

# Industrial Weekly

Special edition from Russia



March 2017

## Vladimir Putin and Narendra Modi

Relations between Russia and India continue to develop the most favorable way. Both policy and the economy gives us a lot of strong impulses for optimism. Russian participation in the IESS-2017 as partner country also serves as a vivid example of our friendship and cooperation. However, we know that the leaders of the two countries form the basis for the development of understanding.

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.

Russian President Vladimir Putin and Prime Minister Narendra Modi meet regularly and often enough. They always say, including business cooperation, implementation of joint projects and programs. For example, it was clearly visible at the meeting of the leaders of the two countries last year in Tashkent, and also in connection with the first unit of NPP "Kudankulam".

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.

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## Defence Cooperation

### The Good Foundation for Innovative Partnerships

Indo-Russian partnership stands on a firm historic footprint of successful programs. Russian weapons systems dominate inventories of the Indian armed forces. The 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.



litical and economic reality? The October 2016 on BRICS summit in Goa has given a positive answer to this question. And this is extremely important for two countries.

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 jetfighters, 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.

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.

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.

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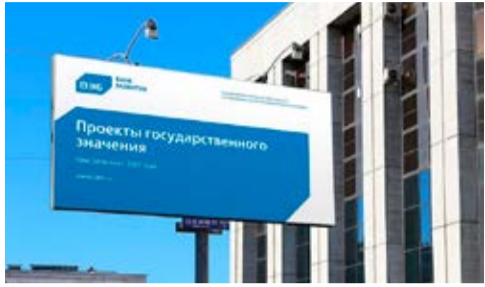
Single-Window System

To Modernize Indian  
Railways



## IN BRIEF

## 'MADE IN RUSSIA'



Vnesheconombank and the Roscongress Foundation have agreed on joint information support for the promotion of Russian exports as part of the 'Made in Russia' National Brand project. The corresponding cooperation agreement was signed by Vnesheconombank Chairman Sergey Gorkov and Roscongress Foundation CEO Alexander Stuglev at the Russian Investment Forum in Sochi. The document envisages the establishment of partnership relations as part of the development of the 'Made in Russia' National Brand concept as well as advertising, marketing, branding and communications support for the export of Russian goods and services. To this end, the parties agreed above all to build an effective communications system, conduct joint specialized events (meetings, sessions, roundtables, conferences, etc.) and to also provide mutual expert and consulting support in order to promote the interests of Russian exporters. 'Made in Russia' is the first communications project for the promotion of exports, business and culture, which includes the international media, the 'Made in Russia' logo and sectoral catalogues.

RUSSIAN AIRCRAFT  
TO FOREIGN COUNTRIES

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. 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.

## Vladimir Putin and Narendra Modi

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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 grow 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, Silovye Mashiny, Lukoil, Sistema, Rosneft and Renova'.

## Russia is a reliable partner

**This year at the VI International Engineering Sourcing Show (IESS) Russia is the official partner country. This fact is another confirmation of dynamic development of economic ties between the two friendly countries. The head of the Russian delegation in Chennai — Minister of industry and trade of Russia Denis Manturov.**

Russia is on the IESS-2017 varied exhibition of their innovations and projects. The main goal is to establish a real partnership in the field of high technology in various sectors. See more of the Russian proposals you can on the stands of the Russian pavilion and in the Russian program on exhibition.

One of the main ideas of Russia today — high-tech exports. Statistically there are indeed significant improvements in high tech production under auspices of Russian Ministry of Industry and Trade headed by Denis Manturov. Provided that in the country a wide range of

measures have been created to support suppliers of knowledge-intensive products it is fair to say that shift of emphasis towards high tech export is a steady and long-term trend.

It is important that the success of export run parallel to the improvement of the situation in the Russian economy, said Denis Manturov. Almost all key indicators for 2016 are already available, showing us that last year's results exceeded our expectations. According to the latest figures, GDP declined by 0.2 percent, which is better than we initially expected, while industrial output increased by 1.1 percent. This year, inflation continues to decelerate. In February, the inflation rate on a year-on-year basis went below the psychological threshold of 5 percent. As of February 13, it stood at 4.72 percent.

It is now essential that the Government has balanced solutions with a view to further curbing inflation, developing domestic manufacturing, industrial production and agriculture,

which in turn will lead to increases in real incomes and success in export programs.

Particularly high achievements in exports from Russia are connected with defence. At the same time, we also see growing activeness from new arms suppliers. Finally, customers' interests are shifting from buying ready-made products to modern development and production,



along with subsequent servicing, on their own territory. The results for 2015 show that Russia delivered arms to 58 countries, has partners in the military technical cooperation field in more than 100 countries. Exports in the military technical cooperation sector remain high this year. Russia orders portfolio remains high too, with orders worth more than \$50 billion.

