RUSSIAN AVIATION & MILITARY GUIDE

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Russia and India: global aviation and technology partnership

AERO INDIA 2017
"Asia's Premier Air Show"

Special partnership
AERO INDIA 2017

Russian Aviation Military Guide

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EDITORIAL

Good real perspectives

India and Russia show an example of steady strategic partnership. The aviation component of our cooperation is one of the most successful and promising. This is especially important given the difficult situation on the world stage. Threat of local conflicts to be evolved into global ones, failure of worldwide system of safety and non-ending crisis — all of this leads to an unstable and dangerous situation. One can predict raise of defense means market in times like this. But together with developing of defense technologies in order to secure people's safety, rivalry among sellers of weapons and defense systems increases in order to achieve such goals as increasing profits and market share. World experience shows that it is not about how many weapons you have, but quality and possibilities of every single one of them is what leads to victory on the battlefield. Other significant factor is technological independence from seller — modern technologies make it possible to shut down any device from any place of the globe if you have appropriate access. With hi-tech technology, solid after-sales service and proven reliability of products, Russia is honest and friendly partner for India and other countries, ready for mutual work. And AERO INDIA 2017 shows good real perspectives of international cooperation with Russia.

Valeriy STOLNIKOV

CONTRACT WITH LAKESHORE INTERNATIONAL AVIATION

Russian Helicopters signed a marketing agreement with Hong Kong based Lakeshore International Aviation Co., Ltd at the China International Aviation Exhibition Center in Zhuhai, China. According to the agreement, Lakeshore International Aviation Co., Ltd. becomes an authorized agent of Russian Helicopters for marketing and promotion of Russian made civilian helicopters in China. Companies already have a history of cooperation in the Asian helicopter market with joint research projects aimed at identifying most attractive regions for sales and consulting with regional operators of civilian helicopters in China and Southeast Asia. Ka-32 helicopters have been operated in China as fire-fighting helicopters for several years. They are based on a coaxial scheme and considered one of the best for urban firefighting, which is crucial for China with its highlands and modern metropolitan areas. Mi-171 helicopters also have been used throughout China for a long time for transportation and evacuations, as well as for transporting medical supplies, humanitarian aid and construction materials.

AIRCRAFT AND HELICOPTERS OF THE NORTHERN FLEET

The first group of pilots of the Northern Fleet deck aviation has flown from the Admiral Kuznetsov carrier to the base in the Murmansk Region. Among them — the crews of 3 MiG-29K and one Su-33 aircraft as well as 3 helicopters Ka-52, Ka-29 and Ka-27. Since November 8, 2016, the carrier group of the Northern Fleet consisting of the carrier Admiral Kuznetsov, nuclear missile ship Peter the Great and Vice-Admiral Kulakov as well as the ships of the Black Sea Fleet, auxiliary vessels and over 40 aircraft carried out antiterrorist tasks in Syria. Within two months, the pilots performed 420 combat sorties among them 117 night ones, as well as 750 sorties for search-and-rescue tasks. Nearly all flights were carried out in difficult weather conditions. Over 1000 terrorist objects were hit.

AVIATION STRIKE OF LONG-RANGE BOMBERS

Tu-22M3 long-range bombers of the Russian Aerospace Forces took off from an airfield located in the territory of the Russian Federation, flew over territories of Iraq and Iran, and carried out an aviation strike ISIS terrorists' targets near Al-Mayadin town in the Deir ez-Zor province. The aircraft were targeted large ammunition and armament of insurgents. According to the objective monitoring data, all assigned targets have been hit. Su-30SM and Su-35S fighters covered the bombers. All Russian aircraft came back to the airbases after performing assigned combat tasks.

Combat helicopters for Kazakhstan

Russian Helicopters will supply the Ministry of Defense of Kazakhstan with four transport-combat Mi-35M helicopters in 2018. The deliveries will be carried out through Rosoboronexport. The contract was signed as part of the Treaty between the Russian Federation and the Republic of Kazakhstan on military-technical cooperation.

The supplies of the Mi-35Ms, produced at PJSC Rostvertol, are part of strategic cooperation between the two countries and are aimed at gradual replacement of the current military helicopter fleet in Kazakhstan with modern rotorcraft. A similar process is taking place in the Russian Federation, which significantly increases the combat capability of Armed Forces both at the level of the state and in the framework of intergovernmental cooperation of defence ministries.

'The Mi-35M is gradually replacing the large fleet of Mi-24s worldwide. It should be said that the Mi-24 helicopter was a unique machine for its time and throughout the years it repeatedly proved its high combat effectiveness. However, we are moving ahead, and designers at Mil Moscow Helicopter Plant created the Mi-35M based on the older Mi-24 model. Unlike its predecessor, the Mi-35M has significantly expanded possibilities of use, since it can perform combat missions at any time and under any weather conditions. It has increased rate of survival in the air due to its advanced security features. Its performance characteristics are also improved,' said Russian Helicopters Deputy CEO for Sales Vladislav Savelyev.

Kazakhstan is one of the largest and oldest operators of Russian helicopters. The fleet of Russian-made helicopters in Kazakhstan today is about 200 units. The military, law enforcement and rescue agencies of Kazakhstan are currently operating all major Russian Helicopter models including military transport, fire-fighting and search and rescue versions of the Mi-8/17 series, multirole Ka-32A11BCs, as well as transport and combat Mi-24V and heavy transport Mi-26T helicopters. The contract for the supply of Mi-35Ms to Kazakhstan specifies payment terms in Russian rubles, which also confirms the strategic character of cooperation between the two countries.

Rostec Supports the Home Front

P-7 parachute platforms supplied by the Technodinamika group proved to be 100% efficient during a humanitarian operation in Syria. This was discussed at an extended session of the Russian Defence Ministry Board on the results of the Armed Forces' activity. According to the Russian Defence Minister Sergey Shoygu, approximately 2,500 tonnes of humanitarian aid were delivered to the Syrian province of Deir ez-Zor in 2016.

The P-7 platform, developed at the Universal Moscow Design and Production Complex, which forms part of Technodinamika, was used as one of the main parachute systems.

'Our platforms proved their reliability once again during a humanitarian operation aimed at the delivery of foodstuffs, medicines, medical equipment and basic commodities in Syria,' pointed out Igor Nasenkov, the CEO of the Technodinamika group.

A parachute platform is an assembled metallic structure on removable wheels with a large number of parachutes. It can drop over 30 types of cargo weighing up to 9.3 tonnes from an altitude of 300 to 1,500 meters above the landing area. The altitude of the unloading point can reach 2,500 meters above sea level. Such platforms are typically used for delivering military equipment and cargo. However, they also serve humanitarian purposes. Thus, paratroopers use the platform to transport mobile temples.

JSC Moscow Design and Production Complex Universal was founded in 1940. Overall, more than 300 items of paraborne equipment and 800 types of ground service equipment for the use of the Russian aviation have been developed at the enterprise.

INTERJET RESUMES SSJ100 OPERATIONS

Sukhoi Civil Aircraft (SCA) has completed repair work on six SukhoiSuperjet 100 (SSJ100) for Interjet airline. Technical teams from SCA were sent to Mexico as part of SCA's after-sales support service for Interjet's Sukhoi Superject 100. Thanks to the work done by SCA and Interjet specialists, all six aircraft resumed operations in the first week of January. Twenty-two SCA technical specialists were sent to Mexico for the warranty maintenance work. The team was made up of specialists with extensive experience in aircraft production and maintenance. The troubleshooting procedure was agreed to with the Russian aviation authorities (Federal Air Transport Agency) and carried out under the control of the Mexican aviation authorities (DGAC). Interjet is one of the world's largest operators of SSJ100 aircrafts and has been flying the model since 2013. Interjet's SSJ100 technical dispatch reliability is one of the highest among the operators. The company's fleet of the SSJ100s has accumulated more than 90,000 flight hours, and Interjet has operated more than 75,000 flights. SCA strives to provide maintenance support as quickly as possible and is working on improving SSJ100's reliability. The SSJ100 was created and tested to international and Russian airworthiness standards, which are confirmed by the IACAR (Interstate Aviation Committee Aviation Register) and EASA (European Aviation Safety Agency).

KA-32A11BCS FOR JIANGSU BAOLI AVIATION

Russian Helicopters has completed deliveries of the first batch of multirole Ka-32A11BC helicopters, which are built at Kumertau Aviation Production Enterprise. The delivery is part of the contract to supply four multirole Ka-32A11BCs, which was signed between Russian Helicopters and Jiangsu Baoli Aviation Equipment Investment Co., Ltd in November 2015. After the delivery of the first batch, two more helicopters will be handed over to the Chinese operators in 2017. These machines will be used for firefighting and rescue operations. The multirole Ka-32A11BC helicopter is designed for search and rescue missions and for work at high altitudes, for cargo transporting, medevac, fire-fighting and patrolling. In China, these machines are mainly used for firefighting and rescue operations, as well as for work in the highlands. Russian Helicopters have previously delivered 11 Ka-32 type helicopters to various Chinese customers. With the continued increase in fleet of Russian-made helicopters in China, Russian Helicopters are also looking to create service centers in China. In addition to China, Ka-32s of various modifications are operated in Spain, Portugal, Colombia, Switzerland, Canada, South Korea, Taiwan, Japan and other countries.

Russian Helicopters: The New Head

Andrey Boginsky appointed the CEO of Russian Helicopters. He previously held the position of Deputy Minister of industry and trade of the Russian Federation.

'Today Russian Helicopters is one of the leading companies in the global helicopter market. Our goal for the near future is to focus on developing new products and improving quality of after-sales service. In particular, we need to create a service system that meets the best international practice,' said Andrey Boginsky.

Andrey Boginsky was born August 11, 1974 in Bryansk. Prior to attending college, he worked as a labourer at various jobs. He received his BA in Financial Management from the Economics and Management Faculty at New Humanities University in 1996. In 2000 he graduated from the Ministry of Foreign Affairs Diplomatic Academy specializing in global economics. Mr. Boginsky is a Candidate of Economic Sciences (PhD in Economics).

In February 2015 he was appointed Deputy Minister of Industry and Trade of the Russian Federation. From May 2012 he served as Director of the Department of Aviation Industry at the Ministry of Industry and Trade of the Russian Federation. From 2010 to 2012 he was Deputy General Director for Economics and Finance at Zhukovsky Central Aerohydrodynamic Institute (TsAGI).

Andrey Boginsky has the title of Honorary Aircraft Builder. He has been a member of the Board of Directors at JSC Russian Helicopters since June 30, 2015.

Russian Helicopters, (part of State Corporation Rostec), is one of the global leaders in helicopter production and the only helicopter design and production powerhouse in Russia. Russian Helicopters was founded in 2007 and is headquartered in Moscow. The company comprises five helicopter production facilities, two design bureaus, a spare parts production and repair facility, as well as an aftersale service branch responsible for maintenance and repair in Russia and all over the world. Its helicopters are popular among Russian ministries and state authorities (Ministry of Defence, Ministry of Internal Affairs, Emergency Control Ministry), operators (Gazpromavia, UTair), major Russian corporations. In 2015 its IFRS revenues increased 29.5% to RUB 220.0 billion. Deliveries reached 212 helicopters.

Contract about 18 helicopters

Russian Helicopters signed a contract with Wuhan Rand Aviation Technology Service Co. Ltd. for the supply of 18 new helicopters including Mi-171s, Ka-32s and Ansat. The document was signed by Deputy CEO for Marketing and Business Development Alexander Shcherbinin and Wuhan Rand Aviation Technology Service Co. Ltd. CEO Liang Jian.

Per the agreement, Wuhan Rand Aviation Technology Service ordered two light Ansat helicopters in medevac mode, two Mi-171s and one Ka-32 with an option for another 13 vehicles (3 Ka-32s, 4 Mi-171s and 6 ANSATs). The first units will be delivered to the customer in 2017. By the end of 2018, Russian Helicopters is planning to supply Wuhan Rand Aviation Technology Service all 18 helicopters.

