

Industrial Weekly

Special edition from Russia

April 2012



ПРОМЫШЛЕННЫЙ
ЕЖЕНЕДЕЛЬНИК

BRICS Format

Global platform for Russia



BRICS countries concluded their forth summit in New Delhi. BRICS is a format which has long provoked a great deal of skepticism among commentators. In the West it is viewed as an accidental and artificial association. But despite those doubts, which at times are pretty well-grounded, the BRICS countries regularly get together, attracting more and more attention from the rest of the world.

BRICS is driven forward by the general situation in the world. Recipes for resolving international issues

offered by the West either don't work or produce the opposite effect. There is a demand – so far rather

vague – for alternative solutions, and as the cores of big regions, BRICS countries are often best-situated to offer a comprehensive global vision.

While preliminary talks on this matter are starting to make small waves, so far this ambition is just declaratory. BRICS has not yet realized its full potential as an influential international

entity. Last year, BRICS lost a good opportunity to position itself as very important grouping when it failed to come to a consolidated position on the appointment of a new IMF managing director after Dominique Strauss-Kahn resigned amid scandal. All the states of the group preferred to make separate agreements with the United States and Europe on the terms of support for their respective candidates. BRICS demonstrated rare unity on the Libyan issue when it was voted in the UN Security Council in March 2011. However, their positions diverged on Syria early this year. The current consensus on Syria achieved in India is very vague. Moreover, the seemingly indifferent position by Russia and China when it comes to extending the United Nations Security Council (UNSC) to include Brazil, India and South Africa has angered those countries. While in New Delhi, Russian President Dmitri Medvedev said that they are strong candidates to join the UNSC. However,

Medvedev can show public support for the move because he knows that China will oppose India in any case.

All BRICS countries really enjoy almost full sovereignty. They have broad latitude in their actions, rooted in their material capabilities, and they are not restricted by formal alliances. There are not so many states in this category. European countries, for instance, do have an economic foundation but are often much more tied up politically. The question is whether this conceptual community is enough to create a framework that can be filled with economic, geopolitical and ideological content. This process is slow and not destined to succeed, but the ability of BRICS to develop in the face of universal skepticism gives cause to hope that it will continue to evolve. In any case, BRICS countries still have plenty of room to maximize their great potential.

Fyodor Lukyanov, RT

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HANNOVER MESSE 2012: Best of the Best

Irina Weisshaar: "The Hannover fair of innovations is strengthening its worldwide significance"



At the end of April in Hannover (Germany) a regular world's largest industrial fair HANNOVER MESSE 2012 will take place. For more than half a century this worldwide review of innovators has been bringing together the leading representatives of the world's technological elite. For several decades Russia has

been a permanent participant of HANNOVER MESSE. The scale of the Russian exposition vary from year to year, but the main point remains the same: This venue is one of the most convenient venues to familiarize yourself with the international experience and to promote your own products and technolo-

gies to the European and world markets. Irina Weisshaar — the head of Deutsche Messe AG representative office in Russia and CIS — speaks on singularities of HANNOVER MESSE and the Russian participation in it.

— Mrs. Weisshaar, a full penetration of digital technologies, according

to some analysts, in the end, would negate a need in exhibitions. Do you agree with this statement?

— Of course, not. This is an erroneous forecast. Life is certainly changing. But nothing will ever replace human interaction. The Internet has influenced the process of preparation and visiting the exhibition.

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Evgeny Ushakov, Director General of IDGC of Center and Volga Region, JSC, — one of the largest and perspective grid companies in Russia, in the investors' opinion, — answers the questions of "Industrial Weekly".

— IDGC of Center and Volga Region has been introducing

IDGC of Center and Volga Region: New Technologies Age

Evgeny Ushakov: "We are ready to invest in innovations"

actively an innovative component in its production activities lately: alongside with a large-scale modernization of electric grids, the Company performs the work in the framework of the innovative development program approved till year 2016...

— Yes, it's true. There are five main components in the program's structure: R&D (research and development work), the innovative equipment and technologies introduction, development of IT-infrastructure and information engineering, human resource development, and also the system improvement of the business processes management.

Totally, currently we are working at over 30 projects of R&D. We attract to the work the leading Russian HEIs (higher educational institutes), scientific research organizations, and also producers of the equipment.

— Can you give any examples of companies which are already your partners as of today?