Russia makes a major contribution to fighting international terrorism and reinforcing our allies' defence capability, including its partners all over the world. Russian companies are ready to offer its customers the most advanced counterterrorism resources. This covers not just systems and equipment for close combat, but also military aircraft, missile defence systems, rocket artillery, armoured vehicles, in short, everything that can help to fight terrorists.

A separate article in this issue of the newspaper dedicated to the topic of military-technical cooperation. There are also a number the most interesting offers for IESS-2017.

March 2017

# Hindi-Russi Bhai Bhai: Ongoing Friendship

**Ever since Russia and India established relations these two countries remain staunch allies and unwavering friends. Accordingly, economic relations between Russia and India have been developing steadily. One may say that both countries shaped a strategic partnership for the years to come. Recent years have seen especially fast growth in all aspects of bilateral collaboration. This includes hydrocarbons, atomic energy, research and development programs, military hardware, cultural and humanitarian contacts.**

Late last year, Russian President Vladimir Putin visited India. More than a dozen documents were signed aimed at enlargement of cooperation in various fields. Special attention was paid to the development of bilateral turnover of goods and commodities. This led to more active contacts between small and medium businesses.

There is a number of joint projects developed by Russia and India. These include atomic energy among other things as one of the crucial sources of energy. Energy security is critical to India's economic development. Two power generating units at Kudankulam Nuclear Power Plant are already in operation and four other units are planned to be built. Of them, construction of the third and fourth power units are to be started in the first quarter of 2017. There are also plans to assemble nuclear fuel cells in India which can further be used domestically or be exported to Russia or to third countries. Another line of cooperation in the field of energy is hydrocarbons. Russia is one of the largest producers of oil and gas. Currently import of oil covers 80 percent of India's needs in oil and 37 percent in gas. The Indian governmental Oil and Natural Gas Corporation (ONGC) is party (owns 20% of shares) to the project Sakhalin-1 so that one million tons of oil is received by India within the framework of that project. It is expected that trade and investments between both countries will increase to \$30 billion by 2025.

Considerable attention is now being paid to the issues of strengthening Russia's technological capacity and production of high-tech products in a variety of industries as mentioned above. At the same time, it is believed that the efficiency can be significantly improved by bringing in advanced foreign partners from India, leading companies in their respective sectors: information technology and data processing, electronics, mechanical engineering, medicine, agriculture, chemical industry. Such kind of business activity will create firm grounds of bilateral cooperation between the businesses of both countries, taking into account that total import to Russia makes \$1.6bn and total export to India makes \$4.6 bln in 2015-2016.

Even during challenging political and economic conditions, Russia remains a country with enormous potential for Indian market. This will not only fulfill state requirements for the speedy implementation of the import substitution program, but will also create a significant number of jobs, improve the skills of Russian specialists to quickly and efficiently adapt production to the needs of Russian and Indian customers.

Among the first priorities in developing the transfer of technologies is protection of intellectual property. In this connection Gorodissky & Partners is the first choice for Indian as well as for the Russian businesses. It is the most experienced and biggest law firm in Russia in terms of supporting foreign and



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Gorodissky & Partners (Moscow)

Russian companies including investors. In order to promote Russian technologies and goods Gorodissky & Partners is well prepared to patent inventions and register Russian trademarks in India. Likewise Indian business may patent inventions and register trademarks in Russia. Gorodissky & Partners is competent in all legal activities regarding intellectual property, from handling patent and trademark applications to supporting and protecting IP, including routine or less frequent assignments. The company provides reliable services in all above-mentioned issues. For this purpose Gorodissky & Partners also works in close cooperation with a number of Indian law firms which provide legal advice to Russian companies entering the Indian market.

Gorodissky & Partners began their professional carrier in 1959 and is now one of the oldest Russian teams in intellectual property field. Aside from its main activities, Gorodissky & Partners is active in the adjacent fields, such as evaluation of intellectual property and taxation issues because M&A deals, disposal of intellectual property often hinge on the combination of IP and financial matters. The firm is well-known worldwide. It is among the ten of the biggest law companies in Europe and has a wide network of branch offices in various regions of Russia and in Ukraine. It assists foreign companies in doing business in Russia and helps the Russian companies to acquire a platform in other countries including India.

Proper handling of intellectual property is a sound legal basis which guarantees efficient and successful international business related to investments both in Russia and India. This is especially important for the transfer of technologies.

Development of mutual business ties leads to the growth of availability of Russian goods in India and of Indian goods in Russia. Intellectual property may become an important subject to various corporate and commercial transactions, which may lead to transferring, selling, licensing or pledging IPR. Gorodissky & Partners provides full legal support in the field of intellectual property, including assisting Russian and foreign clients in participating in negotiations with contractors and discussing the terms of the deals, checking and preparing the necessary underlying documents and agreements, and regis-



**Anand Saini,**  
Regional Director,  
Gorodissky & Partners (Dubna)

tering the deals with the relevant authorities to give them full legal effect.