'China is one of the oldest operators of Russian helicopters and our reliable partner. This is our first contract with Wuhan Rand Aviation Technology Service and we hope that our cooperation will be long and fruitful,' said Russian Helicopters Deputy CEO Alexander Shcherbinin.

Ka-32 helicopters have been used in China for several years for fire and rescue missions. Based on a coaxial scheme, this helicopter is considered to be one of the best rotorcraft to deal with strong fires in urban conditions. It has proved itself well in China's highlands and large modern metro areas.

Mi-171 Helicopters have also been used throughout China for a long time — for transportation and evacuation of people from disaster zones, as well as for transportation of various goods including medical supplies, humanitarian aid and construction materials.

COOPERATION ON AFTER-SALES SERVICE

Russian Helicopters signed an agreement on control of certified repairs with Iran Helicopter Support and Renewal Company (IHSRC) at the 8th International Airshow on Kish Island, Iran. The document is another step for the Russian and Iranian sides on expansion of after-sales service of helicopters produced in Russia, which operate in Iran. Previously, Russian Helicopters approved the roadmap for retrofitting the Mi-17 maintenance and overhaul center in Iran. The authorized repair center in Iran is being created to provide customers with quality and timely maintenance. The opening of the center at IHSRC will help improve performance of the Russian rotorcraft operated in Iran and will increase helicopter flight safety. At present, Mi-17s are the most popular Russian helicopters in Iran. Almost the entire model range of this type of helicopters is in use there, including Mi-17s, Mi-171s, Mi-171Es, Mi-8 MTVs and Mi-17V-5s.

FIRST BATCH OF MI-8MTV-5S TO BELARUS

The official ceremony of transferring six helicopters produced by a Russian Helicopters' subsidiary — Kazan Helicopters — took place at the Machulischi airport near Minsk. The ceremony was attended by the Belarusian Minister of Defense, the Air Force and Air Defense commander and top management of Russian Helicopters. The military transport Mi-8MTV-5 helicopters were delivered to the Ministry of Defense of Belarus in October. Today, during the ceremony, the rotorcraft was transferred to the personnel of the 50th combined airbase of the Belarusian Air Force. During the event military pilots demonstrated the capabilities of the Russian machines. This was also the indication that Russian Helicopters has finished the first part of the contract for delivery of 12 Russian-made Mi-8MTV-5s, which had been signed during the Army-2015 International Military Technical Forum. Mi-8MTV-5 multirole helicopter is part of the Mi-8/17 family. These helicopters are used in medical and search-and-rescue operations; they carry out cargo and passenger transportation. As of today, more than 12 thousand helicopters of the Mi-8/17 series have been produced and delivered to 100 countries. Over many years of operation, the Mi-8/17 type helicopters produced by Kazan Helicopters and by Ulan-Ude Aviation Plant have proven that they can successfully perform tasks in any climatic conditions and are justifiably the most numerous and one of the world's best in their class.

Russia at the Shield Africa 2017 Exhibition

As told by Rosoboronexport, more than 30 official delegations and representatives of companies from African countries visited the stand of JSC Rosoboronexport (part of the Rostech State Corporation) during the Shield Africa 2017 police and gendarmerie armaments and special equipment exhibition, held in the city of Abidjan, Cote d'Ivoire on January 24-26, 2017.

Exhibition visitors representing armed forces, police and gendarmerie of Cote d'Ivoire, Angola, Burkina Faso, Ghana, Cameroon, Kenya, Mali, Mozambique, Niger, Rwanda, Sudan, Tanzania and other African countries were particularly interested in the Russian border protection systems, special operations equipment and dual-purpose vehicles and helicopters used both in law enforcement and emergency assistance to the civilian population.

Besides, African countries have traditionally shown great interest in Russian armaments and equipment designed to fight terrorists, pirates, drug trafficking, illegal fishing, organized crime and riots as well those used to conduct peacekeeping operations, as African countries are getting increasingly involved in regional and international peacekeeping missions.

'Rosoboronexport has for the first time held its display at this exhibition as it reckons on the progressive development of military-technical relations with Cote d'Ivoire and other regional countries. For decades, our country has been actively assisting African countries in the establishment and development of their national armed forces. Today this experience, combined with our partners' confidence in high efficiency of Russian armaments and the need for a widespread stepping up of counter-terrorist efforts, is opening up new opportunities for the increased supply of Russian defense products to the continent,' — said Deputy Head of Marketing Department Vadim Startsev, who led the Rosoboronexport delegation.

Despite stiff competition from foreign exporters, Russia is ready for the implementation of various, including the innovative ones, forms of defense and security cooperation in Africa, up to the joint development and production of high-tech military equipment and security system solutions for the third countries.

The company is actively developing bilateral ties to promote a comprehensive security system to be utilized in large administrative areas, critical facilities and state borders. During the Counter-Terrorism and Law Enforcement presentation held on January 25, 2017, experts of the Rosoboronexport company briefed the exhibition participants on the latest Russian concept of an integral customer-tailored security system designed to identify the sources of terrorist threats and illegal acts, conduct counterterrorist operations, ensure law and order and protect critical facilities.

The concept covers over 200 types of armaments, special technical assets, automated control and communications assets, alarm systems and a facility, perimeter and long boundary protection system. Presentation visitors commended the broad opportunities offered by the project based on the Russian-built counter-terrorism systems and assets.

Novikombank to Finance the Delivery of Russian Aircraft

The base bank for the Russian industry, Novikombank, has granted a loan to the Irkut Corporation (a member of the United Aircraft Corporation) amounting to 20 million euro to finance the execution of an export contract for the delivery of new aviation equipment. This agreement has become the first step towards promising cooperation between the parties.

'The Bank has cooperated with the members of the United Aircraft Corporation since 2010. Since then, we have successfully implemented several important projects related to state defence procurement. Besides, as part of strategic partnership, Novikombank continues to support UAC's export contracts. Financing of the Irkut Corporation's aircraft proves that our cooperation in developing the export potential of the Russian aviation cluster in general is becoming closer,' said Elena Georgieva, Chairperson of the Management Board of Novikombank.

The President of PJSC Irkut Corporation Oleg Demchenko emphasizes that complete support from government agencies of the Russian Federation, Rosoboronexport and Russian commercial banks including Novikombank is an important factor in the promotion of Russian high-tech products on the global market.

Novikombank has worked in the real economy for over 20 years and invests in modernization and innovative development of the national industry. Apart from giving guarantees and loans to the members of the United Aircraft Corporation, Novikombank also finances various production programs. Thus, in November 2016, a credit line was opened for the Russian Aircraft Corporation 'MiG' to provide for re-equipment of the enterprise. Besides, Novikombank actively implements payroll projects for employees of several defence companies and gives them consumer loans. Novikombank's customers include well-known companies such as the United Aircraft Corporation, PJSC Tupolev, OJSC Ilyushin Aviation Complex, JSC Sukhoi Civil Aircraft, etc.

INDIA AND RUSSIA: EXAMPLES OF TECHNOLOGICAL COOPERATION

‘THE COOPERATION SHOULD INCREASE TECHNOLOGICAL COMPETENCIES’

Alexander Braslavets, Deputy Director General, ‘Scientific-production enterprise ‘Aerosila’, JSC

— What do you think is the primary reason for the sustainable strategic industrial partnership between our countries?

— Owing to their dimensions, history, geographic and geopolitical position Russia and India are obliged or devoted (to choose one upon reader’s preference) to pursue a rather independent policy and play a significant role worldwide.

These factors are enough to reasonably make our countries closer and discover mutual interests. The countries cannot be in rival blocs. They are too powerful to be just members (but not leaders or centers) of any blocs and associations. Besides, with a current reformatting and polycentric world conditions our countries take interest in partnership and friendly relations, which enable to create together their own authority and peacefully ‘recapture’ it from the global hegemon.

Meanwhile, strategic industrial partnership is among the important areas of mutual interest for both parties. Russia is in possession of technological competencies, so the cooperation should not only preserve it but increase too. India, on the other hand, is striving to become one of the centers in the modern world order, for which purpose it needs own high technology competencies.

— What areas of the cooperation, in your opinion, are the most promising and why?

— It goes without saying that only those areas can be promising for cooperation, which are considered as interesting and advantageous by both parties. First of all these are areas where one party can offer something and the second party has a demand (aerospace, other high technologies and defense).

— Which experience of your partnership with India do you think should be considered as the most important to enhance industrial cooperation and avoid risks of possible misunderstanding?

— Perhaps the main thing is that we need to make proper adjustments to our attitude towards India as a partner, but not a single time occasional client. With available objective prerequisites to partnership it should be assumed that we are not monopolists to offer areas of cooperation with India. India just like ‘a merchant’ will compare high technology and service offers available at markets and choose the best, cost-competitive things, with better related options and services (production localization, engagement in joint development , after-sale service and so on).

‘OUR PRODUCTS ARE MUCH BETTER THAN WESTERN VERSIONS’

Pavel Kirk, Marketing Director, ‘Arti-Zavod’, OJSC

‘We think that a stable cooperation between Republic of India and the Russian Federation is ensured by a number of factors, the most important of which include long-term relationships established right after India became independent after World War Two. These are military and technical cooperation, power industry and transport infrastructure development projects.

Besides, India was among the founders of Non-Aligned Movement, which required striking balance between two main military and political blocs of 20th century. Meanwhile US and NATO did not sell modern armament and equipment to India.

This has become the reason Indian Armed Forces are saturated with Soviet-made products. The majority of serving officers learnt in Soviet military colleges. The great role is traditionally played by highly competitive prices.

The similar situation had been formed within decades in power industry, transport engineering and construction industry.

Today, when world market interest has shifted towards high technology products, it has unexpectedly been found that Russian enterprises carried out greater works on developing state-of-the-art products, both related to armament and power industry. Meanwhile West European and North American companies did not notice any challenge resting on their laurels.

The same situation we also observe in our industry. Within twenty years US, being the market leader, have not seen serious challenges, so respiratory protection equipment which they offer today have worse protective parameters as compared to modern Russian products, especially special forces-dedicated gas masks made by ‘Arti-Zavod’, JSC. Our products are much better than western versions in terms of ergonomics. Our task is to bring information about our products to an end user in Southeast Asia including India; allow testing, comparing and judging. There is no point in comparing prices. In this regard the offer by ‘Arti-Zavod’, JSC is several times more attractive’.

‘RUSSIA HAS NEW TECHNOLOGIES WHICH WILL HELP INDIA’

Ivan Georgievich Antsev, Chief Executive, ‘NPP ‘Radar MMS’

— What do you think is the primary reason for the sustainable strategic industrial partnership between our countries?

— The partnership is driven by similar views which our countries have on many economic, technological, international, military and technical issues.

— What areas of the cooperation, in your opinion, are the most promising and why?

— We think scientific cooperation is the most promising. Russia has new technologies which will help India be engaged in developing power industry, ensure necessary security and protection for local natural resources.

— Which experience of your partnership with India do you think should be considered as the most important to enhance industrial cooperation and avoid risks of possible misunderstanding?

— A trilateral cooperation agreement has been signed under which our company ‘NPP ‘Radar mms’ in cooperation with ‘Alekseev TsKB’ work on supplying own-produced river and sea ships to Andhra Pradesh as well as together with ‘Morinformsystema-Agat’ our company is to develop security system for Krishnapatnam port.

VLADIMIR PUTIN AND NARENDRA MODI

Relations between Russia and India continue to develop the most favorable way. As evidenced by the private meeting of the leaders of the two countries and their involvement in the implementation of projects of business cooperation. For example, it was well illustrated by the meeting between the two leaders last year in Tashkent, and transfer to the first blog for Kudankulam NPP.