— We cooperate, for example, with the leading Russian universities. So, an exploitation and certification of concrete composition, modified by dispersivity of multi-layered carboniferous pipes has been made in the Udmurt Republic. Individual microcomputerized protection

devices against single phase-to-earth faults for 6-10 kV grids are being developed and planned to be introduced in Ivanovo. A rapidly erected pole for power transmission lines with the voltage of 35-110 kV and a lightning current recording system under strokes to elements of 35-220 kV OL has been developed together with the largest industrial enterprises of Russia.

— Are you ready to support only the Russian scientists and producers of the equipment?

— We are ready to invest in innovations, if they are of a strategic interest for us. Now we are facing an objective to fulfill efficiently the

renewal program of the electric grid funds, that's why we are open to new ideas, independent of geography.

— What developments and scientific achievements can be interesting for IDGC of Center and Volga Region?

— It can be new systems of diagnostics and monitoring of the grids, unique devices, equipment, materials with more perfect engineering specification and characteristics — everything, that shall help to increase energy efficiency, decrease losses under electric power transmission, to improve the quality of electric power, to increase safety of work in the grids.



REFERENCE

Joint-stock company "Interregional Distribution Grid Company of Center and Volga Region" (IDGC of Center and Volga Region, JSC) — is a subsidiary branch of the largest energy company in the Russian Federation — IDGC Holding, OJSC, a stake of the state in the stock capital of which amounts to 53,69%. IDGC of Center and Volga Region, JSC is the main supplier of services on electric power transmission and technological connection to the electric grids in 9 regions of RF. The energy company operates 1 548 substations with the voltage of 35–220 kV; 263 391 km of power transmission lines; 59 621 DS (distribution substations) and TS (transformer substations) 6–10 kV. Web page: www.mrsk-cp.ru.

Naval Cooperation

New submarines for Russia and India



Dmitry Medvedev said the development of military organization will remain a state policy priority, and substantial funds will be channeled for national defence until 2020: at least 2.8% of Gross Domestic Product. Russian President said that on 20 March 2012, when making a speech at an expanded meeting of the Defense Ministry Board. Substantial funds have been allocated for the implementation of the program: over 23 trillion rubles, which exchange for US dollar 800 billion.

"By 2015, the share of new armaments must increase to 30 percent, and by 2020 — to 70 to 100 percent," Medvedev said.

In late 2011 – early 2012 substantial contracts were been placed for naval equipment. The Defense Ministry firmed up orders for four Project 955A Borey-A strategic missile underwater cruisers and five Project 885M Yasen-M cruise-missile submarines with atomic propulsion. In early 2012 decisions were made for refit and modernization of the Project 1144 nuclear powered cruisers and Project 949A cruise-missile submarines. By rough estimates, these commitments combined amount to some US\$10 billion and represent highest-ever orders for naval equipment placed by the Kremlin after collapse of the Soviet Union.

As a result, the share of domestic military orders in the order portfolio of Russia's largest naval equipment enterprise, Sevmash, has risen above 70%. During 2011, another prominent company, the Admiralty Shipyards, laid down three improved Project 636 diesel-electric submarines for the Russian navy's Black Sea fleet. The Defense Ministry intends to increase the order up to six hulls.

The Project 955 and 636 are developed by St. Petersburg based Rubin, which is also responsible for design package on modernization of the Indian navy Project 877EKM submarines, ten of which are in service.

In February the Russian navy confirmed its interest in further improved Project 677 Lada diesel electric submarine with independent air propulsion (AIP). Andrei Dyachkov, General Director at "Rubin" Central Design Bureau for Marine Engineering, the submarine developer, says bench testing of a technology demonstrator unit is complete. The purpose was to attest technologies on generation of hydrogen on-board the submarine through reformation of diesel fuel. The hydrogen is fed to an electrochemical generator charging the submarine's batteries. Next step is construction of a full-size AIP in 2012-2013.

The theme of AIP was also addressed by Russian navy commander Admiral Vladimir Vysotsky. In an interview with local journalists, he said that the head vessel of the Project 677 Lada, the Saint Petersburg, continues operational trials. The commander stated that its propulsion system needs further improvement. So that the next two hulls, the Sevastopol and the Kronshtadt being completed

at the Admiralty Shipyards, will use a redeveloped propulsion system featuring an AIP subsystem.

"Our key task is to create non-nuclear submarines with locally-developed air-independent propulsion. We have already achieved some positive results. [AIP] development goes at high speed, even above our expectations". The Admiral has been referring to bench prototype under tests at Rubin. The bureau experiments with reformation of diesel fuel so as to eliminate the need in onboard storage of hydrogen for fuel cells.