Being in possession of the biggest team of professionals in Russia (over 450 employees including over one hundred Russian patent

and trademark attorneys and lawyers, more than forty Eurasian patent attorneys Gorodissky & Partners has an unrivalled experience. Thus, the company understands specifics of making and operation of Russian legislation in terms of intellectual property. In order to provide information on the Russian IP law to foreign companies Gorodissky & Partners intervenes as a co-organizer and participant in BRICS Intellectual Property Forum in the BRICS countries and elsewhere.

As economic cooperation develops intellectual property becomes more and more important for business development. Presence of the Russian goods on the Indian market and of the Indian goods on the Russian market will entail the need for not only registration of intellectual property in both countries but also for possible contracts on the disposal of IP. Importance of a properly prepared agreement can hardly be overestimated. A properly drafter license or assignment agreement will ensure a seamless operation of business while the opposite is fraught with serious problems for both sides in the contract. Here again, Gorodissky & Partners may provide invaluable support for the partners in business. This echoes the Russian pledge to further strengthen its privileged partnership with India and enhance mutually beneficial economic ties.

## Gorodissky & Partners

Practicing since 1959

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# Poliplast, Ltd

**Poliplast, Ltd is a Russian manufacturer of electroplating, chemical coating and anodizing equipment. The enterprise is ready to offer its clients conducting full cycle works in electroplating shops such as design, equipment production, installation, start-up and shakedown. The company has been successfully working for 25 years being the industry's leader.**



Over all its activity life the enterprise has delivered over 70,000 items for more than 1,800 customers. It can offer its partners both electroplating and ecological equipment like disposal facilities and air scrubbers, cyanide dissolvers, water treatment systems, polypropylene pools, as well as components supply and maintenance.

The company creates new projects using its own developments with regard to industrial, ecological safety, and equipment reliability, introducing automatic control systems. Thanks to such comprehensive approach operating costs are reduced and production quality is improved.

The company's production capacities enable to manufacture high-quality technology-intensive equipment. The production process involves numerical control machines, laser cutters, thermoplastic bending and butt-welding machines. It also uses own technologies of metal coloring and welded seam rust protection. The personnel constantly undergo advanced training at leading European enterprises such as Simona AG, Mazurczak GmbH, Airtek Mueku GmbH and others.

Poliplast abilities and experience is well known both in Russia and abroad. The company-made products have been shown at exhibitions held in Kazakhstan, Iran, Belarus, Germany and Bulgaria. Electroplating lines by Poliplast, Ltd have been delivered to Venezuela and India.

Poliplast is open to cooperation by offering its partners the widest range of capabilities such as design, equipment turn-key delivery, installation, start-up and shakedown, after-sale maintenance and consultation service, implementation of joint projects etc.



## Izhorskiye Zavody Joint Stock Company keeps on developing nuclear power cooperation with Indian customers

**This year, Izhorskiye Zavody are celebrating the 295th anniversary. The enterprise was founded in 1722 by Peter the Great's order. Along their history, Izhorskiye Zavody have been a laboratory for developing new production and new goods.**

They stood at the origins of national nuclear industry in mid-20th century. Today, nuclear equipment of Izhorskiye Zavody based on VVER-440, VVER-1000 and VVER-1200 reactors is used in more than 60 nuclear power plants installed in Russia, China, India, Iran, and other countries.

India is among the key partners of Izhorskiye Zavody in 21st century. The successful nuclear power-focused cooperation with Indian partners commenced in 2002, when Izhorskiye Zavody began to make pressure vessels for the Phase 1 of Kudankulam Nuclear Power Plant. For the first two units of the plant, Izhorskiye Zavody have manufactured over 200 items including reactor vessels with internals and upper cover, pressurizers, emergency cooling and safe shutdown system accumulators, fuel storage racks, transportation hatches, gantry gates, containment penetrations, assemblies of main coolant pipeline, and so on. Delivery of equipment for Units 1&2 was finished in 2008. Then, during the whole period of commissioning, specialists of Izhorskiye Zavody performed supervision of the equipment installation and commissioning. Since that time, Izhorskiye Zavody have been supplying spare parts for commissioning and maintenance of Kudankulam NPP.

Kudankulam NPP equipped with two VVER-1000 power units is a main nuclear facility in India meeting the latest safety requirements. The Unit 1 was incorporated into the Indian

electric power system in 2013. For the first time, the Unit 2 of Kudankulam NPP reached its 100% capacity in the beginning of March 2017. The successful operating experience has caused further cooperation with Indian partners.

