General of Rosoboronexport.

'Company's partners showed keen interest in the MiG-35, Su-57E, Su-35, Su-34 and Su-30SME combat aircraft, Ka-52E helicopter, modernised Mi-28NE, Mi-171Sh, Ka-226T and Mi35P helicopters, as well as Orion-E, Orlan-10E and Orlan-30 UAVs and counter-UAV assets. Russian air defence equipment attracted particular attention from foreign delegations at Army 2023. Upon requests from partners, Rosoboronexport presented the S-400 Triumf, S350E Vityaz air defence missile systems (ADMS), Viking SAM system, various versions of the Buk and Tor SAM systems produced by the Almaz-Antey Corporation, as well as products from High Precision Systems, a subsidiary of Rostec – PantsirS1 and Pantsir-S1M self-propelled anti-aircraft gun/missile (SPAAGM) systems and their naval version – the Pantsir-ME AAGM system, which has recently successfully passed official tests and is being installed on Russian ships, as well as the Verba and Igla-S MANPAD systems,' – reported **Nation Shield**.

Defence 21 wrote on the counter-precision guided munition (counter-PGM) systems developed and produced by Russian defense industry to guests and visitors of the ARMY 2023 Forum.

'The experience of military conflicts shows a rapidly growing trend towards the use of land-, air- and sea-based precision guided munitions. With their stealthy signature, ability to maneuver and penetrate various air defenses, smart missiles and bombs can inflict significant damage on military, economic, and infrastructure facilities. Russian defense companies have developed and produce high-tech systems able to counter the most advanced PGMs. Their effectiveness has been proven in real combat conditions,'- quoted **Defence 21** Rosoboronexport Director General Alexander Mikheev. 'Rosoboronexport presents a wide range of export versions of Russian systems designed both to destroy and completely disable PGMs. Their combined use provides reliable protection of military and civilian facilities against any current and emerging weapons. The company is ready, in the framework of technology cooperation, to jointly develop and produce new models with partners, given high competence of Russian enterprises.'

Defence 21 mentioned jamming modules of the Pole-21E electronic countermeasures (ECM) system designed to protect strategic assets and infrastructure against pinpoint strikes by PGMs, as well as the R-330Zh automated satellite communication/navigation ECM system.

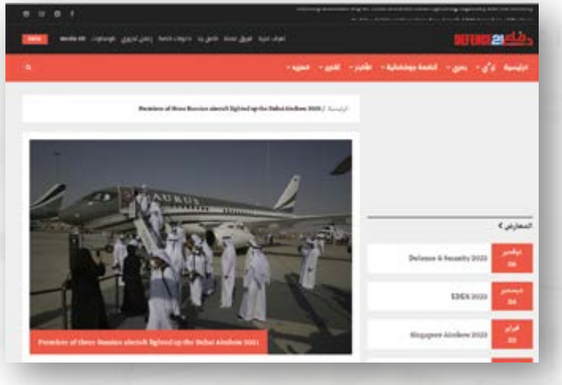
Nation Shield added, that these systems can effectively protect the covered facilities from single and massive strikes by any precision guided conventional-warhead weapons fitted with various guidance systems, including when the enemy intensely deploys countermeasures.

Dubai–2021 Highlights

Dubai Airshow-2021 with its impressive aerospace premieres from Russia was also covered by Arab media.

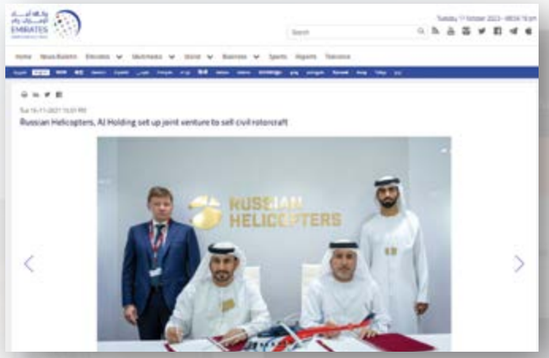
'United Aircraft Corporation has successfully presented the MC-21-310 medium-range passenger aircraft, a new version of the business airliner based on the Superjet 100 under the Aurus brand and the Checkmate light tactical aircraft at the Dubai Airshow. All three aircraft were presented abroad for the first time.