Vysotsky further said completion of the follow-on Project 677 hulls is "worth it" since the submarine has some potential for further improvement. "If we install the new propulsion into the Lada, it will get new functions and capabilities, and, in the end, we will get a good ship". First example of completely operable AIP shall be ready for installation into submarine hulls in 2014. The commander concluded that the new achievements in AIP development "give boost" to "accelerated materialization" of the respective non-nuclear submarine program.

The head vessel of the Lada project was accepted by the Russian navy in May 2010. Later this year the Saint

Petersburg resumes operational trials in deep-water oceanic testing ranges. Export version of the Lada, dubbed the Amur 1650, is completing for the Project 75(I), under which the Indian navy is seeking to procure six advanced non-nuclear submarines. Compared to previous Project 636/877EKM designs, the newer submarine has smaller displacement, at 1,765 tons, resulting in lower signatures, further lowered through use of electrical motors on permanent magnets. At the same time, the submarine carries much more powerful sonar, Electropribor-developed Lira with quasi conformal antennae.

Russia hopes to sell India more submarines and support them through a new dedicated 50/50 joint venture (JV) which is being established. The JV would render services to the Indian navy in relation to Project 971 nuclear powered and Project 877EKM diesel submarines. Russia's Rosoboronexport state arms vendor is offering India the Amur 1650, a Project 677 export version. If the Russian proposal is accepted, lead vessels for India will be constructed at Admiralty Shipyards in St. Petersburg or Sevmash in Severodvinsk.

Vladimir Karnozov

april 2012

Airport Economy

Mikhail Poluboyarinov: «Russia must become world transport center»

Improvement of airtraffic market is tightly connected with the modernization of airport infrastructure- sector that doesn't cause a lot of interest among private investors because of the range of investing and long term of payback of these projects. Russian Vneshekonombank as a national bank of improvement actively operates in renewing this sphere. Deputy chairman of Vneshekonombank Mikhail Poluboyarinov told us about the peculiarities of financing similar projects, their condition and perspectives.



— Mikhail Igorevich, tell us, what is the role of the bank in the modernization of home airports? How many such projects does Vneshekonombank have?

— Airports and their companies all over the world influence economy and employment creating almost 1% of global GDP. The state of surface objects of aviation infrastructure of Russian airports, their flow capacity is unsatisfied and is characterized by significant wear and doesn't correspond to economic needs and the needs of flights' security. The underdevelopment of industrial infrastructure of airports restrains the development of the market of transport service and the realization of transit potential of the country.

Russian airports lag behind in service and accompanying services, the level of business processes, regularity and frequency of flights, in effectiveness of service, in the level of aviation technologies, cooperation with airlines and logistics operators. Airport infrastructure doesn't secure the tasks that increase transit of goods and people, reducing transport charges, increasing availability of services, competitiveness, realization of transport potential, security level, steadiness of transport system, increment of mobility of population and cargo transportation.

Airport economy of Russia longs for financing. According to different appraisals, up to 80% of an aerostation infrastructure needs modernization. At the same time, in the country preconditions for realization of projects in the field of an airport infrastructure exclusively at the expense of private investments haven't ripened yet. It is difficult to involve the private capital for development, as investors can't be up to the end assured of protection of own investments and don't risk therefore to accept participations in capital-intensive projects. Therefore abundantly clear is that without active participation of the state a little dynamical process of reconstruction, modernization and development of an airport infrastructure is impossible. Accordingly, many projects, for example, such as the Sheremetyevo-3, simply never would take place without state support, including in the name of foreign trade and investment bank.

Priorities of the work of Vneshekonombank as the developmental bank — removal of infrastructural restrictions of economic growth and development of the major industries. Financing of projects of modernization and reconstruction of the air-

ports — one of directions of the work of the bank. On a share of aviation transport projects in a broad sense, that is the projects expressly or by implication connected with aircraft (the infrastructure of the airports, aircraft engineering and air service), is necessary an order of 15% of a cumulative portfolio of Bank of development. Thus our investments are carried out on the certain strategy coordinated with the government and the profile ministries.

— On what conditions does Vneshekonombank give credits?

— Though we have mixed structure of state funding, almost any project is financed at the expense of extra money. Another matter is that as Vneshekonombank — the state corporation, as a matter of fact, the large state bank having a country rating, we possess possibility to occupy in the market, including international, more cheaply, than other bank organizations and to finance on slightly best conditions, than in commercial banks.

But, I will underline, it is essential at all: simple comparison of our interest rates with conditions of granting of extra means commercial banks will be of no use and it is not correct, as we work on absolutely different «investment fields». Where it is more important that Vneshekonombank finances projects, to which commercial banks don't go at all, without being ready to take up design risks, and also gives credit resources for terms longer, than commercial banks are capable.

