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General director
Editor-in-chief
Valeriy STOLNIKOV

Chief editor's deputy
Elena SOKOLOVA

Commercial director
Oleg DEINEKO

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

Managers
Tatiana VALEEVA
Natalia MOZHAEVA
Andrey PARAMONOV

Designed by
Svetlana SELIVERSTOVA

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

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

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

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The best offers for DEFEXPO INDIA 2020

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

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

One can predict raise of defense means market in times like this. But together with developing of defense technologies in order to safety, rivalry among sellers of weapons and defense systems increases in order to achieve such goals as increasing profits and market share. DEFEXPO INDIA 2020 presents in Lucknow the best world (Russian also) military innovations for global market, which are the undisputed world leaders on price and quality in their segments.

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

Taking part in DEFEXPO INDIA 2020 Russia continues the policy of open partnership with India and other countries. Russia has a wide product line that meets all the needs of this region and ready propose the best technology and the best price offers.

Valeriy Stolnikov

THE SU-30MK2 AIRCRAFT FOR THE PRESIDENT OF VENEZUELA

On November 27, 2019, the President of the Bolivarian Republic of Venezuela Nicolas Maduro opened ceremony of demonstration at the airbase named after lieutenant Luis del Valle Garcia of the air force of Venezuela in the city of Barcelona of a full-scale simulator of the Su-30MK2 aircraft delivered and mounted by the JSC Sukhoi Company under the contract previously signed between the JSC Rosoboronexport (part of the Rostec State Corporation) and CAVIM (Venezuelan Company of Military Industries).

The opening ceremony of the full-scale simulator was attended by the Minister of Defense of Venezuela Vladimir Padrino Lopez and representatives of the Federal Service Military-Technical Cooperation of Russia and Rosoboronexport.

The Simulator is a Russian-built modern technical means of training. The Venezuelan personnel have undergone all necessary training in the rules of operation of the equipment and devices. The Su-30MK2 fighters delivered from Russia are the core of the air force of Venezuela and a guarantor of safety of the country's air space.

The Su-30MK2 aircraft full-scale simulator allows a pilot to master during training his main skills in the aircraft piloting, develop the qualities of the air fighter and to acquire necessary experience for effective combat underų conditions close to reality, simulating various nonstandard situations, which may occur in flight. Moreover, its use will reduce a period of the pilots' summer training and will considerably save the costs of training.

Since 2005, Venezuela has been the largest partner of Russia in Latin America in the sphere of military and technical cooperation.

Over these years, Rosoboronexport has supplied a significant number of Russian weapons and military equipment, including the Su-30MK2 multifunction fighters, combat and transport helicopters of the Mi type, tanks and infantry combat vehicles, missile/gun armament, modern assets of the air defence, Kalashnikov assault rifles that allowed Venezuela to gain in the shortest possible time a serious potential providing its own national security, defensive power and protection of state sovereignty.

Cooperation with Italy and Australia

The Ruselectronics holding company of the State Corporation Rostec has signed cooperation agreements with the Australian company NOJA Power and the Italian company Tesmec, which develop and manufacture electrotechnical equipment. The parties will engage in joint implementation of projects for the automation of electrical networks in order to increase the reliability of the power grid complex in Russia.

Under the agreements, the parties will cooperate in developing and production of equipment for electric power facilities at production sites of the enterprises within the holding.

'We are actively building up the technical and technological competencies of Ruselectronics enterprises for the implementation of digitalization projects for the electric grid complex of Russia. An important area of work is the localization of the entire industry nomenclature of high-tech products at our production sites,' said Alexei Reutov, Advisor to the Director General of Ruselectronics.

'We see a great opportunity in localizing the products in Russia through cooperation with Ruselectronics,' said Neil O'Sullivan, the CEO of NOJA Power.

'We plan to put together competencies with our Russian partners for joint production of competitive products for the automation of electrical networks,' said Tesmec Rus CEO Christiana Solari.

The signings took place within the scope of Power Grids Forum, which was taking place on December 3-6 in VDNH.

Supplying Ten VRT500 Helicopters to Scandinavia

The State Corporation Rostec will supply ten light VRT500 helicopters to the countries of Scandinavia. The corresponding dealer agreement has been signed by VR Technologies of Russian Helicopters Holding and the Swedish Rotocraft Nordic AB at the international air show Dubai Airshow 2019.

The agreement with Rotorcraft Nordic AB reflects the company's intentions to acquire ten VRT500 helicopters in a basic configuration in 2023. Optional equipment, as well as the interior details and the exterior paint scheme of the VRT500 will be determined after the helicopter receives a type certificate and certificate of airworthiness according to EASA standards. The submission of application for certification is scheduled for this year.

'Our 'Russian Helicopters' holding enters the international market in a new segment – light single-engine civil helicopters. The VRT500 project, without a doubt, is competitive and is of great interest to foreign customers. This is confirmed by the agreements reached on the premises of Dubai Airshow with the Emirate Tawazun holding and the Swedish partners from Rotorcraft Nordic AB. I am sure that our new vehicle will be highly appreciated in many regions of the world', commented Sergey Chemezov, General Director of Rostec State Corporation.

The technical project of the VRT500 program was successfully completed and the development of detailed design documentation began in early 2019. Testings of the first flight model will begin in 2020.

It was reported earlier that a dealer agreement on the promotion and sales of VRT500 with the Malaysian company Ludev Aviation was signed at the MAKS-2019 International Aerospace Salon in August of 2019. The company intends to acquire five helicopters.

THE DELIVERY OF ATTACK HELICOPTERS IS COMPLETED

Rostec's holding company Russian Helicopters has delivered over 20 attack helicopters to the Russian Defense Ministry, fully completing the state defence contract for 2019. The machines successfully passed acceptance tests and were received by the Aerospace forces.

'The enterprises of Rostec are fulfilling the needs of the Ministry of Defense in modern combat helicopters. This year, the forces have received Ka-52 Alligator reconnaissance and strike helicopters, transport and combat helicopters Mi-35M and combat helicopters Mi-28N and Mi-28UB. In addition, we completed the delivery of the first modern Mi-28NM Night Hunter combat helicopters and by 2027 we will produce 98 such machines for the Defense Ministry,' said Aviation Cluster Industrial Director of the Rostec State Corporation Anatoly Serdyukov.

The production of helicopters delivered under the state defense contract was carried out at the enterprises of the Russian Helicopters holding – Progress AAC and Rostvertol. The Rostov enterprise, in particular, produces Mi-28NM helicopters. The new Night Hunter looks significantly different from the basic version of the Mi-28N helicopter. The Mi-28NM has acquired a new fuselage shape, modernized engines and an auxiliary power unit, a new avionics system, advanced weapons capability, and can be operated in conjunction with unmanned aerial vehicles and ground command posts.

'The timely execution of the state defense contract is one of our priorities. This year, we transferred over 20 new combat helicopters to the Russian military. The holding will continue to equip Russian national security agencies with modern helicopter equipment in accordance with both existing and planned contracts,' said the Director General of Russian Helicopters Andrey Boginsky.

Currently, Progress AAC is already carrying out experimental design and tests to upgrade Ka-52 helicopter on the contract of the Russian Ministry of Defense and under the supervision of specialists form the Kamov Design Bureau. This will considerably improve performance of the helicopter. The work is underway to increase the target detection and recognition range and expanding the range of weapons used.

Successful launch of 'Progress-13' Spacecraft

RD-107A / RD-108A rocket engines built in Samara by 'Kuznetsov' enterprise of the United Engine Corporation of the 'Rostec' State Corporation, ensured a successful launch of the 'Progress MS-13' cargo spacecraft within the scope of the 74th International Space Station supply mission.

The launch of 'Soyuz-2.1a' middle-class launcher with the Progress MS-13 cargo spacecraft took place on December 6 at 12:34 Moscow time from the launch complex of site 31 of the Baikonur Cosmodrome. The RD-107A / RD-108A rocket engines installed on the first and second stages of the launcher worked normally.

The approach of 'Progress MS-13' cargo spacecraft to the ISS and the approach to the 'Pirs' docking compartment are planned to be carried out automatically under the control of the MCC specialists and Russian crew members – cosmonauts Alexander Skvortsov and Oleg Skrypochka. The docking is scheduled for December 9th at 13:38 Moscow time.

The 'Progress MS-13' is the third cargo spacecraft launched to the orbit by 'Kuznetsov' mass production engines this year. In total, since the beginning of 2019, 14

launches of Soyuz-type launch vehicles were carried out with RD-107A / RD-108A engines from four cosmodromes – Baikonur, Vostochny, Plesetsk, and Kuru.

The spacecraft will deliver about 2.5 tons of cargo to the ISS – fuel, air, equipment to maintain the station in working condition, packages and life support equipment for the crew.

Powering VRT500 by PW207V engines

At Dubai Airshow, VR-Technologies (part of Russian Helicopters Holding Company) and Pratt & Whitney signed a contract for fitting the cutting-edge light VRT500 helicopter with gas-turbine PW207V engines.

PW207V is the advanced modification of PW200 family engines with the capacity of up to 700 hp designed for light-class rotorcraft. All in all, over 5 thousand powerplants of this type have been produced by now. They clocked more than 11 mln flight hours.

'PW200 family engines have shown excellent performance as reliable powerplants for helicopters. Currently they are being operated in more than 80 countries worldwide which should considerably simplify the certification of VRT500 and render its after-sales support more accessible and efficient. Russian Helicopters have a successful experience of cooperation with Pratt & Whitney Canada and I am sure that VRT500 project shall strengthen the partnership between the companies,' noted Andrey Boginsky, Director General of Russian Helicopters Holding Company.

'The main component of any operating system is the engine. We are thrilled to announce VRT500 will be powered by PW200 engines, an engine and brand with a proven track record in safety, reliability, economy and ease of maintenance which of course is key for our helicopter operators' – said Alexander Okhonko, CEO of VR Technologies.

'Congratulations to VR Technologies for launching the VRT500 helicopter. We are proud that they have selected the PW207V engine. We look forward to working together to make this innovative platform a global success.' – Anthony Rossi, vice president, business development and commercial services, Pratt & Whitney.

In order to be installed on VRT500 helicopter PW207V shall be adapted for powering single-engine rotorcraft with corresponding amendment of Type certificate.

VRT500 is a light single-engine helicopter with coaxial rotor scheme and takeoff weight of 1,650 kg. The helicopter features the most spacious transport and cargo cabin in its class with a capacity of up to 5 passengers and is equipped with the state-of-the-art interactive avionics suite. Due to the embodied design solutions, this helicopter will be capable of reaching speeds of up to 250 km/h, have a flight range of up to 860 km and take up to 730 kg of payload on board. The helicopter is developed in the following configurations: passenger, utility, cargo, training, VIP and EMS.

MI-171A2 CERTIFIED IN INDIA AND COLOMBIA

Mi-171A2 helicopter was certified in India and Colombia. It allows Russian Helicopters (part of Rostec State Corporation) to start exporting the latest modification of the multirole civilian helicopter.

The Civil Aviation Department of India confirmed that the standard design of Mi-171A2 complied with Indian civilian aviation requirements (CAR). The Indian Directorate General of Civil Aviation had previously approved a type certificate for VK-2500PS-03 helicopter turboshaft engine installed in Mi-171A2 helicopters for JSC 'UEC-Klimov'.

The validated Mi-171A2 type certificate was also issued by the Special Administrative Unit of Civil Aeronautics of Colombia (UAEAC). The decision of the Colombian authorities gives Russian Helicopters an opportunity to supply machines of this type to Colombia.

'Mi-171A2 is the latest modification of Mi-8/17, the most common twin-engine helicopter in the world. Companies from Rostec's Aviation Cluster made a great effort to receive an opportunity to operate the machines in India and Colombia: the type certificates were confirmed for the helicopter itself and for UEC's VK-2500PS-03 engines that the helicopters were equipped with. Mi-171A2 has the A type certificate of the Federal Air Transport Agency of Russia. It means that the highest flight safety requirements for civilian helicopters are met,' said Director General of Russian Helicopters holding company Andrey Boginsky.

The first Mi-171A2 for an Indian customer has already been produced by Ulan-Ude Aviation Plant. It was demonstrated to Indian Prime Minister Narendra Modi at Eastern Economic Forum. It is planned to validate the Mi-171A2 type certificate in China, South Korea, Brazil, Mexico, Peru and other countries.

With the most advanced modification of the improved engine, the helicopters have absolutely new capabilities for operation in high-mountain and high-temperature areas. Due to its more efficient X-shaped tail rotor, the new main rotor with all-composite blades, and improved aerodynamic profile, the cruising and maximum speed of Mi-171A2 helicopter are 10 percent higher and the load capacity is 25 percent greater than those of serial Mi-8/17 helicopters.

The digital onboard equipment set KBO-17-1 ('glass cabin'), including the navigation instrumentation and the system of general helicopter equipment with display data indication, allowed the company to reduce the crew to only two people. Video cameras provide a better view during external load operations. Modern terrain awareness and warning systems, airborne and obstacle collision avoidance systems improved safety. The helicopter can carry passengers and is available in the transport, passenger and VIP versions.

Creating Centers for Pantsirs

The High Precision Complexes Holding of Rostec State Corporation plans to create a network of service and modernization centers of the Pantsir-C1 air defense missile defense complex on the territory of the purchasing countries. This will speed up the maintenance of Russian machinery and improve the efficiency of its operation.

The developed concept provides several options for organizing service centers: from stationary complexes to mobile groups for handling minor work. Corresponding negotiations are already underway with a number of countries which have the Pantsir-C1 air defense missile systems in their arsenal that require after-sales service. It is also planned to involve foreign partners in maintenance and modernization of machines.