Currently, Izhorskiye Zavody are making equipment for the Units 3&4 of Kudankulam NPP. The Unit 3 equipment contract was signed in August 2015. The Unit 4 equipment is manufactured under a contract dated June 2016. In line with intergovernmental agreements, there are prospects to manufacture equipment for the next six units of Kudankulam NPP.

Due to the highest quality equipment, the Company remains the leader of the national nuclear power engineering. For example, today Izhorskiye Zavody are engaged in manufacturing equipment for Leningrad NPP-2, Baltic NPP, Belarusian NPP, and Kudankulam NPP.



In the end of this January, the Company shipped reactor equipment for Belene NPP (Bulgaria). The shipment consisted of reactor vessel, two pressurizers, eight hydraulic accumulators, and sixteen shutdown accumulators. Under contract, Izhorskiye Zavody have produced two sets of reactor equipment for the Bulgarian nuclear power plant.

Moreover, Izhorskiye Zavody Company is the first Russian manufacturer of VVER-1200 reactor equipment. In 2011, Izhorskiye Zavody shipped the first reactor vessel of such type to Novovoronezh NPP-2. Each reactors under operation at the plant is the first prototype of commercial VVER-440 and VVER-1000 water-cooled power reactors manufactured by Izhorskiye Zavody. The VVER-1200 reactor unit of Novovoronezh NPP-2 is the first product of AES-2006 Project. The VVER-

1200 reactor unit pertains to the latest III+ generation. The Project involves a number of design improvements ensuring better safety as per the strictest international requirements, better performance indicators, and increasing nuclear unit's life up to 60 years. In the end of this February, the Unit 6 of Novovoronezh NPP-2 was put into full-scale commercial operation.

Implementation of the new nuclear unit projects over the recent years is the result of successful engineering solutions of specialists of Izhorskiye Zavody, which combine both experience gained during production and operation of unified VVER-1000 reactor, and new technologies.

Along with developing nuclear technologies, Izhorskiye Zavody keep on fulfilling their potential as refinery equipment manufacturer as well. The Company has implemented a number of large-scale projects for the largest Russian refiners, such as Rosneft, Gazprom Neft, TATNEFT, and others. Izhorskiye Zavody have certificates of compliance with the requirements of the ASME Code, are included into Vendor Lists of such licensors as SHELL, Chevron, Axens, and are qualified for supplying products under licenses of UOP, Exxon Mobile companies. Thus, today the Company is ready to cooperate with its foreign partners in not only nuclear industry but also gas and oil refining. The highly experienced integrated research and production facility capable of conducting research, testing, design, and engineering works and having the modern pool of necessary high-performance equipment and qualified personnel is an advantage enabling Izhorskiye Zavody to look ahead with confidence.

# Russian GLONASS/GPS precision farming



Varied application of pesticide solutions and liquid fertilizers, monitoring application rate, sections location and end nozzles