Now in Russia a few the commercial banks, ready to give money for infrastructural projects with horizon till 10-15 years. It is an objective reality. If to tell about conditions of our credits terms vary from 7 till 15 years, and interest rates — depending on project economy, but as a whole they 10 times less, than those market rates on which finance even the best Russian corporate borrowers. Certainly, the question on necessity of realization of projects solves the government; hasn't put bank to define, where also what airport is necessary.

But we analyze the project, we watch the volumes of passenger traffic, we calculate a monetary stream and we do a conclusion about real requirements and the size of the bank credit, and differently mean The aforesaid, however, doesn't cancel that we also consider social aspects in the practice. Probably, that I will tell, will seem contrasting with the previous statement, but as though we strictly adhered to a break-even prin-

ciple at decision-making on financing of this or that project, the status of the state structure obliges us to take into consideration social factor, let it and isn't defining. But it is important, therefore we each time look, what quantity of workplaces will be created thanks to the project realization, what value it has from the point of view of a social and economic policy in region.

Here, for example, by consideration of the civil-engineering design of the new terminal in Vladivostok we proceeded not only from economic feasibility reasons, but also taking into account the planned reception by a city of summit APEC in 2012, and also understanding of social loading of the project from the point of view of development of region and necessity of maintenance of transport availability of the population. As a result, despite, we will tell so, difficult economy of the project, the decision to finance this project was accepted. Certainly, not all is measured by monetary return; the government proceeds including from social interests. It can subsidize if necessary the project with that or otherwise, but anyway bank examination very seriously makes sober.

The airport is always a growth point, but the budget too not infinite, and the government reflects, the growth point in this point is how much priority. In it our dominant role as adviser: to tell to the government truth that it is possible to make on reflexivity principles and that won't turn out. Therefore we have an agreement with Ministry of Transport on investment consultation.

Certainly, authorities solve the question about the necessity of realization of the projects; it is not the bank's affair to define where and airport is needed. But we analyse the project, observe passenger traffic, calculate cash flow and conclude about the real needs and rate of bank creditor the money will go irreversibly. Not everything is measured by money; authorities proceed from social interests. It can if needed subsidize the project by any mean, but in any case bank's expertise sobers up. Airport is always a point of growth, but the budget isn't infinite and the authorities think about how much priority has the point of growth there. This is our main role as a consultant: to tell the truth what one can make basing on the principles of recurrency and in what one will fail.

That's why we have a treaty with Ministry of transport in investment consulting.

In this matter I will mark that it is principally important for the bank what «cumulative» effect the project will have. Without any exaggeration one can say that Vneshekonombank works as a catalyst of all process of creating new terminal when significant development of attendant business, places for the activities of small and middle entrepreneurs when the chain of participants involved in the project is constructed — suppliers of building materials, equipment, service staff and others, creating new working places.

— What is the current status of more significant projects?

— As you know terminal «D» in «Sheremet'ev» is being planned. It is first transport-transfer unit with the throughput of 12 mln passengers a year. The realization of the project allows to bring minimal range of docking time to the best standards of the world's best hubs, having reducing practically twice the time of passenger's transit. Main perspectives of «Sheremet'ev» now consist in further increasing of throughput of terminals and building of third airtrip. Ministry of transport tasks and now it becomes more clear. Because of this the question about involvement of management company in «Sheremet'ev» airport which will take all investment obligations in building new big complex upon itself.

Sochi airport is taken into operation. Sochi project required both big technical alterations and sanitation of finance situation but then developed quite OK. Its peculiarity consists in the fact that service requirements of the Olympic Games define such peak throughput that would not be needed in a normal state of airport. Apropos, I will remark that in context of the preparation to the Olympic Games Gelendjik airport that was seen by Sochi airport also interested the bank.

International terminal of «Kol'tsovo» airport was financed by the bank by the sum of 2,25 billion rubles and was brought into operation to the SHOS summit in 2009. We scrutinize «Kol'tsovo» airport as one of Russian hubs where quite big passenger traffic is concentrated including transit, and there we see perspective to further development of the project.

Project of building an international terminal of the airport in

Vladivostok comes into a separate conversation. This airport will accept a conference of APEC next year that's why the terminal must be taken into operation by the end of third quarter of 2011. But I want to mention that the main task of the project and our task is to provide Primorsky edge with high-quality rommy and comfortable modern airport.