Last year in the framework of Vladimir Putin's working visit to Uzbekistan to attend the anniversary SCO summit, the Russian president met with Indian Prime Minister Narendra Modi. At this meeting the President of Russia noted in particular, than 'India is our privileged strategic partner. Relations between our countries are built on long-standing traditions of friendship. This is fully reflected in our close and effective cooperation in economic and international affairs.

I am sincerely glad that in the course of the SCO summit today, India signed a memorandum of obligations as a step toward its status as a member of this organization. I am sure that the membership will happen in the very near future and that next year we will work with India within the framework of the SCO as a full member of this organization. This will give us an opportunity to work even more closely with our Indian friends now also within the SCO.

This year India has taken over the BRICS presidency. We are counting very much on your leadership in the organization and hope that India's presidency will also help strengthen this widely recognized international organization, whose influence is steadily growing'.

Indian Prime Minister Narendra Modi in turn said then: 'I would like to thank you for your constructive support of India's membership in the Nuclear Suppliers Group. Today, we launched the process of India's acquiring full SCO membership. I know that you have played a highly constructive role and I thank you for this. All of this goes to show what it means for India to have a true friend. I thank you from the bottom of my heart'.

Also last year there was the event a very important for business relations of the two countries — inauguration ceremony of Unit 1 of Kudankulam Nuclear Power Plant. The ceremony took place in videoconference format, and Vladimir Putin took part in the inauguration from the Kremlin (Moscow), Narendra Modi was in India on the inauguration ceremony.

Prime Minister of India Narendra Modi said: 'Today is indeed a special day. Today, Excellency Putin and I have the honour to dedicate Kudankulam Nuclear Power Plant Unit 1. I am particularly grateful to President Putin for his presence at this event. And I am delighted that Jayalalithaa ji, Chief Minister of Tamil Nadu, is also present with us on this occasion.

Friends, in dedicating Kudankulam 1, we mark another historic step in India-Russia relations. Its successful completion is not just another fine example of the strength of our special and privileged strategic partnership. It is also a celebration of our abiding friendship. And it is only a start of our collaboration in this field.

It is perhaps not commonly known that at 1,000 megawatt, Kudankulam 1 is the largest single unit of electrical power in India. In years ahead, we are determined to pursue an ambitious agenda of nuclear power generation. At Kudankulam alone, five more units of 1,000 megawatt each are planned. In our journey of cooperation, we plan to build a series of bigger nuclear power plants.

Friends, today's event is also a joyful occasion for the team of Indian and Russian engineers, scientists and technicians. We salute their dedication and hard work and congratulate them for the fruits of their labour.

Friends, the story of human development has been of wide spread technological advancement and growing economic prosperity.

But, as we all know, it has not been without burden on our environment. I have a vision for India where achievements of our economic development are respectful to mother earth, and where the engines of our industrial growth are increasingly driven by clean energy. Kudankulam 1 is an important addition to India's continuing efforts to scale up production of clean energy in India. It also signals our joint commitment to build pathways of partnership for green growth.

Excellency President Putin, the success of our joint efforts in nuclear power generation is a proud achievement of our cooperation. It demonstrates our common resolve to grown and build on new dimensions of our ties.

Above all, it showcases your personal commitment, consistent support and strong leadership in transforming the substance and character of our relationship. For this I am grateful to you, Mr President.

The people of India associate naturally and with great ease with the people of your great country. And personally, I have always deeply valued our friendship. It is, therefore, only fitting that today we join together to dedicate the Kudankulam Nuclear Power Plant unit one to the

strength and vigour of our friendship and cooperation. Long live Indo-Russian friendship!'

Vladimir Putin said: 'This is a big event for our Indian partner, for the Russian company that carried out this project, and for all of us. The power plant was built using the most advanced world technology, Russian technology, and was built by Russian and Indian specialists working together.

Cooperation in nuclear energy is an important part of the privileged strategic partnership between our countries. Our work together in this

sector has great importance for our countries' development. This is not just about building a nuclear power plant and putting it into operation, but is a large-scale project to develop a new high-tech nuclear sector in India. This work involves transfer of skills and training of personnel and specialists in this area.

Russia is well known as a leader on the international market for nuclear technology and services. The nuclear power plants built by Russian specialists are reliable and meet the very highest safety standards. We are sharing with our Indian colleagues our experience and developments in this priority high-tech sector.

Unit one is starting work at its nominal capacity and a second unit will also come on line in the not so distant future, and this will substantially boost India's energy supply and bolster its economic position. Peaceful nuclear energy development will be essential for a vast, powerful and rapidly growing country like India to resolve its social and economic tasks.

Together with our Indian friends we have big plans in this sector. Work began on the power plant's third and fourth units in February this year. We plan to sign a general framework agreement and loan protocol for the construction of the third stage of the project by the end of this year. I would like to remind you that this project is being carried out using funds provided by the Russian Federation. Of the total project financing, 85 percent is in the form of a state loan provided by Russia'.

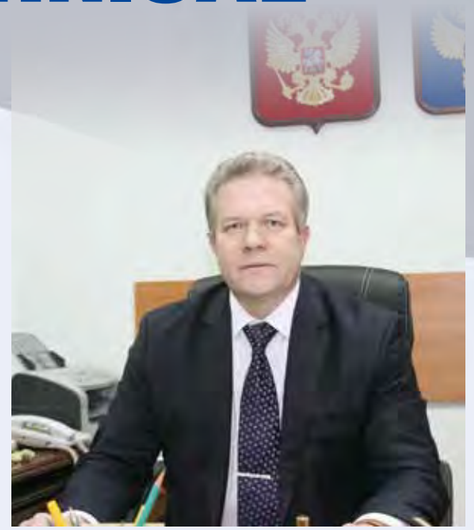
In relations between the two countries is always important stability. Russia and India demonstrates this stability of friendly relations for many years. Any difficulties cannot stop our friendship and our business ties. At one of a bilateral meetings Vladimir Putin stressed:

'As we all know, unfortunately, there has been a certain slump in our trade and economic cooperation. This is primarily due to external factors, of course: fluctuations in demand and supply, currency volatility. Therefore, our main task here is to use every opportunity to diversify Russian-Indian relations and to actively promote projects in such areas as high technologies, aviation and machine building, medicine and the diamond industry.

This is further promoted through regular contacts between Russia's Chamber of Commerce and Industry and the Federation of Indian Chambers of Commerce and Industry, between the Russian Union of Industrialists and Entrepreneurs and the Confederation of Indian Industry. I would like to note that leading Russian companies have gained a strong foothold on the Indian market and are actively involved in upgrading the Indian production base and developing its infrastructure. Among them are Rosatom, Gazprom, Russian Railways, Silovyie Mashiny, Lukoil, Sistema, Rosneft and Renova'. /RA&MG/

RUSSIAN-INDIAN MILITARY-TECHNICAL COOPERATION

Vladimir Drozhzhov: 'The main competitive advantage of Russian weapons and military equipment is their high performance characteristics which are up to the best world standards'



Since 2000, the Russian Federation has established a sufficiently effective system to manage military-technicalcooperation between the Russian Federation and foreign states, incorporating the Federal Service for Military-Technical Cooperation ('FSMTC of Russia') as its critical enabler. The Federal Service for Military-Technical Cooperationis empowered with control and supervision functions in the MTC area. FSMTC of Russia shall be a decision makingauthority on import to and export from the Russian Federation of military purpose products as decreed by thePresident of the Russian Federation, also in the established manner and as authorized by the Russian FederationPresident, issue of licenses to military-technical cooperation-affiliated entities for import to and export from theRussian Federation of military purpose products. Vladimir Drozhzhov, Deputy Director of the Federal service for Military Technical Cooperation (the FSMTC of Russia), head of the official Russian delegation at AERO INDIA — 2017, says in an exclusive interview to the magazine 'Russian Aviation & Military Guide' about the peculiarities of military-technical cooperation with India.

— Mr. Drozhzhov, what types of Russian military equipment are the most familiar in India? In what areas cooperation is most active today?

— Russia and India are bound by a privileged strategic partnership. The military-technical cooperation between our countries remains at a very high level. All types of military equipment produced by Russia — overland, sea and aviation — are broadly presented in the Indian Armed Forces. The most well-known are: 'MiG' and Su-30MKI type aircrafts, 'Mi-17' type helicopters, T-72M1 and T-90S tanks, BMP-2 infantry combat vehicles, 'Pechora', 'Kvadrat' and 'Osa-AK' air defense missile systems, missile boats of different projects, 11356 project frigates(known as 'Talwar' class), 877EKM project submarines (Kilo class)and, of course, 'Vikramaditya' aircraft carrier.

Our countries continue to build up cooperation in a wide range of areas. First of all, I mean license production of Su-30MKI aircraft and T-90S

tanks; preparatory work to launch production of Ka-226T helicopters in India. Contract negotiations on S-400 'Triumph' air defense missile system are fully under way. So are the talks on 11356 project frigates for the Indian Navy. Russia is also participating in tenders on different types of air defense means to India.

— What main competitive advantages doesRussian military equipment have from the point of view of the Indian Army Forces?

— Russian equipment is truly time-tested. It has been supplied to India for decades. So, evidently, there isall theinfrastructurenecessary for its smooth operation and there are capacitiesto train Indian specialists.

Above that, the main competitive advantage of Russian weapons and military equipment is their highperformance characteristics which are up to the best world standards. And at the same time our equipment stands out for itseasiness in operation and high reliability.

— When did the military-technical cooperation between Russia and India start?

— The military-technical cooperation (MTC) with India started in 1960 when the first batch of MiG-21 aircraft was delivered to India. For more than half a century of MTCwe have signed contracts exceeding 65 billion US dollars. Russian technical assistance helped India build above 170 military production objects. Interaction in this field has always been progressive and constructive.

— How high is the potential for modernization and renovation in the Russian military equipment? What can the Russian Federation offer today in this regard?

— Initially all exported Russian military products have a huge potential for modernization, and the military equipment supplied to India is no exception.

A graphic example isthe modernization of MiG-29 aircraft of the Indian Air Force to level MiG-29UPG. As a result, the Indian Air Force will receive the latest generation aircraft capable of carrying out a wide range of missions. At the negotiation table are also the modernization of T-72S and T-90S tanks and the first batches of Su-30MKI aircraft, produced in 1990s, and the upgrade of Il-76 military-transport aircraft and Mi-17 helicopters.

— As the forthcoming 'AERO INDIA — 2017' has a focus on aviation, it is natural to ask you, what aviation equipment according to the experts of FSMTC of Russia is in high demand by India?

— Well, a very important field of cooperation with India in military aviation, undoubtedly, is thejoint development of the FGFA. Russia hasalso offered latest Il-78MK-90-A tanker aircrafts to India. We are ready to additionally supply to India our distant radar detection aircraft based on Il-76TD.

The project of deep modernization of Su-30MKI aircrafts produced in 1990s and early 2000s years might become yet another promising direction of the Indo— Russian cooperation in the aviation sphere.

Worth mentioning are our achievements in the area of helicopter equipment. First of all, it is future production of Ka-226T helicopters in India, as well asthe additional delivery of Mi-17V-5 military-transport helicopters and the project on modernization of 'Mi-17' type helicopters supplied to India in 1980s—1990s.

— What pieces of equipment presented by Russia at this salon will potentially raise high interest among partners?

— Certainly, it will be our brand new-MiG-35 fighter thathas just beensuccessfully presented in Russia. In our opinion, Il-76MD-90A new generation medium-range military-transport aircraftwith PS-90A-76 engines and Il-112V light military-transport aircraft also deserve attention.

Russian outstanding helicopters are usually of great interest to foreigners. Ka-226T light helicopters, Ka-52 attack helicopters and various modifications of the 'Mi' type military-transport helicopters will be presented at the exhibition.

— Is Russia ready to consider joint venturesin India? Is the experience of such cooperation positive?

— We have a positive experience of making JVs with a number of countries, but the real gem in the crown is 'BrahMos Aerospace' — a joint Russian-Indian organization. It produces missiles that are not onlyin demand in India, but have a vast export potential.