Distribution unit for low-volume systems equipped with electric pump



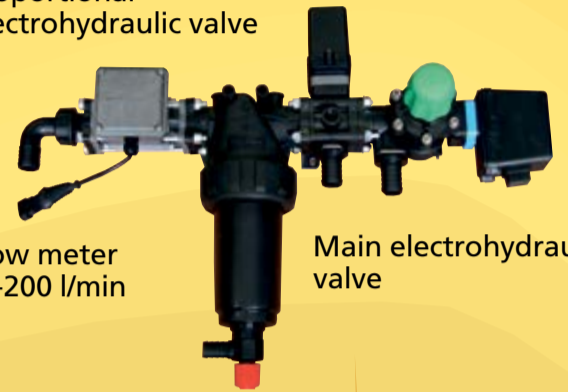
Flow meter 0.5-50 l/min



ASUR-Elektro control unit

Distribution unit for systems equipped with motor pumps

Proportional electrohydraulic valve

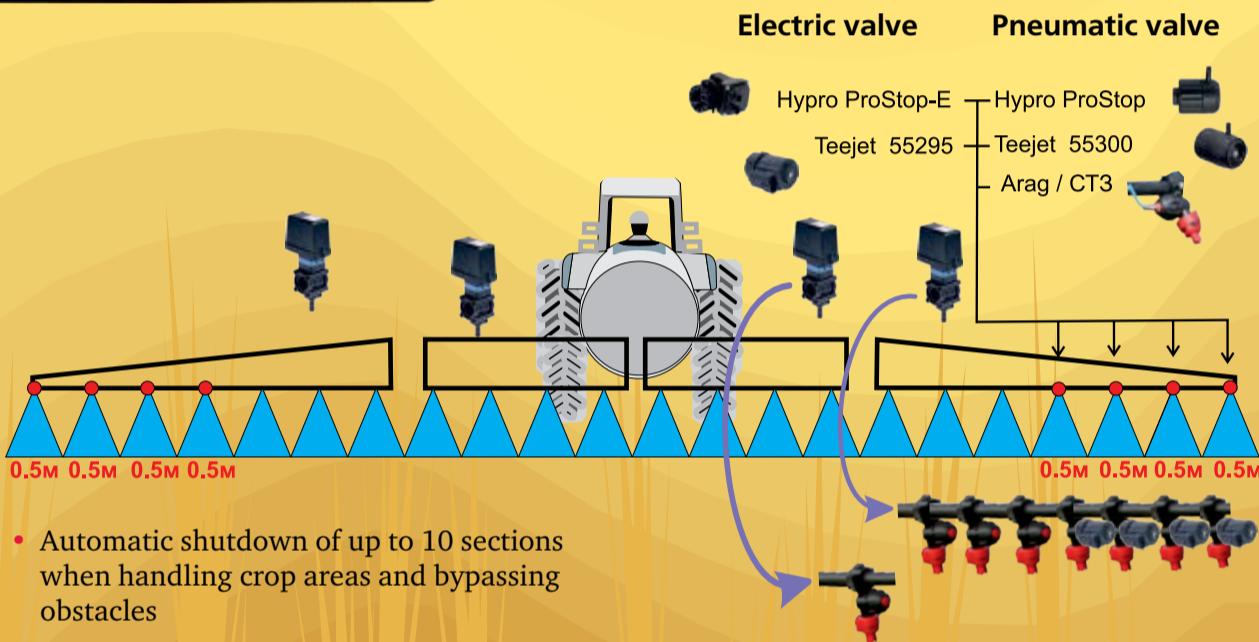


Flow meter 10-200 l/min

Main electrohydraulic valve

- Hydraulic fluid flow rate automatic adjustment to control hectare standards
- Automatic spray activation/deactivation during motion start and stop
- Automatic spray deactivation when the boom is over land

Switch and control unit



- Automatic shutdown of up to 10 sections when handling crop areas and bypassing obstacles
- Automatic independent shutdown of 4+4 end nozzles when entering previously cultivated area at parallel driving

## Varied application of granular fertilizers Seeding control of pneumatic sowing machine



'Agronavigator-Avtorul' electric maneuvering device for tractor.

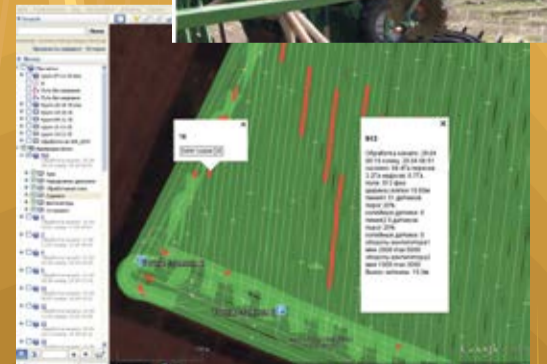


- Stand-alone mode. Driving precision 20-30cm. Receiving SBAS corrections. Driving precision 20-30cm.
- External receiver equipped with Novatel GLIDE filter. Driving precision 20-30cm with sat nav-assisted updating after turning to a pass.
- Terrastar-updated external receiver. Absolute driving precision 10-15cm.
- External receiver with RTK local exchange carrier. Absolute driving precision 10-15cm.



Specified parameter excess control with reference to field position:

- Seed flow volume through each share in two lines (up to 250 shares);
- Integrity of beam sensors and circuit;
- Sowing machine dozer shaft(s) rotation fact;
- Pressure and fact of lowering level of seeds in three hoppers;
- Two fans rotation speed;
- Integrity of hopper and fan sensors;
- Current absorbed by beam sensors in two lines;
- Power supply voltage and dependability of system connection to power supply circuit.



Dosing up to 2 types of fertilizers by sowing machines and spreaders:

- Navigation and collimating point location during soil sample extraction;
- Dividing field into cells;
- Computerized text editor job sheet production;
- Varied application of fertilizers;
- Controlling specified hectare standard when speed is changed.

# Moscow region and India

**Moscow Region Development Corporation assists in the development of Indian business in the region-providing industry analysis and consultation on state support for businesses. The Corporation has achieved significant success in business development in the region and attraction of investors. Timur Andreev, Chief Executive Officer, Moscow Region Development Corporation answers the questions of the newspaper Industrial Weekly about the principles of operation of the Corporation, its achievements and plans.**



— Mr. Andreev, how actively are business relations between Moscow Region and India developing? And how does the Corporation contribute to their strengthening?

— India is a strategic partner for Moscow Region. Recently, we have been seeing an increased interest of Indian companies to the market of Moscow region. Priority areas of cooperation for us are those involved with pharmaceuticals, mechanical engineering, production of auto components and IT technology. Currently, two Indian companies are considering the site of the industrial park 'Pushchino' to localize their production of pharmaceutical products. Pushchino was not chosen accidentally — it is a site with a powerful biological, medical and scientific potential, highly qualified personnel, where a pharmaceutical cluster is currently being formed.