MC-21-310 with Russian PD-14 engines participated in the flight program of the air show. Delegations of the Gulf countries' airlines and specialists from different countries came up aboard the aircraft while it was parked on the static display. Enlarged windows in comparison with those in analogous aircraft, roomy overhead bins and an aisle between the seats increased due to the widest fuselage in the class allowing passengers to walk past a trolley cart – all this was demonstrated for visitors', wrote Defence 21 in its **Premiere of three Russian aircraft lighted up the Dubai Airshow 2021 article**.



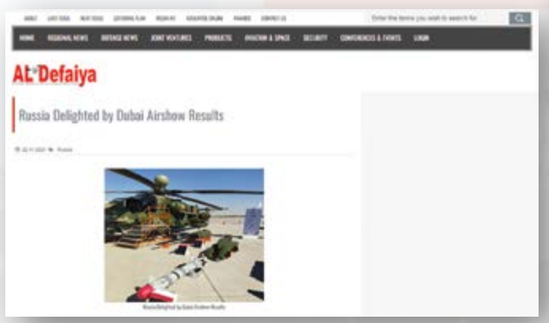
It added, that at the joint stand of the UAC companies, all current aircraft programs were represented as models and in the multimedia exposition, including Su-57, Su-35, MiG-35, Yak-130, Il-76MD-90A, IL-114-300, Be-200, Superjet 100, MC-21.

WAM news agency reported on the establishment by the Russian Helicopters of a joint venture with AJ Holding LLC, called Alpha Aviation LLC, in the Ajman Free Zone to promote and sell Russian civilian helicopters abroad.



WAM: 'Key market for Alpha Aviation will be the countries of the Middle East. The joint venture will also be responsible to provide service maintenance to Russian helicopters in the region… The light multi-purpose Ansat helicopter is presented at the Dubai Airshow 2021 in two versions. The first one is equipped with a medical module, while the second is a luxury Ansat Aurus, which features a VIP cabin designed in accordance with Aurus brand style. Equipped with two engines, the helicopter can be used for passenger and VIP transportation, cargo delivery, environmental monitoring and as a sanitary aircraft. The helicopter can be used in temperatures ranging from -45 to +50 degrees Celsius'.

Al Defaiya, touching the theme of the Russian helicopters, reported, that Mil Mi-28NE Night Hunter and Kamov Ka-52 attack helicopters featured round-the-clock operation ability being armed with an impressive set of smart weaponry.



Al Defaiya: 'The rotorcraft Ka-226T is intended for operations in the highlands and so has been nicked as the 'Climber'. It features new airframe and fuselage design with increased aerodynamic characteristics. Being made of modern lightweight materials the Ka-226T is equipped with an impact-resistant fuel system to meet special safety requirements. The machine received up-to-date avionics package to ensure safe and cost efficient operations. The vehicle module design makes Ka-226 real 'Jack of all trades' as passenger, transport, SAR or medical-evacuation work horse.The Ka-226T versatile design draws interest of both commercial and military operators'.

The **Arab Defence Journal** covered in details the latest Russian Orion-E MALE drone in the reconnaissance/strike configuration.

'The Orion-E is equipped with satellite communication system that boosts its range.

The international marketing of the Orion-E in combat configuration has been announced by the Rosoboronexport in 2021. The Orion-E is intended for performing missions in a wide range of climate zones', – reported the **Arab Defence Journal**.

Milestone for Sukhoi Combat Aircraft

The 2022 year marked the 45th anniversary of the maiden flight of the Su-27 fighter prototype which has been developed by the Sukhoi Experimental Design Bureau. The milestone was actively covered by global media, including the Arab media.

'The designation Su originates from the family name of the aircraft designer Pavel Osipovich Sukhoi whose team remains in charge of the current family development. According to Rosoboronexport, Russia's national defense trader, about 700 Su-27/Su-30 combat aircraft have been sold internationally since 2000. The aircraft open architecture of avionics and weapons systems allows to implement various non-Russian equipment on customer's demand. The Russian Aerospace Forces remains the largest operator of Sukhoi combat aircraft,' reported **Al Defaiya**.