The volume of Vneshekonombank part is more than 2,3 billion rubles while the total cost of airport is 5 billion 813 mln rubles. The airport will be put into operation in a few months. Terminal of total area is about 50 thousand square km and throughput of 3,5 mln passengers a year will correspond to international standards and requirements and will replace current power of airport in serving international and internal flights.

As for «Pulkovo» airport, there is active movement: first realization phase began after conducting necessary preparatory activities.

— Could you tell us about financing modernization of «Pulkovo» as a lot of foreign investors are interested in it?

— «Pulkovo» is a unique project. There first in history of creating projects of airport infrastructure arose international interest of financial institutes: creditors are EBRI with European investment bank as the leaders of the pool of foreign creditors including merchant banks and from Russian part-Vneshekonombank. Credit resources for fulfilling the first phase of the project were divided in two parts: a half of Vneshekonombank in rubles, a half of foreigners in currency.

— Thanks to chosen plan the problem connected with currency risks was reduced. We look at this project with great optimism and suppose it to be an example for Russia. I think that the given transaction was called «The best transaction of 2010» in a sphere of developing infrastructure of airports according to Project Finance.

— Mikhail Igorevich, in what new projects is Vneshekonombank interested and will it be so active in future?

— As for plans for the future, now we are conducting the talks about possible variants of our participation in the reconstruction of the airports in Nuzniy Novgorod and Samara («Kurumoch»). We have also other conversions that's why the bank of Development has a lot of work.



Singapore Airshow 2012

Russian aircraft's Southeast Asia debuts and prospects

The recent Singapore Airshow 2012 involved 820 companies from 35 countries of the world, which makes it Asia's largest international aerospace event (known as Asian Aerospace before 2008). Almost all the world's leading manufacturers of civil and military aviation systems, as well as aircraft maintenance, leasing, financial, service and other companies dealing with development, purchase, operation and maintenance of civil and military aircraft. A considerable part of the exhibition area and business programme at Singapore Airshow 2012 was connected with Russian companies. And though the actual figures of our achievements in Singapore have not been summed up yet, we can already speak of the general business success of Russian aircraft manufacturers. The example of the Irkut Corporation, which is part of the United Aircraft Corporation (UAC), proves that we are capable of promoting in the region not only military, but civil aviation projects as well.

Though the Republic of Singapore is known to be small in size, Singapore Airshow is definitely not a small and backwoods event with its 24 hectares of the total exhibition area, 200 chalets and 90,000 square metres of static display area. The scale of the salon is illustrative of its role. Remaining as a national project (with the Civil Aviation Authority of Singapore and the Defence Science & Technology Agency acting as the organisers and Singapore Airshow and Events Pte. Ltd. as the technical operator), the exhibition has become a key regional showcase, where at least ten nearby countries and the whole Southeast Asia find military technological solutions for their air forces and air defenses.

The prospects of military and aviation programmes in the region make the level of competition at the Singapore biannual exhibition extremely high. The more so in those segments of the market, where until recently we had not been offering cutting-edge systems. This concerns, for instance, mid-haul airplanes. Now we have something to offer in the sphere. That is one of the reasons why Irkut's presentation of the MS-21 airliner drew a wide response, first of all, in the international business community.

MS-21 passenger airliner

The MS-21 was presented at Singapore Airshow 2012 in a special pavilion, where the public could see for the first time a full-scale mockup of the cockpit and part of the passenger cabin.

As was mentioned by UAC President Mikhail Pogosyan, MS-21 is "a major UAC civil aircraft project". The MS-21 project is actively supported by the Russian government. In 2011, the aircraft's pre-design was completed, and the MS-21 was included in the UAC lineup of civil aircraft along with the Sukhoi Superjet-100. As a result, the experience gained due to the Sukhoi Superjet-100 programme was harmonised with new technical solutions for the MS-21. Both air-

planes will have unified after-sales service. Sukhoi Superjet-100 will create a basis for the promotion of MS-21s to the global market.

According to Irkut President Alexei Fyodorov, airlines are currently ordering the new aircraft in two versions: the MS-21-200 with 150 seats and a range of up to 3,500 km and the MS-21-300 with 180 seats and a range of up to 5,000 km. He also said that the analysis of the existing contracts had shown that Irkut should launch the production of the MS-21-300 variant first.

As opposed to the existing airplanes, many components of the MS-21 will be made of carbon plastic. To date, the developers have determined the airplane's final configuration and design and proceeded to detailed design. The electronic design drawings are being passed to the manufacturing plant in Irkutsk, which is performing preproduction works.