To strengthen and expand our cooperation, an agreement was signed last year, concerning the cooperation between Moscow Region

Development Corporation and the Confederation of Indian Industry. Within the framework of this cooperation, we will provide mutual information and consulting support, conduct market research to expand economic cooperation and localization of productions of companies in the Moscow region and India, and organize a number of joint business events.

— **What industries and projects are the most promising in terms of developing relations between India and the Moscow region?**

— As I mentioned above, the priority areas of cooperation with Indian companies for us are pharmaceuticals, mechanical engineering, production of automobile components and IT technologies.

The pharmaceutical branch of the region is attractive for investors in many ways. First and

foremost, there is a large number of highly qualified personnel, a high concentration of specialized research institutes and universities and large number of innovative drug developments; however, there is a problem with the commercialization of these developments. Furthermore, a substantial amount of Russian pharmaceutical manufacturers produce medicines based on imported substances. The production niche of such pharmaceutical substances is, therefore, free. Also, the region needs more production of disposable medical products.

In Moscow region, the production of special equipment and commercial vehicles is present, but there is almost no production of automobile components. On February 21, a special investment contract was signed between the head of the Ministry of Industry and Trade of the Russian Federation Denis Manturov, between JSC "Mercedes-Benz Rus" and the government of Moscow region. According to the agreement, Daimler will build an automobile plant with a design capacity of more than 25,000 cars per year on the territory of the Esipovo industrial park in Solnechnogorsk district. The management company of Esipovo Industrial Park is Moscow Region Development Corporation. On the basis of this park, we are planning to create an automotive industry cluster, and we would be happy to see residents of auto components manufacturers.

In the north of Moscow region on the basis of the Moscow Physico-Technical Institute, 'Fiztehpark', a high-tech technopark has been constructed. Among the anchor residents of the technopark are companies founded by graduates of Moscow Institute of Physics and Technology. In the future, the technopark will

create an innovation and educational cluster around MIPT, within the framework of which new educational buildings, research laboratories and engineering centers will be constructed. Preliminary arrangements for the placement in the technopark have been achieved with potential anchor residents engaged in software development. These are Acronis, Parallels, ABBYY and NetCracker Technology companies. All of them are closely connected with MIPT; they are founded or run by graduates of this university, they actively employ undergraduates and graduates of Fiztekh. Of course, we are interested in the cooperation and exchange of experience, for example, at mini-laboratory sites.

— **On what principles did the delegation in Chennai form? What key accents do you want to express at this exhibition?**

— Among the participants of the delegation are representatives of the leading industrial parks of the region — 'Stupino-1', 'Koledino', 'Kotovo', as well as special economic zones — 'Stupino-Kvadrat', and 'Dubna'. 'Nordavint Group' — a resident of the SEZ Dubna and leading software developer for integrated security systems, as well as cross-platform software for Windows, Linux, MacOS, and various mobile applications, is also a participant of the delegation. The company is expanding its sales market and is interested in finding an export partner.

Industrial Park 'Stupino-1' offers project management services in the field of industrial construction and development, including 'turnkey' projects from the point of land acquisition to the launch of the finished production.

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## Land for Life

### Unique Kotovo: the Nice Region of Successful Business near Moscow

**There are many places in Russia which have good conditions for innovative production. However, there is especially an attractive places. One of these addresses — Multifunctional Industrial District Kotovo (MID Kotovo), which has several objective economic, logistic and legal advantages. Let's meet some of them!**

The integrated development project 'Land for Life' is a social and economic project for Naro-Fominsk district and Moscow region as a whole. Industrial park Kotovo (579ha) and outdoor activity park Chudesa Sveta (218ha) are now shaping up in 1,544ha territory. The company has plans to create industrial park Rozhdestvo (422ha) and residential area Ateptsevskiy (325ha). The territory is due to be developed before 2025. Such projects are significant in social and economic terms for the region and

country. Speaking in figures the project-dedicated investment volume will amount for about 73.3 bln rubles including 2.3 bln rubles tax liabilities (per year), 11.7 thousand jobs with jobs deficit in Naro Fominsk district equal to 39 thousand.

The project features vehicle access cost-effective and logistic:

- 55km far from Moscow Ring Highway (main trade areas);
- 10km far from New Moscow and 1.5km far from Naro Fominsk (the source of qualified personnel);
- 42km far from Vnukovo international airport;
- efficient logistics: federal highway M-3 Ukraina, Central Ring Road, Bekasovo railway junction, own railroad branch and transshipment terminal (up to 90 thousand tons per year).