'Rostec seeks to provide its partners with the best possible conditions not only on the time of sale of domestic equipment, but also during its further operation, offering comprehensive services for the maintenance of products throughout the entire life cycle. The creation of service centers directly in the countries of operation will reduce the cost of transportation of heavy machines and the time spent on their servicing', commented Victor Kladov, Director for International Cooperation and Regional Policy of Rostec.

ZRPK (Anti-aircraft missile and gun system) Pantsir-S1 is intended for close cover of civilian and military installations, including long-range air defense systems, from all contemporary and perspective air attack weapons. The complex has been exported to several countries in the Middle East since 2009.

UAE investor for VR-Technoloiges

During the International Dubai Airshow 2019, Russian Helicopters Holding Company (part of Rostec State Corporation) signed with the Emirati Tawazun Holding Company an agreement on the basic terms of the transaction of the purchase of a stake in VR-Technologies.

The document was signed by Director General of Russian Helicopters Andrey Boginsky and Director General of Tawazun Tareq Abdul Raheem Al Hosani. The agreement defines the main parameters of the future transaction, including the stake to be acquired by the UAE investor; Tawazun will become the owner of half of the shares of VR-Technology company, which is developing promising helicopters and unmanned aerial vehicles. The transaction is planned to be finalized in the 1st quarter 2020.

Upon the acquisition of a stake in VR-Technologies, Tawazun representatives will enter the company's Board of Directors, and their rights will be equal to those of the members representing Russian Helicopters.

'I am sure that the investments of our partners will fasten the development of VRT300 and VRT500 projects and will give impetus to new developments of advanced helicopter and UAV systems. Our agreements also provide cooperation in promoting these products in the markets of the Middle East and GCC in particular. Both rotorcrafts have good prospects in the region, where solutions for the development of urban air mobility are becoming increasingly popular', noted Sergey Chemezov, CEO of Rostec State Corporation.

'The agreement signed today lays the foundation for long-term cooperation in the format of not just colleagues, but business partners. With the support of Rostec State Corporation and RT-Business Development, we were able to achieve full understanding with Tawazun, without which it would be impossible to implement such significant and large-scale projects. As equal partners, we plan to invest at least 400 million euro in the development of VR-Technologies, which will help make the company's products competitive and in demand all over the world,' said Andrey Boginskiy, Director General of Russian Helicopters Holding Company.

Also commenting on the signing, Abdullah Nasser Al Jaabari, Chief Officer and Head of Tawazun Strategic Development Fund, said: 'This agreement stems from the Fund's commitment to support the UAE's strategic vision of investing in advanced industries and transferring relevant technologies'.

The International Dubai Air Show is the first foreign site to showcase the VRT500 project. The model of the helicopter is presented at the joint exposition of Russian Helicopters and Tawazun Holding Company. The helicopter has the largest passenger and cargo cabin in its class with a total capacity of up to 5 people. At the same time, the outline dimensions of the rotorcraft were reduced due to the coaxial rotor placement, which permits to operate the helicopter in the restrained urban conditions. VRT500 is equipped with a modern avionics complex based on the 'glass cockpit' principle, and its key systems were developed by the best international manufacturers.

2019-2038 MARKET OUTLOOK

United Aircraft corporation (UAC) has delivered new long range civil aircraft market forecast. The whitepaper document is intended for the mainstream audience and serves for harmonization of the Russian aviation industry opinions as referred to the core markets and also for signification of the Corporation contribution to the international aviation community references coordinates formation.

The 2019-2038 Market Outlook booklet concept differs from the relevant documents which the Corporation has delivered in the previous years, as it contains corporate vision revealing supply and demand ratio pitfalls covering different market segments relative to world regions and key countries comprising Russia, China and India in addition to the vital market statistics.

The civil aircraft quantitative demand appraisal for the forecasted period is executed on the basis of the genuine mathematical imitation model, which considers many parameters, comprising but not limited to macroeconomic and demographic arguments, air transportation dynamic and volume data, current fleet condition, world production capacities, sale, purchase and lease deals as well as state investment programs records and miscellaneous commercial factors.

Narrowbodies of 166-200 seats capacity will be in the main demand stream. The market pull for the such aircraft is forecasted at 20.5 thousand level, which is in excess to all other market segments. The total demand in raw numbers is estimated in amount of 44.3 thousand airliners or 6.35 USD trillion if calculated in the 2019 catalogue prices.

The Russian segment share is equal to 2,9% in monetary and 3,3% in quantitative terms of the world market. 166-200 seater narrowbodies segment will overtake the majority of the local aviation carriers deliveries (630 tails estimate). Maximum quantitative demand geographical location-wise is forecasted in China (9,1 thousand tails), Asia-Pacific (excluding China and India) (7.9 thousand aircraft), European (8.3 thousand liners) and North American (8.2 thousand units) regions.

The 2019-2038 Market Outlook booklet contains detailed quantitative data regarding the global commercial aircraft market segments actual state and development trends, as well as a regional chapter that provides a detailed information on Russia, China, India, countries of the CIS, Asia-Pacific, European, Latin American, Middle East, North American and African regions.

Wind tunnel tests completed under CR929 program

In Moscow, the next stage of wind tunnel tests has been completed under the program of China-Russia Long-Range Wide-Body Commercial Aircraft (LRWBCA) CR929, which is being jointly created by PJSC 'United Aircraft Corporation' and the 'Commercial Aircraft Corporation of China'.

The wind tunnel simulation of High Speed Standard Model (HSM) which was jointly designed by COMAC and UAC aerodynamics team and manufactured in China, made on a scale of 1:39 in the 'fuselage plus wing' configuration, in transonic T-128 wind tunnel was performed within a week by the specialists of TsAGI – the Central Aerohydrodynamic Institute (a part of the National Research Center 'Zhukovsky Institute'),jointly attended by UAC and COMAC experts.

Similar tests were carried out jointly by Russian and Chinese sides under CR929 program in China and the EU during earlier time of the year.

'A series of tests in different countries has allowed us to collect data, on the basis of which we can perform a correct comparison of the results. The obtained information will allow us to more accurately predict the aerodynamic characteristics of CR929 aircraft in the conditions of full-scale flight', explains Maxim Litvinov, Chief Designer of CR929 program from the Russian side.

In addition to practical value for CR929 program, the results of tests of the HSM model as a whole are of great importance for the development of domestic civil aircraft industry.

'We will be able to compare the results of tests of the same standard model in aerodynamic installations of several countries. This happens for the first time in our practice', says Anton Gorbushin, Head of laboratory of research complex for aircraft aerodynamics and flight dynamics of TsAGI.

The Specialists have conducted an express analysis of the obtained data. Currently, Both Chinese and Russian experts are conducting a detailed analysis of the entire cycle of tests and is generating a report, the results of which will be taken into account for engineering work under CR929 program.

for close cover of civilian and military installations, including long-range air defense systems, from all contemporary and perspective air attack weapons. The complex has been exported to several countries in the Middle East since 2009.

SSJ100 meets the European standards

SSJ100 aircraft will be additionally equipped with controller–pilot digital private communications system.

SSJ100 aircraft has successfully completed test flights and proved the performance capability of ATN system in real conditions in Europe. The installation of this system today is relevant primarily for the operators flying to EU countries. Equipping of all civil passenger aircraft with ATN system starting from February, 2020 is a mandatory requirement of the European aviation authorities for flight operations in various European countries above FL285.

Aeronautical Telecommunication Network (ATN) is a system of automatic data exchange between the aircraft and the ground-based air traffic control services. It simplifies the pilot's control of the aircraft, it works through a secure communication channel and provides communication between the air traffic controller and a specific aircraft. The principle of standardized queries used by ATN allows to reduce the time of information exchange between the aircraft and the controllers, reduces the risk of message loss, misunderstanding between the pilot and the ground services in the event of interference.

'ATN system is a novelty in the design of SSJ100. ATN will be installed as one of the main aircraft systems on all newly manufactured SSJ100 aircraft. The aircraft in operation rework will be optional and made on the customer's request under the Service Bulletins,' said Andrei Nedosekin, Deputy General Director for Design.

SSJ100 aircraft has successfully completed the tests in the airspace of the Russian Federation and the EU. Finland was chosen for the test flights to the EU, where the ATN service closest to Zhukovsky is located.

INDIAN DEFENSE MINISTER VISITED UEC-KLIMOV

Delegation headed by Indian Defense Minister Rajnath Singh has paid a work visit to Saint-Petersburg's UEC-Klimov (which is incorporated in United Engine Corporation of State Corporation Rostec).

During the visit the Indian Defense Minister was familiarized with the product range of the enterprise and key stages of the production process. The guests have visited mechanical, assembly and test workshops.

At the 30th test cell Mr. Rajnath Singh inspected the TV7-117ST turboprop engine. The power of this engine makes up 3,100 h.p. at the maximum takeoff power and 3,600 h.p. – at the increased emergency power. The power plant comprises new AV-112 propeller of increased thrust. The TV7-117ST-01 engine, which is the TV7-117ST newest modification, is the baseline engine for the power plant of Il-114-300 passenger airplane.

In the assembly workshop the delegation members familiarized themselves with the production lines of the VK-2500, TV7-117V helicopter engines, saw one of the most important product designed by the enterprise – the aircraft RD-33MK engine for the seaborne fighter. The engine is adapted for operation at the maritime climate, features an increased thrust, owing to which the fighter takeoff from the aircraft carrier deck is possible without use of the catapult launcher.

During the meeting with the top management of the enterprise Mr. Rajnath Singh put a high value on the scientific-design capacities of JSC 'UEC-Klimov', the quality and the scale of the up-to-date production complex.

Mi-38 in the international market

During the Dubai Airshow 2019, the Russian Helicopters Holding Company (part of Rostec State Corporation) made the first foreign presentation of its newest Mi-38 civilian helicopter. The rotorcraft featuring a luxury cabin was showcased at the static exposition, and also took part in the flight program.

The civilian version of the first serial Mi-38 helicopter was introduced last August at MAKS-2019 Moscow air show, where it was demonstrated to the Russian President Vladimir Putin. Cutting-edge technical solutions in the field of safety and comfort were used in the development of the helicopter interior. The engines of Mi-38 are located behind the main rotor transmission, instead of their traditional forward placement, which ensures the reduction in aerodynamic resistance and noise level in the cockpit, as well as increased the rotorcraft safety. In addition to its excellent flight performance, the competitive advantage of Mi-38 is its cost, which is lower than that of its foreign same-class peers.

The flight range of the transport version of the new Mi-38 helicopter is up to 1,000 kilometers (with additional fuel tanks). With its maximum takeoff weight of 15.6 tonnes, the helicopter can carry 5 tons of payload on board or on an external sling.

Another novelty of the Dubai Airshow was the light Ansat helicopter, which, following its European debut in Le Bourget, was introduced to the Middle East. The corporate version of the rotorcraft also took part in the flight program of the show. In this configuration, the helicopter can comfortably transport up to 5 passengers.

'Research and development effort, as well as experimental designing activity within the Mi-38 project was financed by the Russian Ministry of Industry and Trade. The helicopter was originally designed to meet the toughest existing and potential standards of safety, environmental friendliness, land noise. The closest attention was paid to meeting the customers' needs in terms of flight performance, operational and economic parameters. Our engineers have performed a range of activities aimed at further expanding the operational capabilities and ensuring maximum versatility of the helicopter use. The improvements aimed at ensuring reliable and comfortable operation of the new rotorcraft in the conditions of hot climate and desert terrain should be of particular interest to operators in the Middle East,' noted the Minister of Industry and Trade of the Russian Federation Denis Manturov.

'It is the first time in Russia's newest history that our civilian helicopters was presented at a Middle East air show. The format and content of the participation of Russian Helicopters Holding Company in the Dubai Airshow demonstrated the new approaches of Rostec State Corporation to promoting Russian high-tech civilian products on foreign markets, which involves the support from the Russian Ministry of Industry and Trade, the Russian Export Center, and leasing companies. We are confident that, in terms of its price and quality, Russian-made helicopters can be quite competitive in the world market and we expected that their demonstration would result in more actual contracts,' said Rostec CEO Sergey Chemezov.

'Dubai Airshow was the first foreign site for us to demonstrate our latest Mi-38, so we said that we were making the world premiere of this rotorcraft, as well as the debut of Ansat in the Middle East. The UAE saw the rapid development of its urban mobility sector, therefore, in addition to flight models, at our booth, we presented the VRT300 UAV, and a model of a light single-engine VRT500 helicopter was showcased at our joint exposition with Tawazun, an Emirati Holding Company. It is no secret that UAE investors were interested in joining the project, and we expected to take the first actual steps in this area during the exhibition', said Director General of Russian Helicopters holding company Andrey Boginsky.

Mi-38 can be operated in a wide range of climatic conditions including maritime, tropical and cold climates. The use of unparalleled technical solutions makes Mi-38 superior to other similar-class helicopters in terms of load capacity, seating capacity and main performance characteristics.

Light multi-purpose Ansat helicopter is equipped with two engines and can be used for passenger transportation, cargo delivery, environmental monitoring and as an ambulance aircraft. Ansat has successfully passed high-altitude tests, which proved that it is suitable for use in mountainous terrain at up to 3,500 meters of altitude, as well as climatic tests, which confirmed its operability in a temperature range between -45° and +50° C.