The open architecture of avionics and weapons systems allows to install various non-Russian equipment on customer's demand. Other key features of the Su family include: super-maneuverability; powerful smart missiles package teamed by a 30 mm cannon; in-flight refueling capability. The Russian Aerospace Forces remains the biggest operator of Sukhoi combat aircraft.

Rotary-wing Hunter-Killer

The **Nation Shield** in 2022 published a large analytical article on the Ka-52 combat-reconnaissance helicopter.

'Ka-52 is battle-proven, and these rotorcraft have been involved in several reconnaissance and combat tasks. Moreover, the combat capabilities of the rotary-wing platform have exceeded the original requirements of its designers,' wrote the **Nation Shield**.

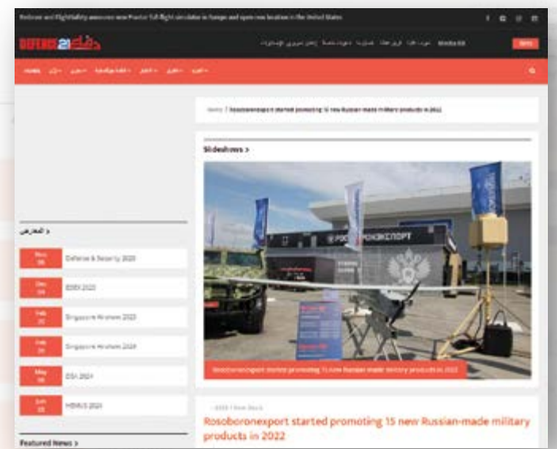
Ka-52E helicopter is designed for destruction of tanks, armored and non-armored vehicles, enemy's manpower and adversary helicopters in the front line or in tactical depth. The helicopter provides transfer of target reconnaissance, target distribution and target designation data to interacted helicopters and command posts of Ground Forces.

Ka-52E has a high combat survivability and combat power, it can be operated round-the-clock, it has a wide range of aerial weapons that can be mounted on 6 hardpoints and it is the only helicopter in the world that is equipped with the ejection & shock absorbing system.

New UAV and Anti-UAV systems

The brand-new version of the globally renowned Orlan UAV, the Orlan-30, became premiere of 2023.

'Orlan-30 unmanned aerial vehicle system developed and manufactured by the Special Technology Center is a further evolution of the Orlan-10 UAV, which is well known in the world market and has proved its capabilities in real combat conditions. The Orlan-30 is intended for aerial reconnaissance, search, detection and recognition of objects in the visible or infrared range. In addition, when equipped with a mission payload, it provides target designation for precision-guided weapons for destroying fixed and moving targets day and at night,' wrote **Defence 21**.



It also noted, that in 2022 Rosoboronexport added new drone countermeasures to its export catalog. Among others was the RB-504P-E electronic warfare system, which provides highly effective detection, identification, and direction finding of UAVs, as well as jamming of their navigation and control links.

'In 2022, Rosoboronexport has launched a global marketing campaign for 15 new military products developed and manufactured in Russia. Its export catalog was replenished with products for the Air Force, Navy, Ground Forces, Air Defense Forces as well as with UAV countermeasures. Market launch of new products significantly increases the competitiveness of Russian arms and strengthens the position of our country on the global market,' quoted **Defence 21** Alexander Mikheev.

UMEX 2022 expo in Abu Dhabi was an excellent opportunity to get to know latest Russian developments in the fields of both UAVs and anti-UAV systems.

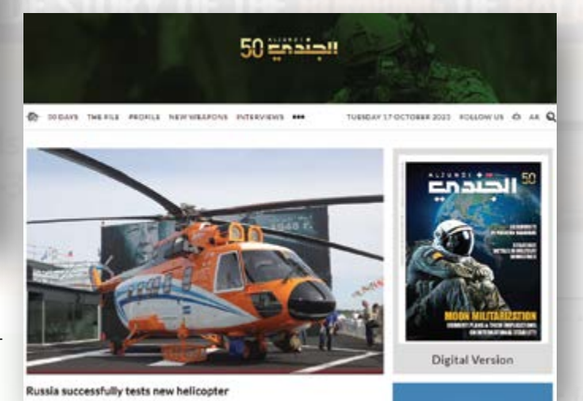
'Along with the growing demand for drones, there is an increased attention to drone detection and suppression systems. These products are particularly relevant in the Middle East region, where drone attacks by terrorists occur repeatedly,' quoted **Al Defaiya** Alexander Mikheev.