Besides thatanother joint Russian-Indian venture on production of Ka-226T light helicopters is being finalized.

Given the 'Make in India' program that is strategically important for India and the special level of our bilateral relations, the Russian Federation is ready tojointlydevelop and produce hi-tech military equipment with our Indian partners.

/RA&MG/

Major areas of FSMTC of Russia activities shall be:

- To perform control and supervision functions in the area of military-technical cooperation in compliance with laws of the Russian Federation;
- To participate jointly with other federal government authorities in elaboration of state policy in the area of military-technical cooperation and submit in the established manner relevant proposals to the President of the Russian Federation, the Government of the Russian Federation, and Defense Ministry of the Russian Federation;
- To ensure jointly with other federal government authorities implementation of key state policy guidelines in the area of military-technical cooperation as set by the President of the Russian Federation; and Within its competence and jointly with other federal government authorities, to implement state regulations in the area of military-technical cooperation.

In conformity with laws of the Russian Federation, FSMTC of Russia shall perform control and supervision functions relating to:

- Compliance, of activities in the field of military-technical cooperation of federal government authorities, government authorities of the Russian Federation constituencies, and Russian organizations empowered in the established manner to carry out foreign trade activities regarding military purpose products, corporate developers and manufacturers of military purpose products, other legal entities, officials and individuals, with legal acts and regulations of the Russian Federation and key state policy guidelines in the field of military-technical cooperation, requirements of the Russian Federation laws on export control over procurement of military purpose products;
- Implementation of underlying state policy principles in the field of military-technical cooperation including state monopoly;
- Efficient functioning of state regulatory system in the field of military-technical cooperation;
- Fulfillment of international treaties of the Russian Federation in the field of military-technical cooperation;
- Activities in the field of military-technical cooperation of representative offices of military-technical cooperation–affiliated entities in the Russian Federation and foreign states, as well as those of other organizations;
- Marketing, advertising, and exhibition activities in the field of military-technical cooperation;
- Efficient application of funds allocated from the federal budget to finance activities in the field of military-technical cooperation, as well as efficient use of federal property by military-technical cooperation–affiliated entities;
- Level of foreign trade prices for export and import military purpose products with due regard to protection of economic interests of the Russian Federation;
- Level of local prices for military purpose products to be funded out of the federal budget, and supplied to foreign customers under international treaties of the Russian Federation.

HIGH TECHNOLOGY OF INTERNATIONAL PARTNERSHIP

Rosoboronexport: more than 85% of Russia's arms exports

On November 4, this year JSC Rosoboronexport (part of the Rostec State Corporation) will mark its 17th anniversary. The sole Russian state intermediary agency, which is responsible for import/export of the full range of defense and dual-use end products, technologies and services was set up by the RF President's Decree in 2000. This is a 100% state-owned company.

The Joint Stock Company Rosoboronexport, part of the Russian Technologies State Corporation, is the sole Russian state intermediary agency responsible for import/export of the full range of defense and dual-use end products, technologies and services. Rosoboronexport was set up by RF President's Decree 1834 of 4 November 2000 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.

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

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

The main result of biography of Rosoboronexport, despite the difficult economic conditions and fierce, often unfair, competition in the global arms market, that company have managed not only to carry its sales, but also significantly enlarge its footprint in the traditional and new arms markets. Through integrated marketing strategies, company have ensured that order book today exceeds US$ 45 billion.

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

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

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

In addition, Rosoboronexport is actively involved in a number of charitable and sponsorship projects. The company provides assistance to military hospitals, military histori-

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

In November 2000 the two enterprises were merged into a single one — Rosoboronexport Federal State Unitary Enterprise, the sole state intermediary for export/import of defence products, by the Presidential Decree No. 1834 dated 4th November 2000 aimed at restructuring the system of military and technical cooperation of the Russian Federation with foreign states, and improving its performance. Since 1 July 2011 Rosoboronexport has been operating as an open joint stock company.

Core areas of activities of Rosoboronexport

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

cal museums, and children's educational institutions. Rosoboronexport supports major sporting events and various sports federations, acts as sponsor and partner of the largest industrial exhibitions and cultural events held in Russia and abroad.

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

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

NEW CEO OF ROSOBORONEXPORT

Alexander Mikheev from January this year headed the company Rosoboronexport, which 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 70 countries around the world.

Alexander A. Mikheev was born on November 18, 1961 in Moscow.

Education: graduated in aeronautical engineering from the Moscow Institute of Civil Aviation Engineering in 1985; obtained a master's degree from the Military Academy of the General Staff of the Russian Armed Forces in 2005; graduated from the Russian Government Financial Academy in 2006, with a degree in finance and credit. Holds a candidate degree in economics.

Career:

From 2001 to 2013, he served in various positions at JSC Rosoboronexport. Prior to his appointment to the position of Deputy CEO of Rosoboronexport (then a federal state unitary enterprise) in 2007, he was head of the company's export department for special property and services for the Air Force;

In September 2013, he was appointed CEO of JSC Russian Helicopters;

In January 2017, he became CEO of JSC Rosoboronexport.

State decorations:

Awarded the Order of Honor, the Medal for Services to the Fatherland (2nd class), the Order of Alexander Nevsky, the Duslyk (Friendship) Order of the Republic of Tatarstan.

Honored with a letter of commendation of the President of the Russian Federation.

UAC INTERNATIONAL

United Aircraft Corporation increasing opportunities for direct cooperation at world market

United Aircraft Corporation of Russia (UAC), which under one company represents the most well-known Russian aviation brands such as Sukhoi, MiG, Tupolev, Yakovlev and others, is today one of the world's biggest manufacturers and suppliers of aircraft. In December 2016 as part of an effort to expand foreign presence UAC was given a military-dedicated foreign trade license to be implemented on a direct basis. The military-dedicated foreign trade license has been issued by Federal Service for Military and Technical cooperation. This will help UAC improve maintenance and repairs of equipment previously delivered abroad, which includes every Su, MiG, Il, Yak and Tu airplanes.

Yury Slyusar, UAC President

EXPORT UPSWING

Thanks to the success of its products UAC is one of the world's leading aircraft manufacturers. UAC's revenues have been lately growing on average more than 30% per year. Sukhoi Superjet 100 civil airliners, Su-30 and MiG-29 fighters, Yak-130 operational trainers are among the most popular aircraft exported by UAC.

The document received by UAC is to much more simplify foreign market procedures, which is good news for present-day and future UAC's partners worldwide.

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

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

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

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

INDIAN VECTOR

India has been for many decades a key foreign partner of Russia involved in aircraft among other things. Cooperation between the two countries is dedicated to military and civil aircraft supply, co-designs and establishing joint venture network under the ambitious Make in India program.

MiG-29K/KUB, MiG-29UPG, Su-30MKI fighters, A-50 AWACS, Mi-17V-5 and Ka-226T helicopters are among the most large-scale cooperation projects. Moreover, it is a case of very large contracts. Thus, Su-30MKI program involves almost 300 planes, both supplied as ready aircraft and assembly sets that were later assembled in India. Totally over 150 Mi-17V-5 and about 200 Ka-226T helicopters have been delivered as well.

Meanwhile supplies of Russian aircraft are rather multi-faceted. Thus, in previous May in Goa an official ceremony was held to field the 300th squadron of Indian Navy with new Russian-made MiG-29K fighters which replaced outdated British Sea Harriers. We are glad to say that all ordered planes have been already delivered.

The most important joint aircraft-building programs being currently at various progress stages include Su-30MKI licensed production, repairs and upgrade, Indian Air Force MiG-29 upgrade, Indian Navy ship-based MiG-29K/KUB technical support as well as fifth generation

EXPORT REGULATIONS

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Ship-based MiG-29K are multi-functional '4++' aircraft designed to accomplish naval air defense missions, gain air supremacy, kill above-water and ground targets with smart munitions day and night, in any weather. The planes have improved highly composite airframe, quad redundant integrated digital fly-by-wire control system, significantly reduced radar signature, increased fuel volume and delivered ordnance, open architecture avionics.

AVIATION BESTSELLERS BY UAC

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

UAC places big stakes on supplying fighter planes given that many countries plan to have their aircraft fleets upgraded. Among the most world popular planes is Yak-130 operational trainer which has been

UAC has released an up-to-date forecast for civil aviation market development within the next 20 years. According to the forecast the volume of world air transport service will keep growing and annual growth rate account for 4.6% per year.

The leaders of the current growth rating are still the USA and China which have large domestic air transport market as well as UAE, UK and Germany whose airlines carry out the majority of international air transportation. Russia remains the country with high technology aviation and has the 7th rating position in terms of air transport service as of 2015 and growth of domestic passenger traffic is stable. Russian airlines have been adapting to changing economic conditions and finding mechanisms to optimize their activities.

All this helps us look to the future with cautious optimism and suppose that by 2020 the volume of Russian air transportation will have reached its pre-crisis level. Annual growth rate of national passenger traffic within the next 20 years is to be close to international rate and equal to 4.4%.

An important factor affecting on air transport service market is the reduction of oil prices. Within the period of 2014-2015 the lowest oil prices were in December 2015. Now there is stabilized 50-55$ per barrel price. Thanks to lower fuel price airlines can cut transportation costs and promote their growth. The latter will inevitably lead to increasing demand for new airplanes.

According to the forecast a demand for new aircraft within the period of 2016-2035 will account for over 41 thousand airframes. As a tradition narrow-body long-range aircraft with over 120 seats will enjoy the most popularity. The greatest overall demand for new aircraft is expected in Asia-Pacific region, mostly due to China. The next in importance will be traditional big markets of Europe and North America.

already delivered and being delivered to many countries. This is a top-class aircraft. It can be upgraded as a light fighter or close support plane which is highly demanded by Indian Air Force.

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

The key advantage of Sukhoi Superjet 100 is lower operational costs as compared to its 100-seat competitors. Operational costs are minimized due to higher fuel efficiency and lower take-off weight. According to the aircraft operation study, its ownership cost is averagely 15-20% lower than the other similar class aircraft. The highly competitive lease rate supported by a state guarantee of depreciation value is also worth being taken into account.

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

Meanwhile UAC keeps working on creating 150-210-seater MS-21 narrow-body aircraft family. Estimated volume of production is up to 72 aircraft per year. Today the backlog for these aircraft is 175 orders. There is also interest towards the future aircraft in foreign markets. 'We should sell internationally hundreds of aircraft. This is our goal in the civil segment', emphasized Yuri Slyusar.

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

INCREASING VOLUME OF SSJ100

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

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

/RA&MG/

MASTERPIECES BY BRAND ‘DUX’

R-73 missile: the best from the best in the world

One of the world’s oldest and the most experienced aircraft manufacturers, Russian factory ‘Dux’ which celebrates its 124-d anniversary this year, is now undergoing full-scale upgrading phase. Known worldwide for its air missiles the enterprise is going to significantly increase the range of equipment manufactured and among other things enter a world market with its new civilian products. We have had a conversation with Yuri Klishin, General Director of ‘Dux’, JSC about new milestone of ‘Dux’ and his export activity.

Yuri Klishin, Director General of ‘Dux’, JSC

— Mister Klishin, ‘Dux’ has a life history full of bright pages…

— The enterprise which traces its history back to 1893 had been an all-purpose machine builder for over 120 years. Among its great values was a capability of mastering new products in record time and putting wide range of goods into production. Suffice it to recall that during its history ‘Dux’ had been producing hardware for circus, bicycles, motor bikes, propeller-driven sledges, airship, planes, air weapons, missiles and so on. The enterprise received the habitual title ‘the first’ as it comes from its name (Latin Dux for the first). In 20th century ‘Dux’ actually became the father of a number of aircraft companies and brands such as ‘Sukhoi’, MiG’, ‘Yak’, ‘Vympel’, ‘Progress’. Today its main serial products are close air combat air-to-air missiles R-73 and R-73E as well as launcher P-72. I would like to add that thanks to performance R-73 leaves behind all known foreign counterparts in terms of reliability and safety. I may state it is based on my personal experience. According to experts this kind of missile is the most used one by air force.