Light VRT500 helicopter and VRT300 UAV were developed by VR-Technologies Design Bureau and feature coaxial rotors, which ensure their high side wind resistance and small dimensions making them suitable for use in the restrained urban conditions.

VRT500 features the largest passenger/cargo cabin in its class, with a total seating capacity of up to 5 people. The flight and technical parameters of the helicopter will allow it to speed up to 250 km/h, have a flight range of up to 860 km and carry on board up to 730 kg of payload.

FLIGHT TEST PROGRAM FOR THE SUKHOI SUPERJET 100

At the aerodrome situated in Zhukovsky the flight test program of the SSJ100 with the horizontal wing tips was successfully completed.

Two SSJ100 with the manufacturer serial numbers 95032 and 95157 with the horizontal wing tips took part in the testing. One of them had ice simulators of special shape on the leading edge and the empennage.

In accordance with the test program there were performed more than 140 flights. The flight program consisted of the examination of the take-off and landing performance, stability and manageability, flight control systems , lights, VNAV. There were the tests for strength, flights for high speeds, critical angles and cat. I, II, IIIa (takeoff-landing) performed and also in modes for the fuel consumption analysis at different stages of flight carried out.

The saber-like configuration of the tips installed on to the Sukhoi Superjet 100 turned out to be the result of a number of research, engineering and experimental activities carried out by the Sukhoi Civil Aircraft Company (UAC subsidiary) with the assistance of Central Aerohydrodynamic Institute (TsAGI).

The geometry of the tips was determined with the implementation of the innovative methods of 3D optimization based on numerical computation called Computational Fluid Dynamics (CFD) – the unique TsAGI know-how used in Russian aviation industry in particular for Sukhoi Superjet 100 program.

'Sukhoi Superjet 100 – is dynamically developing program. The installation of the saberlets allows to simultaneously improve the take-off and landing performance. Moreover, fuel effectiveness will improve. Customers will be able to decrease the fuel consumption for no less than 4%', as noted by Minister for Industry and Trade of Russian Federation Denis Manturov.

'Sukhoi Civil Aircraft Company is consequently implementing the Sukhoi Superjet 100 improvement program aiming at market expansion and the increase of the number of Customers, the current Operators satisfaction level growth and the maintenance of the high competitive level of the product. The wing tips installation being t he part of the improvement program will provide the operators with cost cut up to 10 000 000 rubles per year per one SSJ100', underlined Director General of the Sukhoi Civil Aircraft Company, Ravil Khakimov.

The completion of a full-scale program of ground and flight tests will result in the certification of the SSJ100 with the horizontal tips – saberlets and they will be offered as an option to the Customers and the Operators. The installation of the tips is possible not only to new aircraft but to the already delivered aircraft as well.

Saberlet kits are manufactured by Voronezh aircraft manufacturer (VASO), which belongs to UAC Transport Division. The kits are made of modern composite materials produced and certified in Russia and abroad.

Tests of Mi-26T2V helicopter

Russian Helicopters holding company (part of Rostec State Corporation) and representatives of the Russian Ministry of Defense started joint state tests of Mi-26T2V heavy-lift military transport helicopter which are to last until the end of 2020.

As part of Russian Helicopters' program on upgrading the heavy Mi-26 helicopter for the Russian Aerospace Forces, in 2018 Rostvertol produced a prototype of the modernized Mi-26T2V helicopter.

'Currently, Mi-26T2V prototype has successfully completed preliminary tests at the manufacturing facility, allowing us to start the joint state tests program which is to last through the entire year 2020. We have taken into account all preferences of the customer and implemented them in Mi-26T2V helicopter design. The performance of the machine will be considerably improved due to the modernization. I am convinced that Mi-26T2V helicopter will have a rightful place in the Russian armed forces,' said Director General of Russian Helicopters holding company Andrey Boginsky.

The tests will take place on four proving grounds. The crew of the helicopter will include representatives of the Russian Aerospace Forces and will check the main performance characteristics of the helicopter and operation of new equipment.

The modernized Mi-26T2V helicopter which can be used at any time of the day and has modern avionics is a heavy-lift military and transport helicopter which can carry up to 20 tonnes of cargo. The rotorcraft has the modern NPK90-2V integrated avionics which ensures piloting during the day and at night, enabling the helicopter to fly the route in an automatic mode, come to a preset point, perform approach and final approach maneuvers, and return to the main or alternate aerodrome. The onboard defense system of Mi-26T2V ensures protection of the helicopter from being hit by air defense missile systems.

Mi-26T2V will be able to make flights in the conditions of any region, including those with complex physical and geographical and adverse climatic conditions, at any time of the day, at equipped and unequipped routes, or even without routes, and on featureless terrain, in conditions of fire and information counteraction of the enemy. The number of crew members of the modernized helicopter (five persons) remained unchanged.

Currently, Russian Helicopters holding company produces the entire range of military helicopters for the Russian military agency in accordance with contracts. These machines are necessary for performing the tasks of the Russian armed forces: Ka-52 Alligator, Mi-28NM Night Hunter and military Mi-35M attack helicopters, Mi-38T paratrooper carriers and transport helicopters, Mi-8/17 military transport helicopters, heavy-lift military transport Mi-26 rotorcraft, training and specialized machines.

Rostec Development Strategy

Rostec State Corporation is updating the development strategy until 2025 in connection with the incorporation of the United Aircraft Corporation (UAC). Be reminded that the decree on the transfer of 92.31% of UAC shares to Rostec capital was signed in October 2018. The transfer is carried out in stages and should be fully completed within a year and a half.

The strategy will be updated according to the changes in markets and macroeconomic factors that have occurred since 2015 – from the moment of the adoption of the Corporation's development strategy until 2025. It is planned to clarify the target indicators of the strategy in connection with the accession of the UAC as part of the work.

Updating the development strategy is also associated with the transition of the State Corporation to international financial reporting standards. As a result, the level of transparency and openness of the company will increase, which opens up new opportunities for doing business and developing partnerships in Russia and in the world.

From 2015 to the present, Rostec has been implementing the strategy according to the main parameters (revenue, net profit, share of civilian products, EBITDA and others) within the limits of the risk appetites, as the Corporation notes.

Strategy 2025

According to the strategy approved earlier, by 2025 Rostec plans to enter the top ten largest global industrial corporations in terms of revenue, achieve a growth in the share of civilian products in revenue above 50%, and also increase labor productivity to the level of the best quarter of world players. In addition, the unchanging goal of the Corporation is to unconditionally fulfill the state defense order.

RUSSIAN BRAND 'LOBAEV ARMS'

Rosoboronexport Began new Promotion in the World Market of Sniper Firearms

JSC 'Rosoboronexport' (part of the Rostec State Corporation) and private Russian enterprise LLC 'KBIS' (owners of the 'LobaevArms' trade mark) started implementation of the long-term plan of activities, which was signed between the two parties, and aimed at joint export promotion of the TM 'Lobaev Arms' high-precision sniper (hunting) rifle.

'Lobaev Arms' rifles (sniper rifles DVL-10M1 'Diversant', TSVL-8 'Stalingrad', DXL-4 'Sevastopol' and others) are already included in Rosoboronexport's catalogue in Section 'Civilian and Service Weapons', as well as in a specialized catalogue, titled as 'Anti-terrorist Assets'. Besides, since 2020 'Lobaev Arms' rifles will be demonstrated as part of Rosoboronexport's exhibits at industry-specific foreign arms shows. Potential foreign customers and professional shooters/snipers will be able to see those rifles during negotiations in Russia as well, including a chance to take part directly in trials at testing grounds with appropriate layout of training targets.

'We proudly tell out foreign partners: in Russia we have skillful gunmakers not only in high-tech enterprises of defence-industrial complex, which is quite natural, but also in small private firms. 'Lobaev Arms' rifles were created by absolute fans of sniper shooting and simultaneously skilled businessmen, who started from scratch and built a complicated process of production of high-precision long-range weapons. I am confident that foreign specialists will duly appreciate the excellent quality as well as very high accuracy and other characteristics of these rifles. There is a demand for such firearms in the world. Russia is able of satisfying these needs in full scale, no matter which range of fire and calibers we are speaking about, as our country produces all types of firearms and ammunition,' said Rosoboronexport's Deputy Director General Igor Sevastianov.

Nowadays, Rosoboronexport is working in a pro-active manner to promote foreign sales of non-military and service weapons of Russia's production, possessing for this all the necessary export competences and a colossal practice of successful implementation of various projects in the area of military and technical cooperation. The key potential customers of such weapons are the police and special services of foreign states, as well as sporting and hunting clubs.

In 2017, after the approval of changes to the Russian law 'On Weapons', Rosoboronexport received a right to export civilian firearms, in addition to combat weapons. This has created the most comfortable conditions for concluding complex foreign trade contracts, giving foreign partners an opportunity to purchase the whole spectrum of needed weapons from a single reliable exporter on a 'one contract' principle. Representatives of partner states highly praised these changes in legislation. As a result, already in 2018 Rosoboronexport concluded and implemented the first export contract on the delivery of Russian-made sporting rifles and cartridges to them.

Rosoboronexport is the only state-owned arms trade company in the Russian Federation authorized to export the full range of military and dual-purpose products, technologies and services. It is a subsidiary of the Rostec Corporation. Founded on 4 November, 2000, now Rosoboronexport is one of the leading world arms exporters to the international market. Its share in Russia's military exports exceeds 85 percent. Rosoboronexport cooperates with more than 700 enterprises and organizations in the Russian defence industrial complex. Russia maintains military technical cooperation with more than 100 countries around the world.

/IA&MG/

CONTRACT FOR THE SUPPLY OF ORSIS T-5000

Rosoboronexport (part of the Rostec State Corporation) has carried out a contract worth over 100 million rubles ($1.5 million) to supply a foreign customer with a batch of ORSIS T-5000 rifles.

Since 2017, when Rosoboronexport was granted the right to supply civilian and service weapons abroad, the company has considered requests for them from foreign customers worth over $150 million. Several contracts have already been completed, including that for ORSIS T-5000 rifles, and we see great interest in them from the army, police and special forces units of our partners. Today we are negotiating and participating in tenders for the supply of these weapons to a number of countries,' said Igor Sevastyanov, Deputy Director General of Rosoboronexport.

Rosoboronexport and Promtechnologia LLC, the developer and manufacturer of ORSIS rifles, have agreed to work together, which is yielding mutual positive results. The special exporter's specialists are participating in the development of advanced small arms jointly with ORSIS. For example, Rosoboronexport's proposals, based on customer requirements and trends in the global arms market, were accommodated in the design of a recently advertised military version of the K-15M rifle.

Active marketing efforts are underway to promote ORSIS products in Asian Pacific, Latin American, Middle Eastern, African and European markets. In 2019, Rosoboronexport made more than 40 rifle presentations at international exhibitions in Côte d'Ivoire, the United Arab Emirates, Germany, Brazil, Mexico and Vietnam, as well as at ARMY 2019 and Interpolitex exhibitions.

Promtechnologia's products were on display at the Rosoboronexport booth at the Russia-Africa Forum held in October 2019 in Sochi. Many African leaders showed interest in ORSIS products during the summit. As a result, commercial negotiations are underway with more than 10 countries on the continent for the supply of ORSIS products. For some customers, tests have already been conducted in Russia.

In addition, Promtechnologia is planning to participate in DefExpo India 2020 with its civilian and service weapons at the Rosoboronexport booth.

In 2019, Rosoboronexport signed an agreement on cooperation and collaboration with the M.T. Kalashnikov Union of Russian Gunmakers, a non-profit organization. The signing of this document aims to increase exports of civilian and service weapons, as well as their cartridges to the external market. In addition, the agreement should improve mutual understanding between Russia's major special exporter and manufacturers that are members of the Union of Gunmakers on foreign customer needs and market trends.

Rosoboronexport's years of practice suggest that the company has all the necessary competencies to deliver abroad not only weapons and military equipment, but also civilian and dual-use products. Major customers of civilian and service weapons are the police, special services of foreign countries, as well as numerous sports and hunting clubs. /IA&MG/

HIGHLY MOBILE TWO-COORDINATE SURVEILLANCE AND TARGET DESIGNATION RADAR P-18-2 ('PRIMA')

Highly mobile two-coordinate surveillance and target designation meter wave band Radar P-18-2 'PRIMA' is a result of joint work of 'Nizhny Novgorod Television Plant named after V.I. Lenin' (PJSC 'NITEL') and 'Lianozovo Electromechanical Plant' (PJSC 'ALMAZ R&P Corp.' LEMZ Division).

The Radar P-18-2 'PRIMA' is intended for surveillance and target designation of aerial objects including those made by STEALTH technology, its coordinate determination in range and azimuth and direction finding of active noise jammers. The Radar is accommodated on a cross-country chassis and offers increased mobility due to arrangement of equipment, antenna – feed system and power supply source on a single transport unit.

The Radar can be operated at ambient temperature from minus forty to plus fifty degrees Celsius.

The power supply of the Radar can be provided by the built-in primary power supply sources such as power take-off generator or its own generating set as well as by industrial network.

The Radar unrolling by combat crew of two persons takes not more than five minutes including time of automatic leveling.

The Radar orientating takes place automatically with the aid of the satellite navigation systems.

The Radar employs three scan rates of 3, 6 and 12 rpm as well as mechanical sector target search (sector mode of antenna rotation). The Radar can detect and automatically track low speed and low observable unmanned aerial vehicles in the zones of local interference and airborne moisture targets. Reliable acquisition and tracking of targets under heavy interference environment is implemented by dual-frequency probing mode. The Radar detection range limits of aerial objects is 1 to 400 km. The Radar performance specifications are favorably distinguished by high accuracy of coordinates measurement, high resolution and high jamming immunity.