"The principal suppliers of the MS-21 programme have already been chosen, now the contacts on deliveries of complete units and parts are being finalised," said Fyodorov. "Many Russia's partners in the Superjet-100 programme will also take part in the MS-21 programme." There are presently 235 orders for MS-21s, including firm orders, options and agreements of intent. The market demand for MS-21s is estimated at 1,000 jets, including those for the Commonwealth of Independent States and Southeast Asia. The first serial airplane will be produced in 2017.

By the way, Irkut and Lufthansa Consulting announced at Singapore Airshow 2012 that they would jointly promote the MS-21 in the world market. As reported by Irkut, the main areas of cooperation will be improvement of marketing and sales, elaboration of promotion instruments and assistance in the development of a client-oriented after-sales service system that would meet the requirements of the world's leading airlines.

Yak-130 trainer/light attack aircraft

Irkut views Southeast Asia as one of the most promising markets for its new Yak-130 combat trainer. Its model was displayed at show in Singapore.

Speaking to the press, representatives of Irkut noted that in late 2011 the Yak-130 programme received new impulses for its further development. In December, the Russian Defence Ministry and Irkut signed a contract on the delivery of 55 trainers in 2012-2015. According to Defence Minister Anatoly Serdyukov, the jets "will facilitate the training of Russian pilots for mastering new generation fighters on the eve of their acquisition in bulk." (In December Industrial Weekly gave a detailed account of this most important event for the Russian air force). Another important achievement was the delivery of 16 Yak-130s to Algeria, which began in November 2011.

Russia is a leader today in the market of transonic trainer jets for advanced training. The



market has been growing because aircraft of the previous generations (like Britain's Hawk) considerably fall behind the new generation 4+ and 5 fighters. In 2011, Irkut unveiled its plans to further improve the Yak-130. The company's president, Alexei Fyodorov, pointed out enhancement of the Yak-130's combat performance as a priority line of development. Mr. Fyodorov believes that many countries involved in local conflicts or apprehending them would like to have light attack aircraft, equipped with about three tonnes of armament and capable of using guided weapons.

The Yak-130 is presently capable of using smart bombs with a caliber of up to 500 kg, dumb bombs and missiles. The jet is also fitted with R-73 air-to-air missiles, intended for close engagement at ranges of up to 20 km. The designers are also considering the capability of equipping the aircraft with an optical-electronic sighting system and radar. An in-flight refueling system is also being considered.

Among countries that showed interest in the aircraft, Deputy Director General of Rosoboronexport Victor Komardin named Malaysia and the Philippines.

In November 2011, Malaysian Minister of Defence Zahid Bin Hamidi visited the Irkutsk Aviation Plant, a subsidiary of the Irkut Corporation, to familiarise himself with the production of Yak-130s. The minister remarked: "There is a good probability that we will work with this aircraft. The details will be discussed."

Experts of Russia's independent Centre for Analysis of World Arms Trade also name among potential customers Vietnam, Kazakhstan, Belarus, Ukraine, Venezuela, Syria and a number of other states in Africa and Latin America. The overall mid-term demand in Yak-130s is estimated at 450 jets (in favourable market environment - up to 500 airplanes).

As reported by Alexei Fyodorov at Singapore Airshow 2012, the Philippines are thinking of buying six to eight Yak-130 combat trainers. He said: "They have prepared an arms programme till 2016 that provides for procurement of new materiel." Fyodorov also noted that the Philippines did not have a single jet in service at the moment and the country had been purchasing decommissioned U.S. fighters before. However, he added that negotiations could take a lot of time. Besides that, talks on supplies of Yak-130s have begun with Bangladesh. According to Fyodorov, the parties are discussing a batch of up to ten trainers.

As was mentioned by the president of Irkut, the interest of foreign customers to the Yak-130 has increased after it entered service with the Russian Defence Ministry. According to his estimates, many militaries of the world have begun a new cycle of rearmament with aircraft trainers. "The market is large enough for everyone," he said. In general, the company estimates the market capacity of this class of aircraft at 2,000-2,500 units within 20 years. "We intend to have a 25-30% share of the market," he added.

The main rival of the Yak-130 in the market of new-generation transonic trainer aircraft is

Italy's Alenia Aermacchi M-346. The aircraft was based on the Yak-AEM-246 technology demonstrator, developed by the Yakovlev design bureau (a branch of the Irkut Corporation) with Italy's participation in the 1990s. Meanwhile, the aircraft's export vistas are less certain, especially after the crash in Dubai in November. So far, Alenia has won a contract for 12 M-346s to be delivered to the Singapore air force. The declared large order of the UAE has been up in the air since 2009. Certain experts say this is connected with the jet's high cost and limited combat capabilities. In addition, some customers might feel uncomfortable because the M-346 contains many U.S.-produced components.