— How do you describe the current stage of the enterprise in the context of its great history?

— During its more than 120-year-long history ‘Dux’ has always been known for its diversified production and multifunctional products. Today we are also on the way of full-scale increasing product range. We wish to manufacture versatile goods both military and civil ones. Now we are fully engaged in doing so. Furthermore our enterprise is extending fields of application of military products. In particular, there are plans to upgrade the missiles as a whole and their components.

Quick mastering of new products has been the main distinctive feature of our company throughout its history. From bicycles and motor bicycles to propeller-driven sledges, aircraft, engines, weapon systems and small arms. Thus, range of products is defined by state requirements. ‘Dux’ has been very quick in responding tasks and manufactured appropriate goods.

Nothing has changed so far. We are ready for a prompt mastering the widest range of products in favor of the state or customers based on the vast experience and perfect technical facilities which are being now intensively renewed.

— What current ‘Dux’ programs do you think are the most promising and important?

— Our main task is increasing efficiency of our weapons. If yesterday our priority task was a serial production, today we are extending our range of products intensely. We are planning to become developers. In its new capacity ‘Dux’ is going to be in charge of every stage of weapons life cycle: from design to disposal.

We make use of the best traditions of the best Russian engineering centers, cooperate with them, work side by side with national aircraft builders, provide ‘Dux’ designers with the newest technologies, master modern production decisions…

— Mr. Klishin, to what extent do you think has the value of ‘DUX’-made products grown in a current international climate as a deterrent for local wars threat?

— R-73 is a dangerous weapon which has been many times tested during real operations. Available armaments have always been and will be a deterrent against ill-advised actions by a potential enemy. In this regard our R-73 will provide a necessary protection and countermeasures in a menace of local war. So far the missile has been popular both in Russia and other countries.

— R-73 is certainly among the best defense masterpieces. Thus, which operational and other values made it a world blockbuster?

— It has a tested and reliable aerodynamic configuration, long life. When performing scheduled repairs of old missiles we can see they are in a perfect operating conditions, though something has to be replaced. This missile can be developed further. Thus, fitted with new hardware it can have increased combat capabilities, range, speed and power. We are aware of a number of upgrade patterns to make the best use of the product.

— What is the trend for ‘DUX’ upgrading of world-known products?

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— Our main goal is increasing weapons effectiveness. However, as recently as yesterday our priority task was to set up a mass production, but today we are making the range of products absolutely extended. We have plans to be engaged in development. Thus, in new capacity 'DUX' will be responsible for all armament life cycle stages, from development to disposal.

We use the best traditions of the best Russian engineering centers and cooperate with them, work closely with national aircraft manufacturers, provide 'DUX' designers with the latest technologies, adopt the latest production solutions. Besides, we introduce computer-aided engineering systems.

— Which 'DUX' innovations do you consider to be the most important and promising?

— Today 'DUX' is making many efforts to upgrade R-73 missile and its launcher. The missile is getting better power system, control, dependability, G force, altitude and range capabilities. The new missile is going to be 1.5 times more efficient than the previous one. The launcher being used by all front-line aircraft is also being improved.

We are engaged in developing new trends although today demand is exceeding production. Furthermore, it does not involve only missiles, but warning panels, all kinds of electric valves, high-pressure bottles, electric operating mechanisms and other items, the majority of which are components for other finished products. We are absolutely sure that manufacturing wide range of products is a kind of protection during hard times.

— To what extent is Asia-Pacific region important for the enterprise?

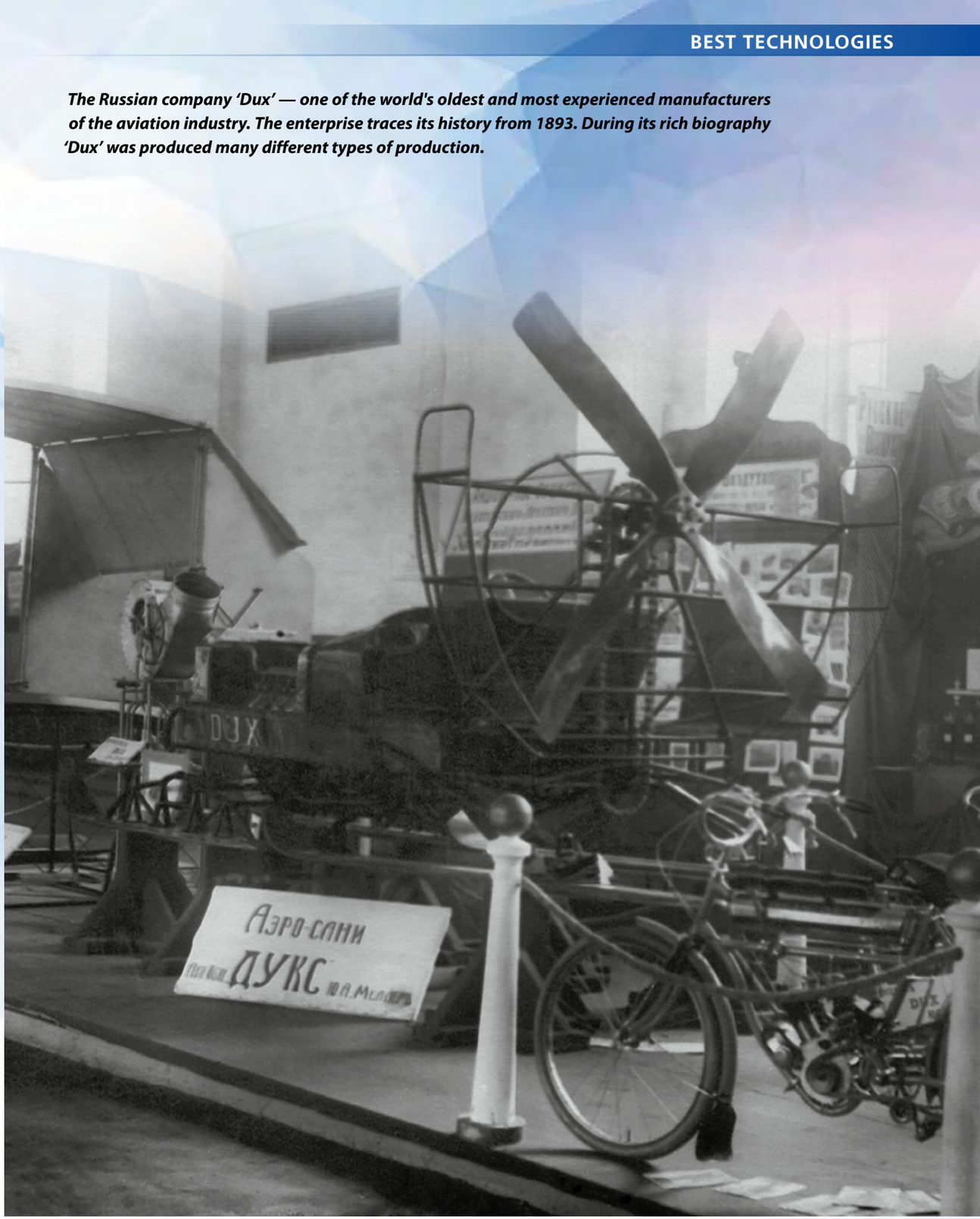
— Asia-Pacific region is the largest customer for 'Dux'-made air weapons, both export version of R-73 (R-73E (R-73EL) and its heavy-upgraded version RVV-MD. Asia-Pacific region has already received many products. We have been cooperating until the present day.

— What principles does 'Dux', JSC follow in its maintenance policy? What new is added to after-sale support and maintenance pattern?

— R-73 type missiles being within rated service and storage life with manufacturer's certificate available are involved in corrective maintenance system, which includes activities to keep products reliable, trouble-free and efficient according to standard technical and operational documents. Such activities can be done both on the manufacturer's premises and in the field with technical support available. Faults happened during a warranty period should be repaired by a manufacturer, free of charge. Faults happened beyond this period (non-warranty) should be repaired at customer's cost. By deeper testing of separate missile compartments we can surely define failure origins and perform a dedicated preventive maintenance.

— How does the enterprise ensure optimized customer unit costs, i.e. good condition and overall operat-

The Russian company 'Dux' — one of the world's oldest and most experienced manufacturers of the aviation industry. The enterprise traces its history from 1893. During its rich biography 'Dux' was produced many different types of production.



ing costs? What signature formulas are used by 'Dux'?

— To optimize good condition costs (per 1 working unit) and overall operating costs as to products with expiring lifecycle we apply a corrective maintenance done on the manufacturer's premises (manufacturer's certificate executed similar to a new product), which involves general repairs for complete recovery of a product operating life with components replaced including basic ones, and both new and recovered units used (only once).

Besides, lifecycle and warranty liabilities are similar to those of the products equipped with currently-made components.

— Today 'Dux' is implementing a large-scale program to upgrade production capacities. What effect will it have on export products in the future?

— Currently we are engaged in extensive equipment upgrading. We are purchasing new manufacturing machines, carrying out renewal and improvement of available machines, installing new attachments, let's say high-frequency spindles, holders, cutters, computerized numerical control on durable cast frames of Soviet-Russian machines.

Meanwhile, we care about each production area and buy only certain equipment with required performance. When choosing machines and machining centers we rely on

One of the principles which we follow when shaping 'Dux' development strategy is a production self-containment in order not to become a hostage of circumstances. Currently it is self-containment that often makes enterprise stable and determines its readiness for hard times, especially when supply is restrained. So we have made a decision to improve our self-containment, viability and profitability using our own developments. In this regard, as I said before, we upgrade production, renovate personnel, establish cooperation with other research institutions and enterprises, both military and civil. That means that we try to make ourselves independent on the others, and on the contrary to determine new approaches and view of development of any given product both military and civil-oriented. We wish to enter new markets not because of dumping prices but thanks to better quality products and using 'Dux' proud brand.

opinion of technologists, those who directly specifies things required for production. Generally speaking, we base upon a flexible system which helps us accomplish upgrade on a real-time basis.

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— Aircraft systems of dozens of countries are equipped with your missiles. What helps your enterprise maintain competitive capability at world market for decades?

— Our competitive capability depends on great quality and reliability of every product. In this regard a key role is played by age-old traditions of manufacturing advanced aircraft and armament. Thanks to highly qualified personnel tasks can be accomplished to a high standard. **/RA&MG/**

R-73 type missiles being within rated service and storage life with manufacturer's certificate available are involved in corrective maintenance system, which includes activities to keep products reliable, trouble-free and efficient according to standard technical and operational documents. Such activities can be done both on the manufacturer's premises and in the field with technical support available.

Missile R-73

Short range air-to-air infra-red seeking combined aero and gasdynamic control missile is designed for conducting fast-moving close air combats, killing air targets (fighters, ground support planes, bombers, transport aircraft, helicopters and cruise missiles) from rear hemisphere and on collision course. It is capable of operating day and night, under active countermeasures taken by enemy, in any climatic conditions. The missile can also destroy ground-based heat-source targets and automatic drifting balloons.

The missile can be launched by both ground and ship-based fighters or ground support aircraft.

Combat performance:	
- Launch weight, kg	105
- Length, mm	2,900
- Body diameter, mm	170
- Wingspan, mm	510
- Finspan, mm	385
- Warhead weight, kg	8
- Launch range: Max front hemisphere, km Min rear hemisphere, km	 30 0.3
- Max angle of attack, grad	40
- Max lateral G load, g	60
- Designating angle, grad	±45
- Homing eye deflection angle, grad	±75
- Target altitude, km	0,02...20
- Max speed of target, km/h	2,500
- Target G load, g	up to 12
- Warhead type	rod
- Powerplant	Single-mode solid fuel engine
- Proximity fuse	Active radar fuse / Active laser fuse

WORLD PREMIERE OF MIG-35

World premiere of the MiG-35 state-of-the art multirole aviation complex was held in Lukhovitsy, Moscow region January 27, 2017 in the production venue of the Russian Aircraft Corporation 'MiG'(a UAC subsidiary).