To protect combat crew the Radar is equipped with remote operator's work stations that allow remote control of the Radar at a distance of 1000 meters. P-18-2 'PRIMA' is capable to coact with modern digital Automated Control Systems, Air Defense Missile Systems and exchange data with them and that includes radio link. To identify friend-or-foe of aerial objects, the Radar is equipped with the Secondary Radar.

The Radar possesses maximum automation at all stages of radar operation modes from the moment of unrolling /rolling up, combat performance, data output to consumer as well as high reliability and capability of survival. /IA&MG/

VLADIMIR PUTIN and NARENDRA MODI

The relations between Russia and India continue developing in the most favourable way with regular meetings of the leaders of both countries and their mutual involvement in the implementation of business cooperation projects. For example, President of Russia Vladimir Putin and Prime Minister of India Narendra Modi had a meeting in November, 2019 during the BRICS summit in Brasilia. Earlier that year in September Narendra Modi came to Russia with an official visit and attended the Eastern Economic Forum.

During meeting in Brasilia President of Russia Vladimir Putin said: 'Mr Prime Minister, this is our fourth meeting this year. I am very happy about this frequency and would like to note that all agreements reached at our previous meetings are being carried out, including those made during the September summit in Vladivostok. Major bilateral projects are being implemented, military-technical ties are growing stronger, and our humanitarian exchanges are expanding.

I would like to note that in 2018 our trade increased by over 17 percent. Importantly, we are not falling off the pace this year; we are maintaining these dynamics. We continue to closely coordinate our efforts in the international arena, working together at the UN, the SCO, the G20 and BRICS. Mr Prime Minister, I am looking forward to our meeting in Moscow next May when we will celebrate the 75th anniversary of our Victory in World War II, in the Great Patriotic War.'

Prime Minister of India Narendra Modi said: 'Thank you very much. I am happy that we have the opportunity to meet again and again. Both at bilateral and global meetings we can talk about everything in detail, about many important issues. You recently invited me to the Eastern Economic Forum, and it made a very good impression on me. I am glad that everything we talked about is being implemented very well. Our oil minister and defence minister were there, and many issues were discussed in detail. Therefore, I believe that our development is moving forward very quickly.

'In the strategic area of defence, we have signed an agreement to create joint ventures and to manufacture spare parts in India. It will give a major boost to our industry. The joint venture to make AK-203 assault rifles will take our cooperation in defence beyond narrow relations and will also create a dependable backup operation in the form of joint manufacturing.'

Narendra Modi

'Russia and India reaffirmed their close positions on key global and regional issues during the discussion of international affairs. Our states are coordinating their foreign policy positions at such major international forums as the UN, the G20, the Shanghai Cooperation Organisation and BRICS.'

Vladimir Putin

You invited me to Victory Day celebrations in May 2020. I am glad and look forward to meeting with you again. In addition, in the near future, we will have more different reasons for meeting, and we will have the opportunity to discuss different topics.'

On September, 2019 the President of Russia met with Prime Minister of India Narendra Modi in Vladivostok, where hi has come to Russia on an official visit and to attend the Eastern Economic Forum. Vladimir Putin and Narendra Modi met on the quay of the Far Eastern Federal University on Russky Island, where the Eastern Economic Forum is being held. After that, they boarded the corvette Uragan to travel from Ajax Bay to the Zvezda Shipyard in Bolshoi Kamen.

During their visit to the Zvezda Shipyard, the Russian President and the Prime Minister of India learned about the shipyard's modernisation and the construction of a dry dock for repairing vessels of any size, They also inspected models of ships and a steerable thruster mounted on a special platform.

Russian-Indian talks attended by the two countries' delegations were later held at Far Eastern Federal University. Following the consultations, Vladimir Putin and Narendra Modi adopted a joint statement titled Through Trust and Partnership to New Heights in Cooperation and witnessed the exchange of the documents signed by their delegations.

These documents include a strategy for the enhancement of Russian-Indian trade, economic and investment cooperation and intergovernmental agreements on the joint production of spare parts and other items for Russian (Soviet) weapons and military equipment, as well as on cooperation in audiovisual co-production.

The other documents signed cover expansion of cooperation in the oil and gas sector, road transport and infrastructure; the development of maritime communications between Vladivostok and Chennai; investment cooperation, including in the implementation of coking coal mining projects in the Russian Far East, the joint development of downstream LNG business and LNG supplies, as well as cooperation in combating customs violations.

The President of Russia and the Prime Minister of India also made statements for the press. Vladimir Putin said: 'Mr Prime Minister, my dear friend, ladies and gentlemen. We are always delighted to welcome to Russia a big friend of our country, Prime Minister of India Narendra Modi. His official visit has been

timed to coincide with the Eastern Economic Forum.

I would like to point out that India is a key partner of Russia. Relations between our countries can be described as truly strategic and privileged and have been developing on the basis of friendship and mutual benefit.

Mr Modi and I maintain close official and personal ties and hold regular meetings, which have become a good tradition. We met only recently on the sidelines of the SCO Heads of State Council meeting in Bishkek and the G20 summit in Osaka. It should be said that our talks are invariably conducted in a friendly atmosphere and are always meaningful and constructive.

This has also been the case with the talks we have held today. First, we met one-on-one and then our delegations joined us to exchange opinions on the key issues of bilateral cooperation, discuss the implementation of the decisions taken at the New Delhi summit last year and map out practical goals, which we included in the joint statement we have issued today.

The large number of interdepartmental and corporate agreements we have signed today covers a variety of spheres and will certainly help promote multifaceted Russian-Indian ties.

Naturally, we gave priority to issues of trade and investment cooperation. Last year our trade grew by almost 17 percent to reach $11 billion. We believe there is every prerequisite for its further growth.

The large-scale strategy of cooperation between relevant Russian and Indian agencies, approved today, is aimed at stepping up economic cooperation. The document provides for removing barriers to investment, promoting major mutually beneficial projects in priority areas and enhancing scientific, technological and innovative cooperation.

'I would like to point out that India is a key partner of Russia. Relations between our countries can be described as truly strategic and privileged and have been developing on the basis of friendship and mutual benefit.'

Vladimir Putin

I am convinced that the establishment of a free trade area between India and the Eurasian Economic Union will create additional opportunities for diversifying trade. This is our common goal and we will soon hold the first round of talks to draft a relevant agreement.

We consider the introduction of the practice of using national currencies in our settlements to be an important component of our joint work with our Indian partners. Failsafe interbank transactions could be facilitated if India joined the Bank of Russia financial message transfer system.

Of course, Mr Prime Minister and I discussed in detail our energy cooperation, which is a strategic area. Russia is a reliable supplier of energy resources to the Indian market. Last year about 2.3 million tonnes of oil, almost 550,000 tonnes of petroleum products and 4.5 million tonnes of coal were delivered to India. A substantial part of Russian hydrocarbon exports is sent to India from Russia's Far East.

Indian partners own 20 percent in the Sakhalin-1 project. Indian energy concerns are invited to join other promising projects, such as Far Eastern LNG and Arctic LNG-2.

We consider Rosatom's cooperation with its Indian partners, including the construction of the modern Kudankulam Nuclear Power Plant, a flagship joint project. Its first two units are already operational. The third and fourth units are under construction. According to the existing agreements, at least 12 Russian-designed power units will be built within the next 20 years.

'I am happy that we have the opportunity to meet again and again. Both at bilateral and global meetings we can talk about everything in detail, about many important issues. You recently invited me to the Eastern Economic Forum, and it made a very good impression on me. I am glad that everything we talked about is being implemented very well.'

Narendra Modi

Russia and India are closely interacting in the sphere of defence. The bilateral defence cooperation programme up to 2020 is being successfully implemented; its revised edition for the next 10 years is being developed. Notably, for more than half a century now our country has been assisting India in equipping and modernising its armed forces, including, of course, the Navy. The Indian Navy includes many Russian-made ships, including the Vikramaditya aircraft carrier.

Today, the Prime Minister and I visited the Zvezda shipyard in the town of Bolshoi Kamen, where the atomic submarine Chakra adopted by the Indian Navy was upgraded at some point. Indian submariners trained there as well.

Russia does more than supply weapons to India. The production of the latest military products has been launched in conjunction with our Indian partners, and joint projects to produce Kalashnikov small arms, Ka-226T helicopters and missile strike systems in India are underway. We value the current level of bilateral defence cooperation and look forward to expanding it.

Of course, during the talks we discussed in detail bilateral cultural ties. The first events will be held in Vladivostok shortly as part of a festival of Indian culture in our country. Instrumental and vocal groups, dancers and martial artists from India will tour many Russian cities.

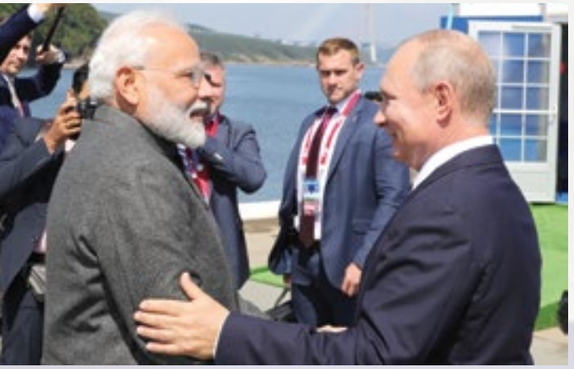
I would also like to mention the deep interest that the people of our countries have displayed for centuries in each other's culture, history and moral values. Let me recall that Russian traveller Afanasy Nikitin was one of the first Europeans to reach India. Over 500 years ago, he described in detail Indian customs and traditions. Russian artist and thinker Nicholas Roerich lived and worked in India for a long time. His work is still venerated in India.

In turn, here in Russia we deeply respect the memory and legacy of outstanding Indian politician, scholar and philosopher Mahatma Gandhi. A commemorative stamp has been issued in Russia on the occasion of his 150th birth anniversary, which is marked this year.

Russia and India reaffirmed their close positions on key global and regional issues during the discussion of international affairs. Our states are coordinating their foreign policy positions at such major international forums as the UN, the G20, the Shanghai Cooperation Organisation and BRICS.

Russia and India are working together to ensure security and stability in Asia, and the Pacific and Indian oceans. We are also cooperating in the RIC (Russia, India, and China) format: a regular trilateral meeting took place on the sidelines of the G20 summit in Osaka on June 28. Of course, we also discussed other international issues, including Afghanistan.

In conclusion, I would like to thank Mr Prime Minister and all our Indian colleagues for productive and meaningful talks. I am convinced that the agreements reached today will further promote the comprehensive development of the Russian-Indian strategic partnership and the consolidation of friendship between our people.'



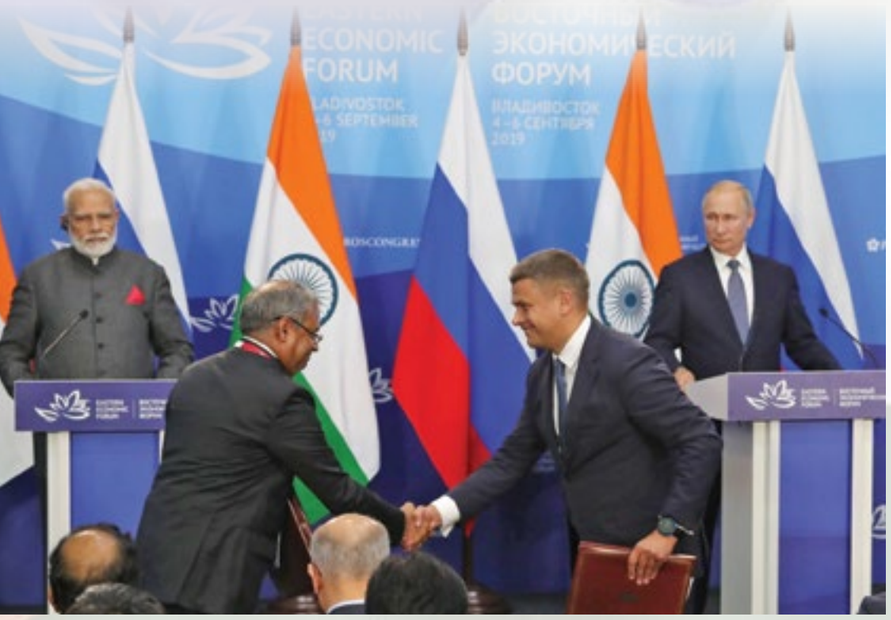
'I would like to note that in 2018 our trade increased by over 17 percent. Importantly, we are not falling off the pace this year; we are maintaining these dynamics. We continue to closely coordinate our efforts in the international arena, working together at the UN, the SCO, the G20 and BRICS.'

Vladimir Putin

Prime Minister of India Narendra Modi said: 'Your Excellency Mr President, friends. I am very happy to be here in Vladivostok. The sun rises earlier in Vladivostok than it does in other regions of the world. This is a triumph of nature, and, indeed, it is a source of inspiration for the entire world.

When scenarios of humankind's development in the 21st century are written, they say that Vladivostok is marked by the commitment of its people to work, and it is an honour for me to be in this city. It became possible thanks to an invitation from my close friend, President Putin. This invitation also allowed me to become the first Prime Minister of India to visit Vladivostok. I am very grateful to President Putin, my friend, for this opportunity. And this is a historical coincidence that President Putin and I have just completed the 20th annual Russian-Indian summit.