Rosoboronexport expressed its readiness to consider cooperation on the export of some UAV countermeasures systems. In addition, it developed and offered its partners a comprehensive counter-drone system combining electronic warfare and air defense systems of various classes.

Mi-171A3 – offshore helicopter

Arab media have also traditionally been paying attention to the developments in the field of Russian civil high technologies.

Al Jundi Journal published the article on Mi-171A3 offshore helicopter.



Al Jundi: 'Rostec, a Russia-based company, has announced that the new Mi-171A3 helicopter has passed flight tests on its first long-distance flight.

According to Rostec, the Mi-171A3 helicopter features unique logistic capabilities, with a maximum take-off weight of 13 tons.

The Mi-171A3 can carry 24 passengers, and has a range of 1,000 km per flight, depending on the main fuel tanks, and it can operate in different regions and weather conditions, at temperatures ranging from -50 to +50 degrees Celsius'.

The helicopter comes equipped with a special system, which enables safe landing on waves up to five meters high, added **Al Jundi**.

/RA&MG/

INTERNATIONAL AEROSPACE, MILITARY, NAVY AND TECHNOLOGY GUIDES IN 2023–2024

'GUIDE' №06 (74)	November 20th	**EDEX 2023** (04-07.12.2023, Egypt, New Cairo)
'GUIDE' №01 (75)	January 05th	**DEFEXPO INDIA 2024** (January 2024, India)
'GUIDE' №02 (76)	January 18th	**World Defense Show 2024** (04-08.02.2024, Saudi Arabia, Riyadh)
'GUIDE' №03 (77)	March 01th	**ArmHiTec 2024** (March 2024, Armenia, Yerevan)
'GUIDE' №04 (78)	March 20th	**Eurasia Airshow 2024** (April 2024, Turkey, Antalya)
'GUIDE' №05 (79)	March 20th	**DSA 2024** (06-09.05.2024, Malaysia, K.Lumpur)
'GUIDE' №06 (80)	March 20th	**International Exhibition of National Security and Resilience 2024** (21-23.05.2024, UAE, Abu Dhabi)
'GUIDE' №07 (81)	May 05th	**KADEX 2024** (23-26.05.2024, Kazakhstan, Astana)
'GUIDE' №08 (82)	May 10th	**MAKS-2024** (July, 2024, Russia, Moscow)
'GUIDE' №09 (83)	July 01th	**ARMY-2024** (12-18.2024, Russia, Moscow)
'GUIDE' №10 (84)	August 15th	**Egypt International Airshow** (02-05 September, Egypt, El Alamein)
'GUIDE' №11 (85)	August 31th	**Africa Aerospace and Defence 2024** (18-22.09.2024, South Africa, Pretoria)
'GUIDE' №12 (86)	September 06th	**ADEX 2024** (24-26.09.2024, Azerbaijan, Baku)
'GUIDE' №13 (87)	September 15th	**SOFEX 2024** (October-November 2024, Jordan, Amman)
'GUIDE' №14 (88)	October 15th	**INDO DEFENCE 2024** (06-09.11.2024, Indonesia, Jakarta)
'GUIDE' №15 (89)	October 22th	**Airshow China 2024** (12-17.11.2024, China, Zhuhai)
'GUIDE' №16 (90)	October 25th	**IDEAS 2024** (19-22.11.2024, Pakistan, Karachi)
'GUIDE' №17 (91)	November 15th	**ExpoNaval 2024** (03-06.12.2024, Chile, Valparaiso)
'GUIDE' №18 (92)	November 18th	**IRAN Airshow** (10-13.12.2024, Iran, Kish Island)
'GUIDE' №19 (93)	November 20th	**Vietnam Defence 2024** (18-22.12.2024, Hanoi, Vietnam)

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