Success in India, prospects in Malaysia

Besides new aircraft versions, Irkut keeps promoting in Asia its well-reputed family of Su-30 fighters. For instance, the Indian air force will receive an additional batch of Russian Su-30MKI fighters. The parties agreed on it in December 2011, when Indian Prime Minister Manmohan Singh visited Moscow. A contract for another 42 Su-30MKIs to be delivered as kits for licensed assembly, is expected in 2012.

Earlier India had ordered 230 Su-30MKIs. By now, Irkut has delivered over 100 ready-made airplanes and kits for assembly by Hindustan Aeronautics Ltd.

Su-30MKIs form the backbone of the Indian air force and, considering the new order, the policy will remain after the MMRCA programme's implementation. Moscow and Delhi are discussing deep improvement of the Su-30MKIs that entered the inventory in 2002. Fighters with the Super-30 upgrade will be fitted with AESA radars, new avionics, more armaments and stealthy features.

At the same time, Irkut and the Su-30MKI's developer, the Sukhoi design bureau, are working on a fighter version for the Russian MoD. As reported by Russia's air force commander, Col. Gen. Alexander Zelin, they are planning to procure 28 aircraft, designated as Su-30SM. A relevant contract is expected in 2012.

Russia's arms exporter Rosoboronexport has declared that it is going to participate in the Malaysian tender. 18 Su-30MKM fighters, derived from the Su-30MKI, have been shipped to the country earlier. According to Victor Komardin, within the tender Russia will make Malaysia a vast offset proposal that would include wider cooperation in civil aircraft building. Specifically, Malaysian companies can participate in the production of the MS-21 new-generation passenger airliner (mentioned above).

"We will participate in the Malaysian tender. Probably, we will offer the Su-30MKM fighter or some other version, depending on the terms," said Alexei Fyodorov. Rosoboronexport's view on the offset was voiced after Malaysian Defence Minister Ahmad Zahid Bin Hamidi had made it clear that the key to the fighter tender was the offset proposal.

Singapore - Moscow



april 2012

Russian Far East Development

Inconceivable without Industek



As regards transportation infrastructure, the Far East is in a strategically beneficial position. Ice-free ports, the Trans-Siberian Railway and the Baikal-Amur Mainline, navigable rivers, and the Northern Sea Route, which, if required, can be operated all the year round, and the growing pipeline complex — all of these may accelerate regional development. But is the power industry ready?

In 2012 the Federal Grid Company came up with an ambitious program of putting into operation several large projects at the same time. Large-scale construction of power transmission lines was started in the area. We can by right call the 500 kV Zeyskaya HPP — Amurskaya — State Border power bridge construction a key project. The total length of the power line is more than 510 km; the project

completion is scheduled for 2013. It is the choice of the contractor that the successful implementation of the construction plans directly depends on.

Last year the construction engineers completed the first construction phase. It involved construction of the overhead power line from the Amurskaya substation to the state border. The contractor — Industek Group — did the job in a responsible manner. All the work was performed at a high quality level and ahead of the construction schedule.

Industek in the Far Eastern Federal District

In the course of the activities Industek power engineers laid 153 km of wire and ground-wire cable, as well as installed 533 power transmission towers. Crossings over the existing power lines and motor roads were provided in the course of the construction.

The 500 kV Amurskaya substation was reconstructed as part of the project. It has been providing power supply to Blagoveshchensk for more than a half of a century. The following large consumers are connected to the substation: Amur Reinforced Concrete Structures Factory, Amursky Metallist OJSC, Malomyrsky and Pokrovsky mines, which are the largest gold mines in the Far East. Investments made by JSC FGC UES in the power line construction and the substation reconstruction amounted to 4.4 billion rubles. The approximate capacity of the new power transmission line is 800 MW.

The power supply center was renovated: the 500 kV outdoor switchgear was expanded by three bays and new modern equipment was installed: 500 kV SF6 circuit-breakers, current and voltage transformers, disconnectors, and surge suppressors. A 500 kV 180 Mvar controlled shunt reactor designed for reactive power compensation and maintaining the grid voltage was put into operation at the Amurskaya substation, which is the first time such equipment had ever been connected to the Far Eastern grid. A shunt reactor provides for automatic stepped voltage regulation and, as a consequence, for increasing the speed of the control response. Losses will be reduced accordingly. State-of-the-art imported secondary switching equipment (relaying and automation equipment, automatic process control system, automated information and measuring system of commercial energy metering, and communication equipment) was installed. As a result, the service life of all the electrical equipment at the substation and the adjacent power transmission lines will increase.