In 2001, when Russia hosted the first such summit, my friend, President Putin, was also President of Russia. At that time, I accompanied our Prime Minister Atal Bihari Vajpayee: I was a member of the Indian delegation and served as Chief Minister of Gujarat. Over the course of our political careers, we have also expanded our friendship and partnership between our countries, and we did it at a very rapid pace.



At that time, our special privileged strategic partnership not only met the strategic interests of our countries, but was also linked with the development of our nations and benefited them. President Putin and I elevated our relations to a new level of cooperation on the basis of trust and partnership. Not only did we see a quantitative leap, but we also witnessed a qualitative leap in our relations.

First of all, we elevated our cooperation from purely bilateral interaction between our governments: we established contacts between our people and between private companies. Today, we have witnessed the signing of a multitude of business agreements.

In the strategic area of defence, we have signed an agreement to create joint ventures and to manufacture spare parts in India. It will give a major boost to our industry. The joint venture to make AK-203 assault rifles will take our cooperation in defence beyond narrow relations and will also create a dependable backup operation in the form of joint manufacturing.

Increasing the level of local production with regard to the nuclear power plant that is being built in India with Russia's support will also allow us to expand our cooperation.

In addition, we will take our relations beyond our respective capitals and establish communication between various Indian states and Russian regions. This is not surprising, because on the one hand, I was the chief minister in Gujarat for 13 years, and President Putin is also very familiar with the potential and capabilities of the Russian regions. Therefore, it is quite natural that he created the Eastern Economic Forum and realised the importance of establishing close ties between a country such as India, which is full of diversity, and this initiative. And we will always be grateful for such an initiative.

After we received the invitation, we began serious preparations for this forum. Key ministers from four Indian states and over 150 businesspeople have come to Vladivostok. We saw the positive results of various meetings with the Presidential Envoy in the Far East and other representatives of the Far East authorities. This made it possible for us to create a blueprint for promoting friendship between our regions and opened up a variety of opportunities in the coal industry, the diamond industry, the lumber industry, as well as agriculture and tourism. Now, in order to improve the interconnectedness of our regions, a sea link between Chennai and Vladivostok was proposed as a project.

In addition, we have diversified our bilateral cooperation, given it new potential and opened up new dimensions in this cooperation. Today, we are mostly talking not about oil and gas deals between Russia and India, but an unprecedented level of investment by both countries in hydrocarbons. We have also agreed on a five-year roadmap for cooperation in this area as well as hydrocarbon and LNG production in the Russian Far East and the Arctic region.

Our long-term cooperation in space has also reached new heights. Gaganyaan is India's manned flight project with the participation of Indian cosmonauts who will be trained in Russia. To fully use our joint investment potential, we agreed to sign an agreement on protecting capital investment in the future.

Russia and the Mumbai Office of the Russian Far East Investment and Export Agency may help us promote cooperation in the future. This will help us write new chapters in the history of our strategic partnership. The Indra-2018 exercises are also a sign of friendship and cooperation between our countries.

'When there was a need, Russia and India helped each other even in the Antarctic and Arctic. Both countries understand that we need a multipolar world to achieve peace and stability. Our cooperation on this issue and coordination will be essential in reaching this goal. This is why we must develop our cooperation in BRICS, the SCO and other organisations and venues.'

Narendra Modi

When there was a need, Russia and India helped each other even in the Antarctic and Arctic. Both countries understand that we need a multipolar world to achieve peace and stability. Our cooperation on this issue and coordination will be essential in reaching this goal. This is why we must develop our cooperation in BRICS, the SCO and other organisations and venues.

As always, today we held open and meaningful talks on major international and regional issues. India wants to see Afghanistan independent, safe, united, peaceful and democratic. Both our countries are against external interference in the affairs of any state. In addition, we held a useful discussion on India's concept of an open and inclusive Indo-Pacific Region. As for cybersecurity, combatting terrorism, and environmental protection, we will continue enhancing bilateral cooperation in these areas.

Next year Russia and India will meet to organise a high-level forum on preserving the tiger population. And I would like to sincerely thank my friend Vladimir Putin once again for this invitation and a very warm welcome. I look forward to taking part with him and my other friends in the events of the Eastern Economic Forum tomorrow. I expect to see President Putin at the annual summit in India next year.

In 2020, Russia will chair both the SCO and BRICS. I am convinced that under the skillful leadership of President Putin, these organisations will see new achievements. For my part, I will give every support to President Putin.' **/IA&MG/**

FSMTC of Russia

Dmitry Shugaev: *'Russia is second in the list of world top exporters of military purpose products'*

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

'For any country, not excluding Russia, successful military-technical cooperation contributes to the federal budget and helps us modernize the national industry. It is no secret that export contracts ensure work-load for domestic industrial enterprises all over our country increasing production and creating jobs. Importantly, global competition of defense producers forces them to analyze success stories of rivals as well as the requirements of their partners so that they can better understand global industrial and technological trends.'

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

– Well, the military-technical cooperation (MTC) is in essence a special area where economic and political interests of a country intertwine. It is the same for the majority of the countries no matter whether they export or import military purpose products (MPP). The economic aspect of MTC is certainly extremely important. Along with the scale effect, which you have aptly mentioned, for any country, not excluding Russia, successful military-technical cooperation contributes to the federal budget and helps us modernize the national industry. It is no secret that export contracts ensure work-load for domestic industrial enterprises all over our country increasing production and creating jobs. Importantly, global competition of defense producers forces them to analyze success stories of rivals as well as the requirements of their partners so that they can better understand global industrial and technological trends.

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

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

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

'Federal Service for Military-Technical Cooperation is an agency that controls and supervises all the activities related to military-technical cooperation and issues licenses. From strategic point of view the FSMTC of Russia plays the role of government policy 'conductor' in the field of military-technical cooperation and acts as a controlling and licensing agency at the same time. However, all decisions regarding final supplies anyway are made at the highest level in Russia. That is, either an appropriate ordinance or instruction of the President or the Russian government should be issued. That's why I call it a 'vertical type of relationship.'

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

– Today the system of military-technical cooperation of Russia is built as a vertical relationship where Rosoboronexport is the only exporter of final military purpose products. Concurrently, there is also a number of entities in the field of military-technical cooperation of Russia that are authorized to provide service of the equipment previously purchased by customers, to upgrade it and to supply spare parts for this equipment. These, in particular, include such integrated structures of the defense industry as the United Aircraft Corporation, the United Shipbuilding Corporation, Almaz – Antey Air and Space Defense Corporation and others. They obtained this right to service their equipment supplied to foreign customers as they represent defense industry itself, they embrace the factories that manufacture spare parts, components, etc.

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

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

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

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

At the same time we understand, that the market of military purpose products (MPP) is a very specific market having cyclic nature. A number of factors should be taken into account, including rearmament programs of armies, financial solvency of countries depending on their general economic health. Therefore, we do not expect any abrupt jumps, we are building long-term relationships that allow us to speak with confidence about stable growth of export supplies.

It is important to participate in long-term programs, providing technical support to our clients and creating maintenance stations with an understanding that many of our clients aspire to improve their own industry, for example.

/IA&MG/

INTERNATIONAL MILITARY-TECHNICAL FORUM ARMY

THE BEST FROM RUSSIA

Rosoboronexport: many years of the success on the world market

On November 4, 2020 there will be the 20th anniversary since the establishment of JSC Rosoboronexport (part of the Rostec Corporation). The company was created in 2000 in line with a decree of the President of the Russian Federation.

'Rosoboronexport continues to strengthen its positions in the world arms market. Irrespective of fierce competition, in the year 2019 we have already managed to supply our products to 43 countries to the amount of 11 billion dollars, signed over 800 contracts for future deliveries. And these are not the final results as we have two more months ahead until the end of the year. Simultaneously, the portfolio of orders of the company keeps at the level of nearly 50 billion dollars, which guarantees the load for Russian defence industry enterprises for several years ahead,' said Rosoboronexport's Director General Alexander Mikheev, who is also holding position of deputy chairman of the Union of Russia's Machine Builders.

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

Dear friends!

On behalf of Rosoboronexport, Russia's state special exporter of defense, dual-use and civilian products, technologies and services, I would like to welcome and congratulate you on the opening of the DEFEXPO INDIA 2020 Exhibition.

Under a strategic partnership, Russia and India are currently implementing major joint projects that are fully compliant with the Indian Government's Make in India program. With the participation of Rostec State Corporation, we are establishing joint ventures in India to manufacture Ka-226T helicopters and Kalashnikov AK-203 assault rifles. We have great prospects for increasing mutually beneficial cooperation in the supply of arms and military equipment, production localization in India and modernization of previously delivered Russian military products.

Participation in DEFEXPO INDIA is an important event in Rosoboronexport and Rostec's marketing activities. The company is organizing a joint display of products from Russia's key defense manufacturers and showcasing the widest range of weapons and military equipment for the land and naval forces.

A total of around 1,000 items will be on display in Lucknow in 2020, including the latest Russian weapons such as the Club-T mobile missile system, the 300 mm 9K515 multiple rocket launcher (MRL) system, the Kalashnikov AK-200 series assault rifles, new tank and MRL ammunition, the T-90MS tank, the Alexandrit-E mine countermeasures vessel, the ORSIS service weapons and the upgraded Mi-28NE helicopter.

I wish all the guests and participants of DEFEXPO INDIA 2020 successful, fruitful work and excellent mood! We are waiting for you at Russia's joint display in Pavilion 6.

Alexander Mikheev,
Director General of Rosoboronexport

Rosoboronexport started to promote for cross-border sales a number of outstanding types of weapons and military equipment, which potentially may become bestsellers in the world market. They include the Su-57E multipurpose fighter of the fifth generation and helicopters Mi-28NE and Mi-171SH, which were modernized with the account of the experience of their engagement in combat operations. For the equipment of personnel of the partners' land forces, special operations and anti-terrorist units, the company has received an opportunity to supply the whole line of the Kalashnikov assault rifles of the newest 'two hundredth' series, including those using NATO standard cartridges.

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

This year Rosoboronexport offered to foreign customers the new Russian multiple launch rocket system (MLRS) Tornado-S with the range of fire of up to 120 kilometers, new projectiles to MLRS and rounds for tank guns, mobile complex of missile weapons 'Club-T', the 'Rubezh-ME' coastal tactical missile system and a number of other types of weapons, which are very much demanded in the market. The majority of them were exhibited at the largest international exhibitions of defence products in Russia and abroad.

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

In 2019 the company has been carrying out its work in the area of marketing and exhibitions in a proactive manner, i.e. it has taken part in 21 international exhibitions. Besides, Rosoboronexport became a participant of the first ever Russia-Africa Summit, where it had productive meetings with high level delegations from the continent's countries.

The special exporter has presented unique products of Russian enterprises at specialized international security fora in Moscow and Ufa. Foreign delegations were shown new sophisticated equipment to counter unmanned aerial vehicles, face recognition assets and other special solutions to fight terrorism and organized crime.

'In 2019 Rosoboronexport continued to strengthen its image of a reliable partner, a dynamic and flexible company, ready to run business effectively even in conditions of immense pressure from the part of competitors. We introduce successfully those financial arrangements, which make our cooperation with partners independent from unfavourable external conditions,' added Alexander Mikheev. 'This brings positive results. Despite sanctions, we have completed supplies of all the components of the S-400 Air Defence Missile Systems to Turkey ahead of time, created and launched the first world's joint venture on production of the Kalashnikov assault rifles of the 'two hundredth' series in India.'

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

Rosoboronexport was set up by RF President's Decree as a federal state unitary enterprise tasked to implement the national policy in the area of military-technical cooperation between Russia and foreign countries. Since 1 July 2011 Rosoboronexport has been operating as an open joint stock company. Rosoboronexport operates under the strict supervision of the Russian President, the Russian Government and in full conformity with the UN arms control treaties and the relevant international agreements.

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

By concluding export contracts, Rosoboronexport supports the Russian defense industry, which is especially important under difficult conditions in the global market. High-tech products are in increased demand in the world arms market today and thus the company is interested in developing smart manufacturing in Russia. In addition, Rosoboronexport is actively involved in a number of charitable and sponsorship projects. The company provides assistance to military hospitals, military historical museums, and children's educational institutions. Rosoboronexport supports major sporting events and various sports federations, acts as sponsor and partner of the largest industrial exhibitions and cultural events held in Russia and abroad.

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

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

ON EARTH, IN THE SKY AND AT SEA

One of the most critical goals for the defense industry is creation of unified weapons. Unification enables raising serial production that decreases the manufacturing cost of products. But development of weapons dedicated for Army and Naval forces leads to rising in the cost of them. Therefore the weapon manufacturers face regularly the task of unification. However as military equipment and its missions is becoming more complicated it becomes increasingly difficult to achieve equally successful functioning of weapons in various fields of application. Nevertheless the existing examples prove that the task can be solved. One of this kind of examples is the work of Izhevsk electromechanical plant Kupol (included into Almaz-Antey ASD Corporation).

IEMP Kupol being the heading enterprise on development and production of short range surface-to-air missile systems of the TOR family makes great efforts to create the SAM systems unified in the most of assemblies and devices, but ready to effective application in various fields.

Thus, in 2017 the Tor-M2DT SAM system was adopted by the Army. This system is significantly unified with the basic version of the Kupol-made SAMS Tor-M2, but intended for use in different climate and terrain features: in High North, under conditions of low temperatures and total lack of roads. Arctic Tor has all the properties of the basic version but it is ready to demonstrate them under much more severe conditions. First batteries of the Tor-M2DT have been sent already to the units of Northern naval, deliveries are continued in the current and next years.