The event was attended by more than 30 delegations from foreign countries, such as India, Peru, China, Vietnam, and other countries of Latin America, Middle East, Middle Asia, Europe and the CIS. Deputy Prime Minister of the Russian Federation Dmitry Rogozin, Commander-in-Chief of the Air and Space Forces of the Russian Federation, Col.Gen. Victor N. Bondarev and representatives of Rosoboronexport and Federal Service for Military and technical cooperation also took part in the ceremony. The state-of the art MiG-35 fighter was presented to the general audience by Mr. YurySlyusar, UAC President; Sergey Korotkov, UAC General Designer, Vice President for Innovations; and Ilya Tarasenko, RAC 'MiG' Director General.

Addressing the audience Deputy Prime Minister Rogozin said: 'That's the first presentation of a combat aircraft in 2017, up ahead on the agenda is a presentation and the maiden flight of the narrow body passenger MC-21 airliner, in summer we plan the maiden flight of the IL-112 light military transport aircraft. That proves that the potential of combat aviation and the designers of Russian aircraft companies is capable of making high quality competitive aircraft. Russia is a great aviation state and today we 've got a serious proof of this fact'.

In his address towards the aircraft industry workers Commander-in-Chief of the Russian Air and Space Forces gave a high appraisal to the new fighter and confirmed the aircraft prospects in the Army: 'Many thanks for such an excellent creation that proved once again that nowhere in the world there are better aircraft than in Russia. This multirole fighter is capable to attack ground, sea surface and air targets and perform aerial maneuvering combat. I feel proud to say that we shall be pleased to take the aircraft — we need them'.

Commander-in-Chief of the Russian Air and Space Forces expressed his deep gratitude to the staff of the UAC and MiG Corporation for such an excellent aircraft. 'Within some time we shall replace all light fighter aircraft with this type., — concluded the Commander-in-Chief.

'Aircraft capable of resolving so many tasks — is the most modern perfect aircraft, crowning the MiG aircraft family. Designed on the proven and tested platform it'll be in demand in both national and foreign Air Forces. It seems to me that this

'This aircraft also has strong export potential, I mean, over 30 countries actively operate another aircraft — the MiG-29, and a solid infrastructure was set up in these countries to support this fighter, and there are trained specialists there. It is feasible that the industry and everything linked with operating the aircraft — all should be ready to offer our potential partners maximum required services in the modern world to support this equipment'…

Vladimir Putin

project has a bright future, so I would like to wish success to it and all of us', said YurySlyusar, UAC President, in his remarks opening the presentation of the new fighter.

Both Russian and foreign guests could watch the MiG-35 flight within the framework of the flight test programme after the presentation. Chief pilot MichailBelyaev and test pilot Stanislav Gorbunov demonstrated flight capabilities of the new fighter.

After the test flight Dmitry Rogozin informed media that in the beginning of spring a military-industrial conference will be held in India, where supplies, repair and maintenance of the Russian weapons, as well as establishing of joint ventures within the framework of 'Make in India' concept would be discussed. The Russian party should be ready to offer the new fighter MiG-35 to India, pointed out D. Rogozin.

It is interesting, that one day before prezentation there was a video conference with report to the President of Russian Federation on the beginning of the flight tests of the new multirole MiG-35 fighter aircraft. Vladimir Putin congratulated designers, engineers, workers and pilots who took part in the process of aircraft production and testing on this important occasion.

'I do expect that our army shall be considerably enhanced by this aircraft — I mean our Defence and Space Forces. But this aircraft also has strong export potential, I mean, over 30 countries actively operate another aircraft — the MiG-29, and a solid infrastructure was set up in these countries to support this fighter, and there are trained specialists there. It is feasible that the industry and everything linked with operating the aircraft — all should be ready to offer our potential partners maximum required services in the modern world to support this equipment', — said Vladimir Putin.

Russian Federation Deputy Prime Minister Dmitry Rogozin, RF Trade and Industry Minister Denis Manturov and RF Minister of Defence Sergey Shoigu also watched the demonstration test flight. The new aircraft was presented to the Head of State by the PJSC UAC President Mr. YurySlyusar, UAC General Designer-Vice President for Innovations Mr. Sergey Korotkov and RAC MiG Chief test pilot Michael Belyaev, who took the aircraft to the air at the production site of the RAC 'MiG' in Lukhovitsy (Moscow region).

YurySlyusar reported to the President of Russian Federation that the new MiG-35 fighter was designed specially to perform combat activities in areas of high intensity conflicts, in high density air defences. Strong performance is achieved due to new defence suite, new opto-location station and reduced radar cross section signature.

that production of a commercial aircraft has been planned in the RAC 'MiG' production sites. This aircraft will be flying on domestic routes.

UAC President informed that here, in Lukhovitsy, on the basis of the RAC 'MiG' production site the IL-114-300 regional turboprop aircraft assembly is being set up. 'Decisions that were taken during the meeting in your office half a year ago are being implemented, the budgeting provided to the PJSC UAC has been distributed between the companies-executors (RAC 'MiG' and 'Ilyushin'). Along with that the design bureau is preparing the documentation to be handed over to the plant. The same facility that will be used for MiG-35 assembly will be used to make 12 IL-114 per year. This will allow us to harmonize the Corporation's product portfolio and fulfill our strategic targets — to increase the share of commercial aircraft in our revenues up to 45 per cent by 2025', said Mr. Slyusar in conclusion. /RA&MG/

> ***'Aircraft capable of resolving so many tasks — is the most modern perfect aircraft, crowning the MiG aircraft family. Designed on the proven and tested platform it'll be in demand in both national and foreign Air Forces. It seems to me that this project has a bright future, so I would like to wish success to it and all of us'…***
>
> ***Yury Slyusar***

Test pilot Michael Belyaev reported that the flight was performed to demonstrate MiG-35 stability, controllability and maneuverability features. All the systems worked normally, crew positively evaluated aircraft.

In his turn UAC General Designer Mr Sergey Korotkov underlined that the RAC 'MiG' was able to design a new multifunctional system integrated with armaments and installed on board MiG-35 aircraft. Together with other systems a 4++ generation complex was designed. MrKorotkov also expressed hope for a future contract with the MoD of the Russian Federation, and high interest of foreign customers.

In the course of a video conference Vladimir Putin also pointed out

SETTING A GOOD EXAMPLE

Vladimir Karnozov

Moscow/New Delhi relationship set an exemplary case for other BRICS members as their mutual ties and interdependence grows. At the summit, held 15-16 October in Goa, heads of BRICS member states — Brazil, Russia, India, China and South Africa — declared that they have a common vision of the many problems on the global scale and scene. In addition to such declarations, the summit provided a convenient platform for India to sign new deals with Russia on most advanced weaponry.

First off, let's look into the most recent purchases New Delhi made. For the first time in history, India has acquired long-range surface-to-air missiles (SAM) in the form of Almaz-Antei S-400 Triumph. Until recently, Indian armed forces operated far less sophisticated and shorter-range systems — the S-75 of the 1950 origin (acquired in the 1960s as part of an initial weapons package from Soviet Union) and the Kub of the 1960 origin. These were medium-range SAM with two-digit firing ranges, whereas the S-400 can defeat aerial and ballistic targets at ranges of several hundred kilometers.

The second deal is that on license production of 200 Kamov Ka-226T helicopters. It is first-ever case in which India undertakes local assembly of Russian helicopters. Before that, the country bought hundreds of Mil and Kamov helicopters, starting with the Mi-4 and Ka-25 in the early 1960s, and through to the most recent Mi-17V-5 with a glass cockpit. But it never made them at home. At the same time, HAL has long been producing French designs — the Alouette II/III and their derivatives — and, currently, the Dhruv, a home-grown design based on BK-117 (a joint design from the Germans and the Japanese). Before the Ka-226T, India produced a long list of Russian designs, including MiG fighters and main battle tanks, but never helicopters.

Finally, New Delhi made decision on third consequent batch of the Project 11356 frigates, which are better known in India as the Talwar class by the name of the first such vessel. Two previous batches were of three hulls each. The current batch is of four vessels, with the first to be built in Russia, second in India using imported parts and sections, and the remaining two in India with a high degree of localization. This is also a new practice in the domain of surface combatants for the navy.

Also in Goa, the Russians and the Indians agreed to form a joint committee at a high level that would see to science and technology. According to Russian vice-premier (deputy prime minister) Oleg Rogozin, this new body shall primarily target space technologies such as rocketry and satellites. With all expediency, joint programs in space was one of the points that Russian president addressed in his remarks at the recent BRICS summit. Vladimir Putin said he considers space programs as a very promising area to joint efforts. He specially mentioned satellites purposely designed for distant probing and monitoring. Jointly, our countries can built a complete ecological monitoring system that would incorporate satellites and technologies they developed independently.

Other points that the Russian leader made in his remarks include the following. Putin stressed that BRICS members should call for resolute actions against the international terrorists and for politic/diplomatic solutions of international conflicts. The policy that focuses on application of force towards sovereign countries and other ways of harming their sovereignty shall be jointly marked as 'unacceptable'. Closer economic partnership calling for joint projects and encouraging investments across borders. Forming a joint energy agency that would coordinate various programs including those on reusable/replenishing sources of power that would be funded through the BRICS bank (with a capital base of U.S. dollar 200 billion). Encouraging

Some people in Moscow are concerned that sales of advanced defense equipment and technology to Beijing are fraught with consequences for Russia's national defense. Today, however, such fears are being talked away by the speeches of love and friendship from Vladimir Putin and Xi Jinping who seem to be all set to open a new page in the history of Sino-Russian relations.

Weapons trade (or 'military-technical cooperation' in a more Russian fashion) has been an essential part in the Kremlin's foreign policy. For Moscow, it remains an effective tool to bolster Russia's military and economic might, and maintain her prestige on the global stage. Arms trade is among very few high-tech exports that supplement Russia's primary source of hard currency income through sales of oil, gas, timber, metals, coal and other mining resources.

E-commerce territory, for which the member states should work out a common policy that would ensure no barriers for the spread of it within BRICS. Joining forces in fighting new kind of deceases, such as Ebola. 'This summit makes me happy because I saw for the first time that all of the process participants show their interest in further development of ties between them. There are new directions of our interaction appear,' Vladimir Putin commented.

MILITARY-TECHNICAL COOPERATION

India and Russia are long standing strategic partners with many joint projects in the area of defense and military-industrial cooperation. Will the two great nations stay together in the changing geopolitical and economic reality? The October BRICS summit in Goa gives a positive answer to this question. And this is extremely important for Moscow taking account of the circumstances below.

The United States, European Union and their allies strengthen the regime of economic sanctions against Russia introduced in 2014 upon the pretext of the annexation of Crimea and hostilities in Donbass. This makes the Kremlin all the more interested in cultivating friendly relationships with China, India and other independent nations.

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Russia holds a quarter of the global export market for defense products. By the volume of arms trade she comes second after the United States. Deliveries of Russian military hardware to foreign countries are worth ten billion U.S. dollars annually. Moscow uses the ongoing wars on terror in Syria and Iraq to demonstrate performance of her advanced fighting machines. This stimulates interest in Russian weapons from the side of importing nations round the world. As a result, the Russian industry has a healthy backlog of foreign orders, estimated at US dollar 50 billion.

Foreign orders provide a worthy addition to the Russian defense budget on procurement of new weapons. Together, they keep numerous enterprises of the Russian military-industrial complex occupied, and thus help the Kremlin solve social issues and ensure further progress of the military science and engineering.

In addition to earnings in the hard currency, the arms export has been an important instrument of keeping client states tied up to Russia logistically, technologically and militarily.