To support industrial activities of residents MID Kotovo has a large engineering infrastructure, which includes 40MVA power supply station, two 2,000 m<sup>3</sup>/day water supply units and 27,000 m<sup>3</sup>/hour gas pipeline.

The park area is capable of containing various production facilities from 0.5ha to 50ha with 50-300m health protection areas.

So far the following companies have production facilities at Kotovo premises:

Integrated house-building factory Grad of PIK group of companies, which is among the largest Russian property developers.

Group of companies Coexpan, which is a world leader in polystyrene extrusion dedicated to food package industry.

Autobau company, which among the most advanced and high-technology enterprises engaged in production and installation of cargo-carrying and large equipment.

Kotovotara (corrugated cardboard) and Salfatex (paper products).

Today the managing company is creating every condition for future and current residents:

- Land rent and sale;
- Design and construction of production facilities under Presidential turn-key Project;
- Finance consulting in deal structuring;
- Storage service (from 1,000sq.m);
- Operation of utility network and production facility area;
- Technical customer function;
- Providing engineering, legal, consulting and marketing services;
- Comprehensive support to receive all required approvals;
- State support assistance.

The developed infrastructure is another significant factor for enterprises to be located at Kotovo premises. The owner has in advance foreseen the possibility for residents to live near their job place. This is especially interesting for



foreign enterprises. The residential area includes multi-storeyed buildings (3-9 floors), hospital, school and kindergartens at a total area of 100,000sq.m. The park has space devoted for Retail-park to be constructed. Near it outdoor activity park Chudesa Sveta has been started up, where residents and their families may spend weekends doing skiing, skating and tubing. There are plans to create skiing and go-kart schools at the park premises.

The project assisted by Moscow region government is undergoing brisk growth. 'We are engaged in developing measures to support residents, searching for investors ready to establish joint ventures and raise private investments for our residents. We are also ready to provide land for Indian enterprises with due consideration of cultural and corporate characteristics involved in production and infrastructure development, which include meal, accommodation, cultural centers, international school'.

Perhaps this is enough for the first acquaintance. Come to Kotovo and you will see that in fact everything in this place is even better!



March 2017

# Defence Cooperation

See page 1

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.

Last year in Goa Russia and India 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 build a complete ecological monitoring system that would incorporate satellites and technologies they developed independently.

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.

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-vectoring Sukhoi fighters and Kilo-class diesel electric submarines armed with tubed launched cruise missiles. In the latter case, the Indian navy acquired ten Project 877EKM 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' ver-

sion 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.

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) 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.

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. 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.

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.

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 9711, 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.

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 (Sindhuhvaj, Sindhuraj and Sindhuratna) to be subjected to such a work. India wants to overhaul them locally with Russian assistance.

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.

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!

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.



## Make in India



India and Russia are going to create a joint venture to make light helicopters in India. India needs to replace hundreds of ageing utility helicopters deployed along its Himalayan border with China as well as in Jammu and Kashmir region. This means an initial order of 200 Kamov-226 helicopters, of which 140 will be built in India as part of Prime Minister Narendra Modi's drive to build a domestic defence industrial base and cut imports, is expected to be increased.

A team will assess the Indian manufacturing facilities over the next few months. "We are keeping our fingers crossed about launching production this year," an executive at Russian Helicopters said. The executive, who did not want to be named, said the joint venture will be modelled along the lines of Brahmos, the India-Russia entity producing supersonic missiles, which which military analysts say are among the deadliest in their class.

## Moscow region and India

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The industrial park 'Koledino' is a multifunctional territory of complex development, whose residents include Metro Cash & Carry, Darwin Garden Center and Busch GmbH.

The multifunctional industrial park 'Kotovo', counts Morton, Rexan, Avon and other companies among its residents. The SEZ 'Stupino Kvadrat', one of the most successful zones in the region, is focused on creating profile clusters of instrumentation and light engineering, electronics and pharmaceuticals; as well as automotive, light, woodworking, glass, ceramic and chemical industries; construction materials, hygiene products and food products. Among the residents are LLC 'Mission Foods Stupino', LLC 'Avalon-Stupino Kvadrat', LLC 'Delagro', LLC 'Arvalus', and LLC 'Sun México', which is part of GRUMA International Food corporation.

SEZ 'Dubna' — demonstrates extremely high rates of development. The conditions now offered to the residents are among the most favorable in the region. At present, 121 residents have placed their production on the site.

This exhibition will emphasize a high-quality infrastructure development for the implementation of the investment projects.

We cordially invite Indian business to learn more about the sites.

## The Alternative to Blu-Ray

**A major Russian tech firm has announced the discovery of a new plant-based storage medium which it claims is set to make Blu-ray (and indeed other optical discs) irrelevant. The new technology utilizes principles of photonics to record and store data on a film-like medium.**

Rostec notes that its new technology utilizes principles of photonics to record and store data on a film-like medium. The layers comprise of a substance known as chromones (formed in plants), and the resulting storage device beats out Blu-ray in terms of not just capacity but also on the performance front.