Other representative of the IEMP Kupol main products range - the Tor-M2K SAMS –on the contrary is intended for use in areas with well developed network of paved roads. Its detection and combat facilities are mounted on the wheeled chassis making over 80 km/h. In recent trials this system has proved its ability to fire on the move.

Another SAMS of the Tor family, Tor-M2KM, does not have chassiss at all, that makes it lighter, lower in production cost and more convinient for transportation. This is self-contained combat module which is intended particularly for defense of on-site facilities and use in hard-to-reach places. Also due to the convenient placement on the railway plartform the Tor-M2KM SAMS combat module can provide air defense for the Railway troops. And in 2016 unique tests of the 'ground' SAM system took place on the high sea. Self-contained combat module Tor-M2KM was mounted on deck of frigate Admiral Grigorovich moving at a speed of 7-8 knots. Two types of training targets created the air situation. Target-missile Saman simulated an anti-radar missile. The second training target simulated an anti-ship missile of Harpoon type, flying at an extremely low altitude (4.5 – 5 meters) above the sea level. The system completed work on two targets successfully. Commission for the holding of the system fire tests assigned by Captain General of the Naval Forces recommended using the Tor-M2KM SAMS for organization of air defense of the NF most important facilities (air-and-naval bases, ports, maritime convoys etc.) to reinforce air defense of ships being in operation.

Firing on the high sea provided much useful information for continuing independent research and development to create the Tor-MF SAM system. This promising system is planned to be fully integrated into a ship design. In this version the antenna post is supposed to be installed on a stabilized platform on the upper deck or a topsides. The system crew station will be located in the interior of the ship and comprise the commander and operator work-stations, training simulator, facilities for interface with the ship equipment and naval artillery control means. The launchers with several missiles (there are 4 SAMs in each transporting-and-launching container) are supposed to be placed in the bellow-deck space in the quantity on request of the NF and provided by the ship structure. Fitting-out of operated battle and auxiliary ships with the Tor-M2KM SAMS as well as of newly built and being under overhaul ships with the Tor-MF SAMS will provide reliable defense of them against anti-ship missiles flying at very low altitudes, long-and-medium range cruise missiles, guided air bombs, anti-radar missiles, UAVs, aircraft and helicopters.

Thanks to continuous modernization of SAM systems of the Tor family they have been remaining the best in the world in their class for the past three decades already. The up-to-day Tor-M2 SAMS is capable of acquisition of air-attack means at range of 32 km and hit them at range of 16 km at altitude of to 12 km when cruise parameter is ±9.5 km. In the most dangerous close zone – up to 7 km in range and to 6 km in altitude – the SAMS can hit the targets with scattering cross-section of 0.1 m2 flying at speed of up to 700 m/s. Maximum number of target marks processed simultaneously is 144, reaction time of the system is 5 – 10 s, time interval between launches of SAM guided missiles is 3 seconds. Four air targets (within the sector 30x30o) can be fired at the same time. Ammunition equipment is 16 surface-to-air guided missiles 9K338.

Hitting probability is close to 100%, that prompted to refuse the practice of simultaneous fire on one AAW (air assault weapon) by two SAMs, nowadays the Tor systems work on principle: 'one target – one missile'.

Unsurpassed performances of these systems were confirmed during many tests and exercises as well as in combat situation. The Tor family SAMS are in service with the Russian Army and Armies of a number of foreign countries. In the course of current technical reequipping of armed forces for purposes of GPR-2011-2020 (government program of re-equipment) Izhevsk Electromechanical plant Kupol delivered to military forces great amount of its systems. All shipments were carried out on time or ahead of schedule, that demonstrates dramatically the reliability of the plant and its production stability.

IEMP Kupol traditionally displays its products at the first-rate defense shows. This year the military products range of Izhevsk plant can be seen at international aerospace show MAKS-2019. **/IA&MG/**

DEFENSE MASTERPIECES

Russian High-Precision Weapons Holding

In February last year, the High-Precision Weapons Holding (a part of the Rostec Corporation) was celebrated the 10th anniversary of its work on the global market. Years by years Holding plays an increasingly important role on the world arms market. The holding is the Russian largest developer and manufacturer of the most modern and innovative high-precision weapons. The importance and potential of the Russian holding increase worldwide as well: On a scale of the top 100 weapons manufacturers in the world, the Stockholm International Peace Research Institute (SIPRI) rates the 'High-Precision Weapons Holding' from Russia at 39.

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

The High-Precision Weapons Holding was founded in 2009. The holding consists of a number of largest leading defense enterprises that are well known on the world arms market. It is sufficient only to mention such brands as the Shipunov KBP Instrument Design Bureau, the Tula Arms Plant, The Tulatochmash, the Nudelman Precision Engineering Design Bureau, the Kovrov Electromechanical Plant, the V.A.Degtyaryov Plant, the VNII 'Signal' and others. Most of them are national and international leaders in their segments.

The products of the holding's companies are well known on all continents and much sought after on international arms markets. Interest in the products of the 'High-Precision Weapons Holding' grows due to the objective situation.

The exports of the holding are based on warfare systems well known on the international market such as Pantsir-S1, Palma, Kornet-E/EM, Konkurs, Metis-M1, Igla-S, Arkan, Verba, Shmel, Kapustnik, and others as well as on training systems, armored vehicles upgrade, and so on.

The holding's products are well known and much sought after on the markets in the Middle East, the Gulf, Northern Africa, Latin America, India, Central and Southern Africa. The holding is constantly expanding the geography of its exports. This is due to product line extension, development of new models and upgrade of products in demand as well as well thought-out service policy.

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The holding invests much into the development of promising designs of weapons and military equipment, enhances and augments its development and production potential, and invests in the development of models of tomorrow.

It is evident that the demand for high-precision weapons only increases around the world. They do not miss. They are mobile, fast, maintenance-friendly, reliable, and the most modern.

The newest technological solutions are used. 20 years ago, the proportion of high-precision weapons used in local conflicts amounted to up to 7%. In recent years, this share has increased by up to 90-95%. The most designs of the 'High-Precision Weapons Holding' are the best in the world and determine the technological vectors of development in their segments.

There is no doubt that the main task of the 'High-Precision Weapons Holding' is to strengthen the defense capability of Russia and to supply the Russian Army with the most modern and the most reliable high-precision weapons. Within the scope of the contract, the holding regularly transmits to the Russian Ministry of Defense the corresponding quantity of planned weapons. Due to the holding, the Russian Army is armed with the best weapons in the world. At the same time, it is important that the holding itself also supplies the same weapon to the world market, where it enjoys consistent success.

Middle East states are always been and remains the most important strategic partner of the High-Precision Weapons Holding. The participation of the holding's enterprises in IDEX-2019 is an important stage of friendly and mutually beneficial cooperation in defence area. /IA&MG/

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MOTOR SICH AT DEFEXPO INDIA 2020

MOTOR SICH JSC is the company specializing on development, manufacture and after-sales servicing of aircraft gas turbine engines, industrial gas turbine drives, and gas turbine power stations with these drives. Currently, we are building the helicopter industry in Ukraine. Quality and reliability of our aircraft engines was demonstrated by their long-term operation on the airplanes and helicopters in more than 100 countries worldwide.

Vyacheslav A. Boguslayev, President, Motor Sich JSC

Today, the list of our quantity-produced engines and the engines developed for passenger, transport and military transport aircraft includes:

- turboprop and turbopropfan engines of 400 to 14,000 hp, including the world's only turbofan D-27, the most advanced engine of this type;
- by-pass engines with 1500 to 23,400 kgf thrust including the D-18T engines installed on the largest cargo-carrying aircraft in the world Ruslan and Mriya.

The new D-436-148 engine for passenger airplanes of the An-148 family meets up-to-date ICAO requirements and its performance is on par with similar foreign engines.

Various versions of the An-148 aircraft carry 68-89 passengers at a range of 2.1 to 4.4 thousand kilometers with a high level of comfort.

At present, the specialists of Ivchenko-Progress SE and MOTOR SICH JSC are building the D-436-148FM engine for the An-178 transport airplane with 16 to 18 tons payload, intended for replacement of the An-12 transport airplane.

The D-436-148FM is the D-436-148 version with take-off thrust increased to 7900 kg and maximum emergency thrust of 8790 kgf due to more efficient engine components.

For improving the helicopters flight performance and efficiency in hot and high conditions MOTOR SICH created the TV3-117VMA-SBM1V engine with total service life of 12,000 hours/12,000 cycles and service life to first overhaul of 5,000 hours/5000 cycles.

Due to considerably improved performance, the Mil and Kamov helicopters powered by the TV3-117VMA-SBM1V engines will be ideal in flights in mountainous regions of India.

The program of re-engining Mil and Kamov helicopters operated in India by installing the TV3-117VMA-SBM1V engines jointly with HAL or some other company can be mutually beneficial both for India and Ukraine and efficient for Ministry of Defense of India.

Mi-8MSB helicopter

The TV3-117VMA-SBM1V Series 4 and 4E engines (with pneumatic or electric starting systems) are modifications of the TV3-117VMA-SBM1V engine and are designed to re-engine earlier Mi-8T helicopters for improvement of their flight performance.

Our company develops, manufactures and overhauls the helicopter main gearboxes. We started overhaul of the main gearboxes VR-8A, VR-14 and VR-24 for the Mi-8, Mi-17 and Mi-24 family helicopters. At present we are working together with Ivchenko-Progress SE on creation of the VR-17MS main gearbox, the version of the VR-14, for the Mi-17 helicopters with take-off weight increased to 14 tons.

The VR-14MS gearbox is based around the VR-24 gearbox and is intended for installation on the Mi-8MT (MTV) helicopters and upgrading of the Mi-8T helicopters.

Use of the TV3-117VMA-SBM1V engines family for the MRH helicopter with take-off weight of 10-12 tons may be farsighted for the HAL project.

Currently, we are working on the turboprop versions AI-450C and AI-450C-2 with take-off power of 495 and 750 hp respectively, intended for general aviation airplanes and trainers, as well as for aerobatic aircraft (AI-450CP and AI-450CP-2). Austrian company DIAMOND AI created the DART-450 trainer powered by the AI-450CP engine. This airplane was first officially presented at Farnborough 2016 exhibition and sparked great interest among the specialists.

We are also developing the turboprop versions of the MS-500V-S family with take-off power of 950 to

TV3-117VMA-SBM1V Series 4E engine

1050 hp designed for general aviation, passenger airplanes and trainers.

Currently, MOTOR SICH JSC is dynamically developing its own helicopter program. The Experimental Design Bureau founded by the Company with more than 300 employees was certified by the Aviation Administration of Ukraine as the Design Organization.

MOTOR SICH helicopter production includes modern machining and assembly workshops, paint removal and application section, flight test complex, simulator complex for training flight crews in all types of helicopters produced by the Company.

The Mi-8MSB medium multipurpose helicopter with maximum takeoff weight of 12,500 kg is the first project implemented under MOTOR SICH helicopter program. The helicopter is equipped with a powerplant consisting of two TV3-117VMA-SBM1V Series 4E gas-turbine engines with electrical starting system.

The Mi-8MSB helicopter with TV3-117VMA-SBM1V Series 4E engines set a number of world records, including an absolute record for altitude in horizontal flight in class E1 – 9155 m, which is 300 m higher than Mount Everest, the highest mountain peak in the world.

The Mi-8MSB helicopter differs from similar helicopters by ease of maintenance, repairability and reliability. The helicopter design makes it possible to install a wide range of specialized equipment for various missions. The helicopter is equipped with advanced navigational complex meeting EASA and ICAO requirements.

The helicopter can be equipped with an external load sling system, specifically designed to minimize the fuselage loading. The system of up to 4 tons lifting capacity is designed for transportation of oversized cargo, fighting fires using Bambi Bucket system, and for erection works.

Different versions of the Mi-8MSB are available – transport, passenger (including VIP), search and rescue, ambulance, fire-fighting, and military (Mi-8MSB-V).

The Mi-8MSB-V helicopter was put in service by the Ministry of Defense of Ukraine. Today, the Mi-8MSB-Vs are operated by the Ukrainian National Guard, Ground Forces Aviation, and Air Forces.

The Mi-8MSB-V helicopter can be equipped with an external load sling system, equipment for parachute and non-parachute dropping, rescue winch, searchlight, optoelectronic and radar equipment, airborne defense complex and armament system including guns, guided and unguided missiles.

Another line of MOTOR SICH helicopter program is development and manufacture of light helicopters. The Mi-2MSB is the first certified light helicopter developed by MOTOR SICH. The main design change is replacement of outdated and phased out GTD-350 engines of 400 hp take-off power with new engines AI-450M-B of 430 hp developed by Ivchenko-Progress SE and manufactured by MOTOR SICH JSC.

The Mi-2MSB multi-purpose helicopter differs from other light helicopters by a spacious cargo and passenger cabin and twin-engine power plant.

The helicopter has a renovated, more dynamic appearance due to modified shape of the helicopter cowling. The cowlings are made of advanced composite materials reducing weight of the helicopter structure.

The helicopter instrumentation was supplemented by digital indicators of engine parameters. A new complex of airborne equipment such as 'glass cockpit' may be installed as an option.

One of key advantages of the upgraded helicopter is critical altitude of its engine, which opens a way for export to mountainous countries. On 18 April, 2016, the Mi-2 set a new record – reached the height of 7000 meters.

Despite the fact that the Mi-2MSB belongs to the light class helicopters, its transport capabilities are large enough. So, the helicopter cabin is designed to carry 8 passengers (excluding a pilot), which significantly exceeds the capacity of its more expensive foreign counterparts.