A BIG AND DEMANDING CLIENT

Together with Venezuela, Algeria, China and Vietnam, India is firmly in the top five customers for Russian weapons. New Delhi first applied to Moscow for weapons in 1963. The Soviet Union obliged by meeting most of the Indian requests for jet-fighters, airlifters, rotorcraft, armored vehicles, cannons and warships. Estimates made in 2014 indicated that the grand total of the arms trade between the two countries during the past fifty years totaled 57 billion U.S. dollars. Since then the figure passed the mark of 60 and is steadily approaching 70.

India, however, is by no means an 'easy' client. Historically, the country has been importing from the U.K., France and other European nations. At the turn of the century, Israel started selling into India. More recently, New Delhi began purchasing from the U.S. Noting the advent of these aggressive exporters into the Indian market, the international media started reporting on a decline in Russo-Indian trade. And yet, certain Russian sources insist that in dollar terms the Russian arms export into India has been growing. Rosoboronexport state arms trader said that in 2013 its shipments into India were worth more than U.S. dollar 3.6 billion. Beyond doubt today is the fact that New Delhi has a wider choice of suppliers and make them compete harder.

For Russia, the political, military and industrial importance of the Indian market exceeds that of any other country. Certain Moscow-based exports believe that in many ways, the Indo-Russian cooperation in the military-technical sphere represents 'ideal partnership of the two great nations.' They point out at harmony in economic ties between the Russian and Indian industries. At the same time, they say, commercial interests of weapons makers do not always coincide with the national defense considerations, — but this is not the case for India and Russia.

The Kremlin is interested in seeing the rise of new centers of military and economic power round the world provided they keep national identity and sovereignty. That set them apart from the vassals and serves of the hegemonic superpower. The rise of India does not concern Russian generals and strategic planners, as they believe Russia and India are complimentary. Moscow observes the progress and expansion of the Indian economy and military-industrial complex with pleasure. At the same time, the rise of China does not always create the same feelings within the Russian elite.

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Indian state officials sometimes call Vladimir Putin 'an architect of strategic partnership between India and Russia'. In our view, the president of the Russian Federation spares no time and effort to keep Indo-Russian cooperation growing. Meeting between Putin and his Indian counterparts take place on a regular basis. Several times a year the Indian PM and the Russian president meet to discuss various issues, including arms sales, license production and co-development.

Ritual hand-shaking and passionate speeches about mutual love and friendship might seem boring, unless you take into account that they are made in the background of the U.S.&E.U. sanctions regime. This new background gives them a new flavor and a new meaning. They testify that after the regime change in April 2014, New Delhi remains committed to Russia and her leader. Once upon a time India was under U.S sanctions, and so its leaders know what these are like.

Touching on the importance of arms trade and delivery of contractual obligations, Putin said: 'We all know that reliability in the sphere of military-technical cooperation is one of the major components of interaction in this very sensitive sphere. Should we fail one or twice, our reputation would suffer seriously… and may also bring some negative eco-

nomic consequences on us. [That's why] We must stick to our obligations and deliver them'.

NEW DELHI AS A MAIN CUSTOMER

In a number of recent cases, the Indian defense ministry has de-facto assumed and played the role of the main customer in relation to certain types of advanced weapon systems developed by the Russian military industrial complex. These include the Sukhoi Su-30MKI heavyweight multirole fighter, Mikoyan MiG-29K/KUB ship-borne strike fighter, the T-90S main battle tank, the Project 11356 Talwar-class frigates, Project 877EKM (08773) diesel-electric submarines armed with the Club-S missile system etc.

This role requires the customer to formulate requirements and specifications to new weapon systems or its customized versions. If live tests on prototypes confirm their compliance, the main customer gives Ok for series production, accepts a worthwhile number of deliverable examples and pays for them. To justify production of a modern aircraft, orders should measure in hundreds. The Indian MoD has placed orders for 272 Su-30MKIs, a quantity more than just enough to justify R&D and manufacturing costs.

In some instances, Indian orders for a specific product numerically exceeded those fielded by the Russian defense ministry. This has been the case with the T-90 main battle tank, and its customized Indian version known locally Bhishma. A further evolution of the T-72, the T-90 (EIS 1992) provided base for more advanced T-90S which was selected by the Indian army in 2001. It differs in having a more powerful — through supercharging — diesel engine developing 1,130hp.

In 2004-2011 timeframe, the Russian land forces procured 350 T-90A/AM tanks in addition to 150 copies of the initial version. This compares to 657 T-90S MBTs New Delhi procured directly from Russia's UralVagonZavod (under two contracts, for 310 and 347 respectively, signed in 2001 and 2007) and 536 made locally at the Heavy Vehicles Factory in Avadi. Today, the Indian army operates twice as many T-90s in the Russian inventory, and is likely to have four times as many at the end of the license production run later this century.

The case of the T-90 is not the only one in which India procured more pieces of equipment than Russia herself. The foreign customer bought more thrust-vectored Sukhoi fighters and Kilo-class diesel electric submarines armed with tubed launched cruise missiles. In the latter case, the Indian navy acquired ten Project 877EKMs with the Club-S system against six Project 636.3s with further developed Caliber-PL for the Russian navy. Another example of the kind is that the Indian navy operates six Project 11356 frigates compared to just two (and one being completed) in service with the Russian navy.

Major Indo-Russian defense projects tend to be of a long term nature. For instance, the initial contract for the Su-30MKI was signed in 1996, and shipments are still ongoing. The framework agreement calls for direct shipments from the Irkutsk Aircraft Plant (IAZ) of the Irkut Corporation and setting up a second assembly line at the HAL Bangalore complex. Since then the sides signed a number of additional contracts detailing the framework agreement (and more are coming).

The Su-30MKI features the powerful N-011M Bars multimode phased-array radar, canards (foreplanes) and thrust-vectoring (none of which are present on less advanced 'Chinese' version of the Classic Flanker — the Su-30MKK/MK2). The aircraft provided base for the customized versions for the Algerian (Su-30MKA), Malaysian (Su-30MKM) and Russian (Su-30SM) air force variants, all of which are now operational.

President of United Aircraft Corporation (which controls Irkut and IAZ) told the media at Aero India 2015 that out of 272 Su-30MKIs contracted so far 222 were assembled or being assembled at the HAL Bangalore complex. According to other industrial sources, shipment of the kits under already placed contracts terminates in 2017. When this author visited IAZ plant in June 2016, he was told that the negotiations were ongoing so as to increase the grand total of Indian Su-30MKIs to 'over three hundred units'.

The Su-30MKI is also remarkable as it was the first large project on which a new trend in Indian procurement practice was tried, that for 'internationalized' weapons systems. The aircraft used a proven Russian platform with a large number of technology insertions, including those from French and Israeli firms. Such an approach stimulated Russian OEMs to establish industrial partnerships with their counterparts in other countries. It has brought a priceless experience for the Russian industry, and helped it integrate into the world's community.

In a number of instances, India ordered from Russia customized equipment with parameters exceeding those for factory standard versions. Hence with, meeting customer specification involved technological and technical risks. Let's take Talwar-class frigates. India placed order for three such vessels in November 1999.

Based on the proven Project 1135 warships, these (Project 11356)

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frigates featured a completely revised weapons suite employing the Club-N missile system, A-190E artillery piece, Puma fire control system, Shtil-1 SAM with extended firing range etc. Since these were brand-new and untried, performance shortfalls and electromagnetic interference occurred. These and other issues were discovered at the stage of sea trials and required a year to be resolved. Even though the Indian navy accepted these ships with a considerable delay to the original schedule, it chose to order three more hulls since the Project 11356 proved very capable. Most of the frigates ordered in October 2016 will be constructed at a local shipyard in accordance to the 'Make in India' program.

New Delhi was the launch customer for the MiG-29K/KUB deck fighter. India has ordered 45 navalized MiGs compared to 24 Russia takes for the navy of her own. Respectively, the Indian navy got hold of this advanced type ahead of the Russian navy. Today, these MiGs form the backbone of the Indian navy's Fleet Air Arm. Sixteen airplanes in the initial batch had been provided by mid-2011 under initial contract worth 752 million dollars. This year RAC MiG has to deliver the final batch of six MiG-29K/KUB deck fighters to India under the follow-on order for 29 such aircraft awarded in 2011.

AT SEA AND IN THE AIR

Among weapons systems India procured early from the Soviet Union there was the MiG-21F lightweight supersonic fighter. The type proved long-lasting. Interacting with the local media, RAC MiG general director — general designer Sergei Korotkov emphasized that the MiG-21 was inducted into the Indian air force back in 1963. Since then, the type remains in the Indian service, with twin seat operational trainers and MiG-21UPG 'Bison' multirole fighters continuing to solder on.

The Bison represents a MiG-21bis with a number of improvements, including replacing the original RP-22 unit with the Phazotron Kopyo multimode radar enabling firing at two aerial targets simultaneously with Vympel RVV-AE radar guided missiles. Upgrades were made in accordance to the 1996 contract worth U.S. dollar 0.6 billion. The Bison is expected to remain in service throughout this and next decades.

Starting with the MiG-21F, India has been (and remains) the largest oversees customer for MiGs. It took delivery of 64 MiG-29 single seaters and eight MiG-29UB operational trainers in 1986-1989, and added eight and two more respectively in 1994 to compensate for attrition. According to RAC MiG general director — general designer Sergei Korotkov (recently promoted to the post of general designer at United

Aircraft Corporation), 'We have always supplied India with the most advanced equipment. For instance, the MiG-29 went to India before the type become available to Warsaw Treaty countries'.

RAC MiG has won contracts for modernization and refit of 63 surviving MiG-29s into the MiG-29UPG variant. The deal is reportedly worth one billion U.S. dollars. An initial batch of six aircraft underwent refit and modernization in Russia and rejoined the Indian air force in 2011-2013. These serve as specimens for similar work to be done locally on the remaining 57 airframes. Shipments of kits for local upgrade into this version are ongoing.

A group of Indian technicians were trained in Moscow. Having passed exams, they are now implementing their skills at the 11-th Aviation Repair Base (11ARB) of the Indian defense ministry. 'We are trying to expedite the process so as to complete the work on the whole of the MiG-29 inventory in shortest time possible', Korotkov says. 'We supply kits; the upgradation work is done by the MiG-qualified local technicians under supervision of the RAC MiG team working at the 11ARB'. RAC MiG is working with the local industrial partners to establish MRO in India so as to create more jobs for the locals, reduce logistic chains and cut maintenance costs.

In May 2007, the Indian navy published 'Freedom to use the seas: India's maritime military strategy'. It postulates 'the freedom to use the seas for our national purposes, under all circumstances'. Building the blue-water navy compliant to this strategy is a long endeavor. To be the primary power in the Indian Ocean, the Indian armed forces need force-projection capability. Arguably, this necessary capability is best provided by nuclear powered submarines and aircraft carriers.

The very special and exclusive nature of Indo-Russian military-technical cooperation can best be illustrated by the fact that the Indian navy is the only one in the world that operates a foreign made nuclear powered submarine. The Chakra (II), a fast-attack submarine of the Project 971I, exportable version of the Akula (Bars) class, has been made available for ten years under operational lease agreement. This case is second such in the world's history: India leased a Project 670 vessel for three years (1988-1990).

In November 2013, the Navy accepted its largest warship (and the largest ever exported) — INS Vikramaditya aircraft carrier of project 11430. She was declared completely combat ready in June 2014 when PM Narendra Modi inspected the ship after ten Indian pilots had qualified in MiG-29K/KUB deck operations.

INS Vikramaditya represents reworked ex-Russian navy cruiser 'Admiral Gorshkov' of Project 1143.4. Refit and modernization centered on enabling the ship to operate MiG-29K/KUB deck fighters. Today, local dockyards are constructing aircraft carriers which effectively represent a further evolution of the distinct Russian carrier concept.