Rostec is saying that the potential capacity we're talking about here is up to 1TB – 10GB of data can be stored in a single functional layer — with transfer rates of up to 12Gbps being claimed at this point. At the moment, this is still very much in the early stages of development, with the initial sample having been created, and the tech to be licensed in due course. So there's no news on pricing yet, although the company is saying that the new media will be cost-effective.

As well as the field of storage, Rostec has its hand in many technological pies including telcoms, optics, security systems, robotics and more. So while details are relatively thin on the ground at the moment, this is a development which is clearly worth keeping an eye on.



## Single-Window System

**Russian Helicopters, part of State Corporation Rostec, is working to improve services and create a 'single-window system' — a new form of cooperation with foreign customers based on a new after-sales service strategy. A pilot project is currently being implemented in India.**

The new format focuses on centralization of all processes related to after-sales services, and is the first step in providing integrated support and transitioning to helicopter service contracts covering their entire life cycle. Russian Helicopters, which designs and manufactures rotorcraft, intends to utilize existing cooperation with other Russian companies taking part in helicopter building to ensure operability throughout the full lifespan of the machines.

"For us, it is important to provide timely and quality service for Russian helicopters in India. As part of the single-window system, the holding company and parts suppliers for Russian-made helicopters will develop a complete structure of services for such helicopters for foreign operators. We will implement these acquired best practices into the global after-sales system of Russian Helicopters," said Igor Chechikov,

Russian Helicopters' Deputy CEO for Aftersales Service, during Aero India 2017 exhibition.

Per Russian Helicopters specialists, the single-window system will increase quality of service to beat foreign competitors. With the implementation of this system, operators will avoid negotiating with hundreds of parts manufacturers as they will have 'the single window' to obtain the entire range of after-sales services for the Russian made helicopters.

The system will not only significantly ease the process of setting up maintenance and repair for operators but will also reduce time to provide such services. In addition, operators

will get spare parts and services certified by Russian Helicopters.

Russian Helicopters is currently involved in the process of approving long-term contracts on supply of spare parts and provision of services with operators. The holding company is also testing a method and conditions for cooperation with parts suppliers for the Russian helicopters operated by foreign customers through the "integrated center for after-sales services".

Russian Helicopters 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 after-sale 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.



## To Modernize Indian Railways

**Russia has started a pilot project to help India increase the speed of its trains. This is the first time Russia has entered India's vast and heavily used rail network. Both sides are hoping the initial partnership will blossom into meaningful collaboration. India under Prime Minister Narendra Modi is not shy of seeking foreign help to modernize its ageing railway system where average speeds are notoriously slow.**

Russia is entering India's railways sector with an ambitious joint venture that envisages boosting the current top train speed of 120 kmph to over 200 kmph. The 575-km rail route between Nagpur in Maharashtra and Secunderabad in Telangana has been marked down for executing the pilot project. A government to government agreement in the matter is expected to be signed any time soon.

An Indo-Russian team of rail engineers has already collected data on the existing infrastructure on the route and has submitted its

preliminary report. The data was collected in line with the Indo-Russian protocol signed last October. The data will be further studied by experts of RZD International, a subsidiary of Russian Railways, in order to recommend the kind of construction services and technologies that would be required to achieve the target speed of 200 kmph.

The Nagpur-Secunderabad route has 18 major bridges with a length of more than 100 meters, 1,770 smaller bridges and culverts and 61 kilometers of speed restrictions on account curves and weak foundation of soil.

According to sources, the project will entail a complete overhaul of the existing infrastructure and technology including re-alignment of tracks, treating the earth bed where the soil is loose, digital technological communication network for the entire section, instead of the existing radio communication. A number of safety measure for averting collision with other vehicles and people and animals have also been suggested. They include overpasses, anti-collision and anti-ram

barriers, automatic alarm systems and protective fencing along the length of the rail track.

The Gatiman express that runs between Delhi and Agra is currently India's fastest trains that runs at 160 kmph. The Indian Railways currently do not have coaches that can run beyond this range. Therefore, it has been envisaged that railway coaches that can move with a speed of 200 kmph or above, will either be imported manufactured indigenously through a Transfer of Technology (ToT) agreement with the chosen vendor.

Railway agencies from Japan, Germany, Great Britain and France are already involved in Indian Railways modernization drive. This would be the first time that a Russian company would be directly involved in a Railways project in India.

Indian Railways is Asia's largest and the world's second largest rail network carrying more than 22 million passengers and more than 3 million tons of freight every day. However, India has been struggling to cope up with the robust technological advancements other countries have achieved in this sector.