MOTOR SICH is improving commercial capabilities of the helicopter due to integration of a new mission equipment. So, a new original external sling system was developed, which received a supplemental Type Certificate. The external sling system significantly expands transport capabilities of the helicopter making possible to carry oversize cargos and deliver them to places where landing is not possible. It is intended for transportation of oversize cargo as well for construction and installation works.

The Mi-2MSB helicopters successfully participate in championships, demonstrating excellent aerobatic qualities of this type of aircraft.

The new MSB-2 type multi-purpose helicopter created by JSC MOTOR employs a standard classic single-rotor configuration with a tail rotor. MOTOR SICH submitted application for the helicopter Type Certificate to the State Aviation Administration of Ukraine. The helicopter is powered with AI-450M-P engines, 465 hp each, and a new transmission, developed and manufactured by MOTOR SICH.

MOTOR SICH has manufactured the helicopter prototype that is now passing ground and flight tests.

MOTOR SICH JSC
15, Motorostroiteley Av.,
69068 Zaporozhye, Ukraine
Tel: (+38061) 720-48-14
Fax: (+38061) 720-50-00
E-mail: eo.vtf@motorsich.com
www.motorsich.com

RUSSIAN COUNTER-DRONE SYSTEMS

Within the international aviation and space exhibition Dubai Airshow 2019 Rosoboronexport (part of the Rostec State Corporation) presented Russian systems, designed for the counteraction to unmanned aerial vehicles of all types.

Today, unmanned aerial vehicles pose threats not only in the military sphere. In our daily life we see more and more examples when drones are used for illegal purposes, i.e. for espionage, transportation of cargoes and even for terrorist attacks. Taking that into account, industry enterprises, including Rostec, are creating a wide range of assets of electronic countermeasures – on different platforms, in various form-factors, as well as highly mobile systems, which may be quickly deployed on civilian installations and industrial enterprises. Such systems are capable of detecting drones of different sizes, identify them, overtake control and effectively disable drones. The demand for such products in the world is extremely high, and in the next 5 years it is estimated at the level of 2 billion dollars,' said Rostec's General Director Sergey Chemezov.

Practice, including the combat experience of Russian armed forces in Syria, shows that small and miniature UAVs are widely used not only by regular armies, but also by terrorist organizations and criminal groups. Low cost, availability and friendly control interface make drones one of the most effective assets for achieving illegal goals.

'Just recently terrorists in the Middle East showed that disregard of this problem may lead to critical outcomes for strategic industries of a separate state and even influence the world financial market. Classical defensive assets turned out to be helpless against this challenge, which was admitted by their producers. Rosoboronexport reacted to the situation quickly and prepared unique solutions to protect vital installations of transportation, fuel and atomic infrastructure from attacks. We have already sent to our partners in the Middle East, North Africa and other regions our proposals, including services on building a layered point and area system of electronic countermeasures. This system will provide a reliable protection of territories and sites from separate UAVs, as well as from their groups, including swarms of drones,' said Rosoboronexport's Director General Alexander Mikheev.

The layered point and area system of electronic countermeasures against small-sized unmanned aerial vehicles may, at customer's request, include a number of elements, which differ in their radius of action, mobility and characteristics of covered sites and territories.

Area coverage of territories is provided by the Repellent electronic warfare complex, which is developed and produced by JSC Defensive Systems.

The complex detects the UAV itself and the ground control station via their transmitted radio signals,

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Practice, including the combat experience of Russian armed forces in Syria, shows that small and miniature UAVs are widely used not only by regular armies, but also by terrorist organizations and criminal groups. Low cost, availability and friendly control interface make drones one of the most effective assets for achieving illegal goals.

The layered point and area system of electronic countermeasures against small-sized unmanned aerial vehicles may, at customer's request, include a number of elements, which differ in their radius of action, mobility and characteristics of covered sites and territories.

determines UAV type and the direction of its motion, after which it suppresses its data links, depriving it of communication, control and navigation. The distinctive feature of this complex is its ability to jam all UAV's control circuits.

Repellent is an asset with a big radius of action, i.e. it is capable of detecting and suppressing UAVs at a distance of no less than 30 kilometers. The complex may operate in any season, all climate zones and in the most unfavourable weather conditions, including dust, rain and strong wind.

To cover vital installations, which may be airfields, sites of atomic or energy complex, etc., Rosoboronexport offers a wide spectrum of products of the Avtomatika Concern.

The Sapsan-Bekas mobile multipurpose complex of countering unmanned aerial vehicles uses both passive and active means of detection. It provides for a guaranteed detection of all types of UAVs, including the ones with a minimized access into radio networks. All the assets of target detection and influence are unified by an automated workstation of control and information display. The complex is capable of carrying all-round observation and scanning an assigned sector.

Sapsan-Bekas may detect UAVs by means of electronic intelligence at a range of no less than 20 kilometers and means of active radio location at a distance of 10 kilometers. The complex also includes systems of optical and electronic recognition of UAVs, i.e. a video camera of a visible spectrum and a cooled thermal scope. The range of drones' recognition by optical assets is up to 8 kilometers.

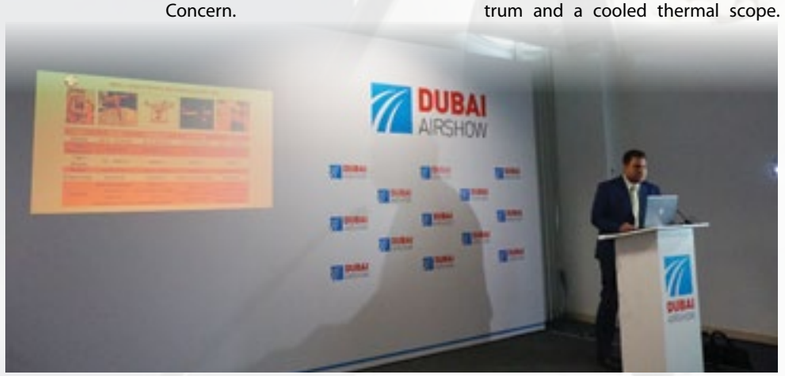
The range of jamming of control and navigation circuits depends on the offered configuration and may reach 30 kilometers, varying in line with customers' requirements. Besides, the complex may act as a target designation asset for other electronic countermeasures and air defence systems.

The Kupol and Rubezh-Avtomatika complexes carry out continuous observation and create an umbrella dome over the installation. This is a barrier, which cannot be overcome, and which is capable of repelling attacks of separate drones and their groups, coming from different directions and heights in a radius of no less than 3 kilometers.

The Luch portable complex may be quickly deployed and used for the protection of various installations. It detects UAVs and creates interferences, which jam control and navigation circuits in an assigned sector at a range of no less than 6 kilometers.

The Pishchal portable complex performs similar missions. Its weight is only 3.5 kilograms, owing to which it is one of the lightest products, offered in the market. This means that Pishchal may be included in individual sets of equipment. The range of jamming of control and navigation circuits of UAVs is 2 kilometers.

A mock-up model of the Pishchal complex is demonstrated on Rosoboronexport's exhibit, where it will be possible to obtain comprehensive technical information on all the Russian assets to counter unmanned aerial vehicles and discuss options of cooperation. /IA&MG/



RUSSIA-INDIA DEFENCE COOPERATION THROUGH THE EYES OF THE INDIAN MEDIA

Major Indian defence exhibition DefExpo 2020 coming early February in Lucknow will focus the attention of the world on the latest achievements and developments in the Indian domestic military industry, but also – on the equally important issues of the military cooperation between Delhi and its partners. Russia remains the major partner of India in this field, and large-scale military projects (unequalled by other countries), were unleashed by Moscow and Delhi in the past two years since DefExpo 2018, which took place in Chennai. Firstly, the historic contract on S-400 air defence systems was signed becoming the single biggest arms deal between India and Russia. Secondly, four Project 11356 guided missile frigates will be built for the Indian navy. Other major new projects envisage the licensed production of Kalashnikov's AK-203 assault rifles for the Indian Armed Forces through a joint venture scheme – the parties have already signed an intergovernmental agreement paving the road for the program. A string of other projects is in the line. Its prospects and developments are seriously assessed and analyzed by the Indian media and expert community. Among the most discussed are the Ka-226T helicopter licensed production program, Su-30MKI multirole fighter jet fleet modernization and additional deliveries, 75I diesel-electric submarine tender etc. Major Indian mainstream and defence media have hugely covered Russia-India military cooperation issues, providing both news stories on the latest breakthroughs and a look into the future. Here is an overview of this coverage.

General assessment

Since the early 1960s when the Indian Air Force introduced the Soviet MiG-21 fighter jet (which also was produced in batches by HAL), Russia has been the major arms supplier for India. In the past decades Delhi started a major turn towards the diversification of the weapons procurement sources – the USA, France, Israel, the United Kingdom have significantly increased the share of their equipment in the arsenal of the Indian Armed Forces. Nevertheless, Russia remains the principal defence partner of India and aside from delivering products is strongly engaged in Make in India projects. One of the most important benefits of partnership with Russia could be the possibility of getting brand new technologies indispensable for the development of India's own military and industrial complex – and Moscow's readiness to provide Delhi with them.

As **Business Standard**'s **Ajai Shukla** underlined in September 2019, Russia was already India's biggest arms supplier and was in line for more with $12 billion of Make in India projects in hand and was eyeing $25 billion more. He recalled that in March 2019 the Stockholm International Peace Research Organisation named Russia as India's biggest arms supplier from 2014-18, accounting for 58 per cent of India's imports.

According to **Huma Siddiqui** from the **Financial Express**, 2020 will witness renewed military and trade ties between Russia and India.

'In an effort to further strengthen military relations with India, Russia plans to implement contracts exceeding $ 14.5 billion as well as the Inter-Governmental Agreement aimed at joint development and production of military equipment and spare parts. And as has been discussed between the two leaders Prime Minister Narendra Modi and the Russian President Vladimir Putin at the recently concluded annual summit, Russia is planning to localise up to 80 per cent of various platforms and is also looking at the possibility for the joint entering the third countries', points out Financial Express's author in her article published late in December 2019.

She adds that the Indian armed forces are using 'almost 60 per cent of military platforms from Russia which has been recognized as one of the most trusted partners in the military field'.

Among the crucial current programs the journalist names S-400 air defence systems, upgraded MiG-29UPG fighter jets, Ka-226T helicopters, Project 11356 frigates, BrahMos supersonic cruise missiles, T-90S Bhishma main battle tanks, 3VBM42 Mango 125 mm armour-piercing fin-stabilized discarding sabot rounds, Konkurs-M 'AT-5b Spandrel anti-tank guided missiles and Kalashnikov AK-203 7.62 mm assault rifles.

The end of December 2019 saw the ceremony of de-inducing of the last IAF's squadron MiG-27 which for decades formed the backbone of the Indian ground attack air fleet. Indian media widely covered the event praising the jet. Among the articles there was **Hindu**'s **Dinakar Peri**'s 'MiG-27 flies into sun set over Jodhpur'.

'MiG 27 swing-wing fighter aircraft has been the backbone of the ground attack fleet of the IAF for the past four decades. The upgraded variant of this last swing-wing fleet has been the pride of the IAF strike fleet since 2006,' the Air Force said in a statement. The fleet earned its glory in the historic Kargil conflict, when it delivered rockets and bombs with accuracy on enemy positions, it added', wrote **Hindu**.

The author mentions that Sqn Ldr (retd.) Anshuman Manikar said his best recollection was low-level, high-speed runs over range, 'optimum mix of fun and watchfulness and a complete adrenaline rush.'

November visit

In November Indian defence minister, Rajnath Singh visited Moscow to participate in ameeting of the India-Russia intergovernmental commission in Moscow reviewed all ongoing projects. According to **Economic Time**s's **Manu Pubby**, progress has been made on several aspects, including a major upgrade for the Su-30MKI fighter jet fleet.

'Defence minister Rajnath Singh, who met his Russian counterpart General Sergey Shoigu in Moscow, pushed for joint manufacturing of spares, components and aggregates in India to reduce costs and supply timelines. An industry delegation led by Ficci met Russian equipment manufacturers to identify products for which joint ventures would be formed in near future. Sources told ET that among the issues discussed, the urgent Indian requirement for minesweepers came up, with the Russian side offering its Project 12701 Alexandrit-E ships under a transfer of technology (ToT) pact with the Goa Shipyard Limited. The navy has an urgent requirement for 12 minesweepers to replace the Pondicherry class of boats that have been decommissioned. On the aviation front, the two sides have agreed to go ahead with an upgrade of the Su-30MKI fleet. With 272 aircraft on order, the upgrade will be one of the biggest of its kind to be carried out. Sources said that it has been agreed that the prototype for the upgrade

will be developed in India by Hindustan Aeronautics Limited (HAL) with assistance from the Russian side', reported **Economic Times**.

As reported by the newspaper, the rifles factory at Amethi was going to be soon operationalized with the Indo-Russian Rifles Private Limited JV to manufacture the Kalashnikov AK 203 rifles. A record of 670,000 Kalashnikovs will be manufactured, with the army clearing the technical gates and a commercial bid set to be sealed.

During the talks in Moscow Rajnath Singh called upon the Russian defence industry to work jointly to modernise India's defence platforms and manufacture equipment to give a massive boost to the two nations' exports to third countries.

'We have set up defence corridors in Uttar Pradesh and Tamil Nadu and offer attractive terms for investment. India is ready to explore opportunities and co-production of high-end defence equipment with Russia,' Singh said.