REPAIR AND MAKING OF SUBMARINES

Visiting Severodvinsk in November 2013 to take delivery of the Project 11430 carrier INS Vikramaditya, then Indian chief of naval staff admiral Devendra Kumar Joshi promised local shipbuilders some work on repair and modernization of Kilo-class submarines. Almost two years passed, and on October 14, 2015 the Ship Repair Center 'Zvezdochka' won a contract for major overhaul and modernization of INS Sindhukesari, a Project 877EKM boat.

She arrived in Severodvinsk aboard Rolldock Star on June 15, 2016. Two months later, the submarine was inspected at the dock by the Indian ambassador, who expressed satisfaction with the work being done on Sindhukesari and the desire to have the overhaul completed as per contractual terms.

Typically, Russian-made submarines have a lifetime of 25 years with a major overhaul in between. In case the navy wants to operate a boat for a longer time, she shall be subjected to 'second overhaul'. If the hull and mechanisms look Ok, the design house and a repair plant it teams with offer lifetime extension of ten years.

Thus, India became the first foreign user of Kilo class submarines to have committed to their lifetime extension. The Russian navy has already done that on Kaluga (2013) and Vladikavkaz. Last year, the latter submarine of Project 877 rejoined the Northern Fleet following completion of the respective work at Zvezdochka. On the Pacific coast, Amurski Shipbuilding Plant (ASZ) overhauled Komsomolsk-upon-Amur which is in the process of rejoining the Pacific Fleet. The Russian navy wants all of the remaining Kilos to undergo major overhaul and lifetime extension though to 2025-2030.

Work on a second Indian boat shall commence in 2017. Further plans call for three more submarines (Sindhudhvaj, Sindhuraj and Sindhuratna) to be subjected to such a work. India wants to overhaul them locally with Russian assistance.

A circle of possible program participants was drawn last year. Public sector is represented by Mazagon Dock Limited (MDL), Goa Shipyard Limited (GSL), Hindustan Shipyard Limited (HSL) and Garden Reach

Indo-Russian partnership stands on a firm historic footprint of successful programs. Russian weapons systems dominate inventories of the Indian armed forces. But this leadership shall not be taken for granted. Aggressive exporters from other countries are keen to unseat Russia in this and other lucrative markets. As per a connection to BRICS, the exemplary case of lasting Indo-Russian relations in the highly-sensitive area of military-technical cooperation can serve a good example and specimen for other member states as their mutual ties and interdependence grow.

Shipbuilders and Engineers (GRSE). Of those, Hindustan Shipyard seems the best candidate, as it overhauled one Project 877EKM boat in the 2006-2015 timeframe. Out of private sector companies, Pipavav (recently acquired by the Reliance Group) and Larsen&Taubro were considered, with the latter having best chances to qualify for the job.

The Indian navy operates nine Russian-built Project 877EKM submarines. They were built in the 1986-2000 timeframe and later underwent modernization so as to employ the Club-S missile complex using three types of tube-launched cruise missiles.

The Indian navy lost Sindurakshak to internal explosion in August 2013. Since then New Delhi has been considering buying one or two Project 636s to compensate for that loss. Doing so would not require any measures to do with training facilities and weapons arsenals. Due to the type commonality, the navy can make use of existing wares and infrastructure.

Russia was one of the foreign countries invited to present information on diesel-electric submarines in frame of the international tender called Project 75I. This competition is about construction of six boats, of which one or two would be provided by the foreign collaborator, and the remainder assembled locally under license. Russia offered the Amur 1650, which is an export derivative of the Project 677 Lada developed for the Russian navy.

As it appears now, the selection process has been indefinitely suspended at the stage of Request for Proposals. Long expected, it has not been released yet. It seems increasingly likely that New Delhi may instead go for a larger number of Scorpene submarines to be ordered from DSNC of France and its local partner Mazagon Dock Limited.

Under the contract signed in 2005 and estimated at 3.2 billion dollars, the two companies are obliged to build six Scorpene boats including some with an indigenous AIP module. This program has been beset by repeated delays. Finally, INS Kalvari sailed for sea trials in 2016. This indeed long expected, cheerful moment prompted defense minister Manohar Parrikar to suggest that the original order might be extended.

Arms sellers in Moscow keep hope that sooner or later India would buy a number of Amur 1650 submarines from Russia, most likely after the majority of the teething problems with the Project 677 head vessel are resolved and the Russian navy takes some improved submarines for itself.

These hopes are based on the long history of Indo-Russian relations in the underwater domain. The Indian navy acquired its first submarines from the Soviet Union. New Delhi first inquired about a possibility of purchasing Russian boats in August 1964, during defense minister Y.B. Chavan's visit to Moscow. That time it took the Indians only twelve months to prepare all the necessary documents and permissions, and proceed to signing a firm contract in September 1965. The first submarine built under that deal, INS Kalvari, commissioned in December 1967. Fifty years past and… the acquisition process under Project 75I seems to take ages!

Four Project I641 boats were delivered in 1967-1969, and became first-ever Soviet submarines of special exportable design made to the specification of a foreign customer. Then, India placed a second order, for four boats of the improved I641K design. These were delivered in 1973-1975. Last of those — INS Vagli — was decommissioned in 2011, after 36 years in service.

Today, with all major dockyards of the public sector overloaded with orders, New Delhi has been encouraging the private sector to get involved into the business of constructing warships as well as doing repair and maintenance work on them. It looks increasingly likely that the private sector may one day attempt to build submarines.

CHALLENGES

India is a large country with potent, combat-experienced army. Continuing confrontation with Pakistan and competition with China stimulate New Delhi to develop armed forces and equip them with most advanced weaponry so as to achieve and maintain a quality advantage over Pakistani and Chinese military. Continuing economic growth fuels these ambitions.

Today, Indo-Russian cooperation in the defense area faces new challenges. Russian OEMs fighting for Indian orders are placed in a highly competitive environment. Firms from the U.K., France, Sweden and Germany were represented in the Indian market with their products for decades. Israel joined them in the late 1990s.

Earlier this century, the United States entered the Indian market in a big way. Sales of the North American products include the C-130J Hercules, C-17 Globemaster III, P-8I Poseidon, AH-64D Apache. Aiming to include India into a global anti-Chinese circle, the U.S.A. is prepared to sell advanced weapons systems and licenses for local assembly. North American defense companies expect to conquer a considerable portion of the Indian market. In many instances, they offer rather expensive, but the most technologically advanced equipment.

Another challenge for the Russian makers is to do with co-development programs together with their Indian partners. Local firms want to develop engineering capabilities of their own. Whereas the first such case — the PJ-10 BrahMos supersonic missile from BrahMos Aerospace joint venture — is often pictured as 'exemplary', others — Fifth-generation fighter aircraft (FGFA), Multirole Transport Aircraft (MTA) etc. — proceed too slowly.

Indo-Russian partnership stands on a firm historic footprint of successful programs. Russian weapons systems dominate inventories of the Indian armed forces. But this leadership shall not be taken for granted. Aggressive exporters from other countries are keen to unseat Russia in this and other lucrative markets. As per a connection to BRICS, the exemplary case of lasting Indo-Russian relations in the highly-sensitive area of military-technical cooperation can serve a good example and specimen for other member states as their mutual ties and interdependence grow.

/RA&MG/

AVIATION CLUSTER OF FORUM 'ARMY-2017'

At the end of this year a special aviation cluster considerably extended as compared with 'Army-2016' is due to be introduced within the frameworks of International Military and Technical Forum 'Army-2017', which is to be held from 22 to 27 August in the largest Russian Patriot Convention and Exhibition Center located in Moscow region. Aviation equipment is to be deployed at Kubinka airfield near Forum 'Army-2017' site.

The aviation cluster is to be a further development of International Military and Technical Forum 'Army' which is an integrated business platform for promoting all types of military equipment including aviation necessary both for sustaining Armed Forces of Russia and promoting the best aviation equipment at world arms market.

It is worth noting that the new aviation cluster will entirely use the unique opportunities of both International Forum 'Army' (the largest in Russia and among the largest in the world) and opportunities of the site hosting the International military expo.

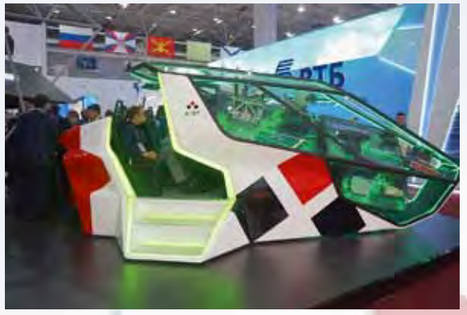
One of the tasks to be solved at Forum is searching for technologies which can be used in civilian industry of Russia including aviation. This will provide the additional prospects for the participants including foreign aircraft manufacturers.

The aviation cluster of International Military and Technical Forum 'Army-2017' is to introduce the whole range of modern and advanced military and civil aviation equipment at a static site and inflight, show technological innovations by leading world aircraft manufacturers in exhibition halls, enable to have key trends of international aviation industry discussed in the context of Forum business program.

There is a great professional interest in 'Army-2017' including its aviation cluster. Russian and foreign aircraft manufacturers focused on searching for new partners, new technologies and products, are expected to be fully engaged in the process.

A number of aviation aspects will be shown within the frameworks of 'Army-2017' main display at the exhibition. The thematic areas will include 'Military and civil aircraft', 'Engine technology', 'Aircraft weapons', 'Simulators', 'Airfield facilities', 'Maintenance facilities' etc. There is also a special display dedicated to intra-industry and international cooperation related to aerospace programs and projects.

For more details on the aviation cluster of 'Army-2017' as well as terms and conditions, see: http://www.rusarmyexpo.ru; info@rusarmyexpo.com



Among the major participants are Russian Aerospace Forces, 'Roscosmos' corporation, rocket and space industry enterprises of Russia and other countries, 'UAC', PAO, 'Rostech' and its members such as 'Technodinamika', KRET, ODK, 'Russian Helicopters' and others. An eventful flight program with in air demonstration by individual planes and air display teams is also expected. **/RA&MG/**

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	Release dates	Additional distribution
'RA&MG' № 01 (08)	February 13th	**AERO INDIA 2017** (14-18.02.2017, India, Bangalore)
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'RA&MG' № 03 (10)	March 20th	**LIMA 2017** (21-25.03.2017, Malaysia, Langkawi)
'RA&MG' № 04 (11)	April 02th	**LAAD 2017** (04-07.04.2017, Brazil, Rio de Janeiro)
'RA&MG' № 05 (12)	May 14th	**IMDEX ASIA 2017** (16-18.05.2017, Singapore)
'RA&MG' № 06 (13)	May 17th	**SITDEF 2017** (18-21.05.2017, Peru, Lima)
'RA&MG' № 07 (14)	June 18th	**Paris Air Show 2017** (19-25.06.2017, France, Paris)
'RA&MG' № 08 (15)	June 27th	**IMDS-2017** (28.06-02.07.2017, Russia, S-Petersburg)
'RA&MG' № 09 (16)	July	**MAKS-2017** (July 2017, Russia, Moscow)
'RA&MG' № 10 (17)	August 22th	**ARMY-2017** (22-27.08.2017, Russia, Moscow)
'RA&MG' № 11 (18)	September 17th	**AVIATION EXPO CHINA 2017** (19-22.09.2017, China, Beijing)
'RA&MG' № 12 (19)	October 02th	**INMEX SMM India 2017** (03-05.10.2017, India, Mumbai)
'RA&MG' № 13 (20)	October 15th	**SEOUL ADEX 2017** (17-22.10.2017, Korea, Seoul)
'RA&MG' № 14 (21)	November 04th	**Defense& Security 2017** (06-09.11.2017, Thailand, Bangkok)
'RA&MG' № 15 (22)	November 10th	**Dubai Airshow 2017** (12-16.11.2017, UAE, Dubai)
'RA&MG' № 16 (23)	November 20th	**MILIPOL 2017** (21-24.11.2017, France, Paris)
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