Indiandefenseindustries.net, the news portal dedicated to the Indian defence industry, provided a detailed

description of Project 12701 Alexandrit-E minesweepers.

'Alexandrit class comes with the world's largest monolithic fiberglass hull made using vacuum fusion technique. This reduces the mass of the vessel and increases its endurance significantly. This reduces corrosion and increases the service life of the vessels, highly placed sources informed', wrote **Rohit Srivastava**.

The news portal also covered the Indian minister's visit to UEC-Klimov engine plant in St. Petersburg.

Game changing system

S-400 air defence missile system's procurement by India was the single major issue of the defence journalism in 2018. Indian media provided aninsightful lookinto both the technical capabilities of the system and its meaning for the Indian defence in general, as well as into the political side of the issue.

According to **Defenseworld.net**'s 'Battle Of The Air Defense Systems: S-400 Vs Patriot And THAAD' 2018 article viewed by more than 195 000 web users, S-400 Triumph outperformed US PAC-3 Patriot.

'S-400 comes across as the most advanced serially produced air defence missile system in the world. Its closest rival is American Patriot with both systems capable of shooting down both aircraft and ballistic missiles', stated **Defenseworld.net** after comparing open data on both systems.

'India's move to ink the $5.43 billion (Rs 40,000 crore) deal for five S-400 missile squadrons from Russia, despite the looming threat of US sanctions, underlines Delhi's resolve to bolster India's air defence coverage… The S-400 system is critical for India's national security', reported **Deccan Herald**'s **P K Vasudeva**.

The newspaper called the Triumph system 'a game changer for India'. Indian journalists in the summer of 2019 visited a number of Russian defence manufacturing enterprises, including The North Western production plant of Almaz-Antey.

'India will have five regiments of the system that will strengthen air defences in the face of depleting fighter squadrons of the air force. The S-400 regiments will be delivered starting 2020 and are likely to be deployed to cover both the Pakistani and Chinese borders… The Russian system is being bought under special waivers from the Indian offset policy given its cutting edge technology', reported **Manu Pubby** of **Economic Times**.

WION's **Sidhant Sibal** in August 2019 quoted the Indian envoy to Russia Bala Venkatesh Varma calling the S-400 missile defence system 'the best in the world'.

'India had signed the missile deal in October 2018 during Russian President Putin's visit. The deal was worth $5 billion ensuring the advanced long-range surface-to-air missile would become a key weapon in India's arsenal', – reported **WION**.

LEAD MEDIA REVIEW

BrahMos – supersonic cooperation

BrahMos supersonic missile system developed and produced by the Russian-Indian BrahMos Aerospace joint venture has become the backbone of the conventional striking potential of the Indian Armed Forces. Naval, land and aerial applications have been successfully developed.

The program is being successfully implemented, the JV speaks of the plans to create ahypersonic version of the missile in the future. Meanwhile the major development of 2020 could become the first export contract of the missile to a third country. In December Delfin Lorenzana, the secretary of the Department of National Defence of the Philippines, announced that the contract for the BrahMos cruise missiles, which were being eyed for coastal defence missions of the Philippine Army, was to be signed by the early part of 2020.

Earlier, in August, **Manu Pubby** of the **Economic Times** reported that India and Thailand were stepping up military cooperation, with a tri-lateral naval exercise planned later this year and advanced talks on for the acquisition of Brahmos cruise missiles and other indigenous weapon systems.

'Thailand has also expressed keen interest in the BrahMos missile systems that can be used in ground attack and shore defence modes in recent meetings. Sources said that the system was identified as a potential export during a visit by Thai Navy Chief Admiral Luechai Ruddit in December last year and technical discussions are currently on to take the project forward', – wrote **Economic Times**.

Su-30MKI program

The production of Su-30MKI multirole fighter jets by HAL in India is one of the major joint projects with Russia. Currently the fleet of Su-30MKI represents a significant part of the Indian Air Force. According to the media reports, the assembly of additional jets is on the table. The integration

of Su-30MKI with the aerial BrahMos missile will significantly increase the stand-off attack capabilities of IAF.

The chances of an additional Su-30MKI's order were analyzed in the beginning of 2019 by **Livefistdefence.com**'s **Shiv Aroor**.

'While the IAF has nearly finalised an order for 8 additional Su-30s to replace eight jets lost in accidents over the years, Livefist learns that an unsolicited offer made by HAL in February 2018 for 40 jets has shuffled its way to the top of the priority list, with the government regarding the proposal as a possible twin-cure… In anticipation of an expanded order, the Indian government has cleared the decks to formally extend HAL's license to produce more Su-30MKIs, should the government choose to do so', reported Livefistdefence.com.

According to **Livefistdefence.com**, the move to acquire more Su-30s 'ticks a lot of boxes, both perceptional and operational'.

'It would slow the depletion in the Indian Air Force's fighter squadron strength – a chief worry for the IAF leadership', – wrote **Shiv Aroor**.

Meanwhile **Defenseworld.net** presented an insightful video comparing Su-30MKI with French Dassault Rafale.

MiG-29UPG program – new MiGs out of old ones

In February 2019 a leading Indian media reported that the Indian Air Force was in advance talks with Russia for an urgent procurement of MiG-29 fighter jets. This also brought additional attention to the ongoing successful program of upgrading IAF's MiG-29 fighter jets to the MiG-29UPG modification.

In December **WION**'s Bharat Sharma provided an outline of the project and its advantages for the Air Force.

'IAF and HAL have completely mastered the technology of upgrading MiG-29 fighter jets into MiG-29 UPG… The project, which incorporates delivery of modernisation kits from Russia, technology transfer and personnel training is divided into two stages: first, the overhaul of the plane, then, the upgrade process itself envisaging the modernisation of the airframe, instalment of new systems and adding new capabilities', reported **WION**.

It added that currently all planes were being modified only in India.

'The capabilities of the upgraded MiG-29s which included improving electronic equipment have been significantly augmented and new weapons can be fitted in… MiG-29UPG has gained not only increased efficiency but also has much more leverage in hitting the ground and naval targets (both static and moving) with high-precision weapons in any meteorological conditions both day and night', said **WION**.

Ka-226T utility helicopters

Russia and India have formed a joint venture to manufacture Ka-226T light utility helicopters. In September **Livefistdefence.com** analyzed the prospects of the signing of the contract necessary for launching the program. The article was called 'Will 2 More Deaths Jolt The Lumbering Indo-Russian JV For New Light Copters?' and was published after the crash of an Indian Army HAL Cheetah helicopter in Bhutan.

'Today's fatal accident once again throws harsh light on the latter – the inexplicably slow-moving joint venture established between India and Russia to manufacture 200 Ka-226T light utility helicopters for the Indian Army and Indian Air Force. In a choice that was made in 2015, precious little has happened in four years apart from paperwork, despite the Indian Military's repeatedly stated urgency in replacing its old Chetak and Cheetah helicopter fleets… If things had moved at faster pace, the supply of the first 60 Ka-226T helicopters could have begun by now to begun augmenting and replacing the oldest Chetaks in service', – wrote **Shiv Aroor** of **Livefistdefence.com.**

He added that the efforts to replace the Indian military's old Chetak helicopters had been meandering without result for over a decade, including two contest aborts at the last minute.

Frigates for the Navy

In India and Russia in October 2018 signed the contract for new Project 11356 frigates, two of which were to be built in Russia and two – by the Indian shipbuilding industry.

'The Indian Navy is likely to get its first two advanced Talwar class frigates by 2022, following clearance of payments and key material procurements that will enable Russia's Yantar Shipyard to commence full-scale work on the warship', – reported **Economic Times**'s **Manu Pubby** in July after visiting Russian Yantar shipyard.

According to **Economic Times**, India already operates six Talwar class frigates of a similar class but the new ones on order will be more advanced versions, fitted with Indian made equipment including sensors and communications.

Underwater strength

The Indian journalists after visiting Russian shipbuilding enterprises in 2019 also reported on the prospects of the Russian participation in 75I diesel-electric submarine project.

'The **Amur 1650**, an 'export' version of the Lada-class, is officially a contender in the Rs 45,000 crore (about $6.5 billion) competition to evaluate and choose not just a submarine, but also an Indian shipyard that will build six of those submarines under the Modi government's Strategic Partnership policy… If Project 75I moves forward along stated contours, this will be India's third license-built submarine project, and will, on the face of it, see the Amur 1650 compete against the French Naval Group Scorpene, the German HDW Typo 214 and the Swedish Saab Kockums A26', reported **Shiv Aroor** of **Livefistdefence.com**.

He analyzed the possible paths of fulfilling the project.

'But that really is the operative question – will the project unfold along a path India says it hopes to? Or could it be bedeviled by its overreaching ambit at a time when the Indian Navy needs new submarines sooner than ever before. As with all defence contests, each of the contenders in Project 75I believes the contest should be subsumed by a deep direct government-to-government handshake that clears the decks for a meaningful submarine-building relationship. Russia's shipbuilding leadership believes India is at a strategic crossroad for several reason. And that a misstep could prove costly in ways more than just sunk finance', wrote Livefistdefence.com.

In September **WION**'s **Sidhant Sibal** reported that Russia had offered submarines to India for navy's Project 75(I) on the basis of an intergovernmental agreement.

'Moscow has proposed a joint design, prototype construction with full intellectual

property rights which will be shared equally. It has offered to jointly develop the AIP (air-independent propulsion) for the submarine but based on the progress that DRDO has already made', – disclosed **WION**.

Small arms from Russia

Another major Russian-Indian defence project is organizing a licenced production of Kalashnikov's AK-203 assault rifles in India.

According to October article by **Manu Pubby** of the **Economic Times**, the rifles factory in Amethi was set to get an order to manufacture a record 6.7 lakh Kalashnikovs soon, with the Army clearing the technical gates.

'While the factory in Amethi was formally inaugurated in March, orders are yet to be placed as they had to go through the acquisition process of negotiating technical and commercial terms. ET has learnt that as per the plan, Russia will transfer complete technology on the modern assault rifle to India. In the initial phase, 6.7 lakh rifles will be made for the Army and the number will increase later to at least 7.5 lakh as requirements of other forces are also added to the order. To achieve technology transfer, it is planned that after the first one lakh rifles, all components of the weapon system will be produced in India. A top Army officer said the joint venture is a good example of how India has achieved technology transfer through planned acquisitions. The joint venture to produce Kalashnikov rifles has been described as the 'fastest' created by Russia for an Indian venture', – reported **Economic Times**. /IA&MG/

INTERNATIONAL AEROSPACE, MILITARY, NAVY AND TECHNOLOGY GUIDES

In 2020

ISSUE	RELEASE DATES	ADDITIONAL DISTRIBUTION
'RA&MG' №01 (50)	January 20th	**DEFEXPO INDIA** 2020 (05-08.02.2020, India, Lucknow)
'RA&MG' №02 (51)	March 15th	**FIDAE 2020** (31.03-05.04.2020, Chile, Santiago)
'RA&MG' №03 (52)	March 15th	**SOFEX 2020** (31.03-02.04.2020, Jordan, Amman)
'RA&MG' №04 (53)	April 05th	**DSA 2020** (20-23.04.2020, Malaysia, K.Lumpur)
'RA&MG' №05 (54)	April 08th	**Eurasia Airshow 2020** (22-26.04.2020, Turkey, Antalya)
'RA&MG' №06 (55)	April 25th	**ILA Berlin Air Show 2020** (13-17.05.2020, Germany, Berlin)
'RA&MG' №07 (56)	May 10th	**HELIRUSSIA 2020** (21-23.05.2020, Russia, Moscow)
'RA&MG' №08 (57)	May 12th	**KADEX-2020** (28-31.05.2020, Kazakhstan, Astana)
'RA&MG' №09 (58)	May 20th	**EUROSATORY-2020** (08-12.06.2020, France, Paris)
'RA&MG' №10 (59)	July 05th	**FARNBOROUGH Airshow 2020** (20-24.07.2020, Great Britain, London)
'RA&MG' №11 (60)	August 10th	**ARMY-2020** (23-29.08.2020, Russia, Moscow)
'RA&MG' №12 (61)	August 20th	**GIDROAVIASALON 2020** (September 2020, Russia, Gelendzhik)
'RA&MG' №13 (62)	August 30th	**ADEX 2020** (08-10.09.2020, Azerbaijan, Baku)
'RA&MG' №14 (63)	September 01th	**Africa Aerospace and Defence 2020** (16-20.09.2020, S.Africa, Pretoria)
'RA&MG' №15 (64)	September 10th	**ADAS 2020** (23-25.09.2020, Philippines, Manila).
'RA&MG' №16 (65)	October 05th	**EURONAVAL 2020** (20-23.10.2020, France, Paris)
'RA&MG' №17 (66)	October 20th	**INDO DEFENCE 2020** (04-07.11.2020, Indonesia, Jakarta)
'RA&MG' №18 (67)	October 30th	**Helishow Dubai 2020** (10-12.11.2020, UAE, Dubai)
'RA&MG' №19 (68)	October 25th	**Airshow China 2020** (10-15.11.2020, Zhuhai, China)
'RA&MG' №20 (69)	November 02th	**BIAS 2020** (18-20.11.2020, Bahrain, Manama)
'RA&MG' №21 (70)	November 10th	**IDEAS 2020** (24-27.11.2020, Pakistan, Karachi)
'RA&MG' №22 (71)	November 30th	**Expo Naval 2020** (01-04.12.2020, Chile, Valparaiso)
'RA&MG' №23 (72)	November 25th	**EDEX 2020** (07-10.12.2020, Egypt, Cairo)

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