The Federal Grid Company has fulfilled its obligations to use the Zeyskaya HPP capacity efficiently, as well as to increase the reliability of power supply to the consumers in the region. Long-term power demand of consumers from the Amur Region, the Jewish Autonomous Region, and the Khabarovsk Territory has been satisfied.

The second phase involves construction of an overhead power line from the Zeyskaya HPP to the Amurskaya substation. The total length of the new line will be 365 km. In strict accordance with the schedule, more than one thousand of transmission tower footings and approximately 700 transmission towers were installed, and more than 150 km of wire and ground-wire cable laid. Due to the complex terrain, the power line route has 45 turns. In accordance with the design project, the 500 kV Zeyskaya HPP — Amurskaya overhead power line will run in the interstream area of the Zeya and Amur Rivers in the Amur Region. A special crossing with the length of 2,275 meters and the tower height of 96 meters will be provided where the 500 kV Zeyskaya HPP — Amurskaya overhead power line crosses the navigable Zeya River. As the winter temperature in this region may drop to minus 52 degrees Celsius, the wire, insulation and rebars will have a rugged design. In the course of the activities at Zeyskaya HPP 500 kW outdoor switchgear will be reconstructed.

The power bridge will be constructed in accordance with the Russian Federation Government "Far East and Transbaikalia Social and Economic Development until 2013" special-purpose program. The com-

pletion of the 500 kV Zeyskaya HPP — Amurskaya — State Border power bridge with the total length of more than 510 km will mean a possibility to provide excess power from the Amur Region power sources to China.

The Amur Region Grid and Distribution System Renovation Program will be completed as scheduled.

Projects and Prospects

As estimated by the Russian Government, the power demand in the Far East in 2011–2015 will exceed the average Russian figures by nearly 4% (8.7% as compared to 4.9% — an average figure for Russia). It is obvious that to fully meet the growing power demand in the Far East, the entire grid infrastructure needs to be modernized.

And for Industek Group construction teams this means that after the current construction activities are completed, they will be re-deployed to other sites. Industek's short-term plans include construction of the 220 kV Tambovka — Varvarovka — Blagoveshchensk overhead power line, as well as participation in the construction of the 220 kV Komsomolsk — Vanino overhead power line.

In accordance with the federal program, the principal customer — MES Vostoka — intends to eliminate the "bottlenecks" in the unified Far East grid until 2020. The situation in the Amur Region and Yakutia is rather complicated. The grid is underdeveloped. And this means that the construction teams have some work to do. Major developments are in prospect for Industek Group in this respect.

Eduard Ananiev

Italian Campania

The land warmed by the sun



In anticipation of the upcoming summer season a meeting of Russian travel agencies and tour operators with the administration of the Campania region (Italy) and Italian tour operators, who prepared an extensive presentation of the region, took place in Moscow in the hotel "National". The event was organized by TTG Italia in support of the Italian-Russian Chamber of Commerce.

During the meeting the Italian representatives told in detail about the region, its features and attractions, as well as what exactly the host is ready to offer Russian guests in the new season.

The Campania region is a blessed land with a rich history. Even the Roman emperors and the elite chose coastal areas and islands as attractive places for healing and relaxation. They named this place Campania Felix, which means Happy Campania. And until these days, it remains an amazing area, which accumulates the most beautiful sights of the country. Nature has generously endowed this region with all the benefits: a mild Mediterranean climate, pristine azure sea, breathtaking landscapes and extraordinary fertility. One of the natural treasures of the Campania is the numerous hot springs with mineral water of volcanic origin.

The region is, in fact, an "open-air museum." The centuries-old layers of different national cultures and traditions formed the cultural landscape, and left us masterpieces of art and folk traditions that are unparalleled in the Mediterranean area. Local arts and crafts have ancient roots.

And, of course, referring to the Italian region, we can't but mention a gastronomic dimension. Since ancient times, Campania has been renowned for its excellent cuisine, which is different from the gastronomy of other areas. Suffice it to say, that this region of Italy is the birthplace of pizza and pasta! Favorable climate and fertile soil made agriculture the main economic sector in the region. The guests of the party had an opportunity to try typical products produced in the region, at a dinner hosted by the organizers.

Today, the region of Campania is the most visited tourist region of southern Italy. The host companies of the region are doing their best for a comfortable stay of their guests. Currently the region employs over 1300 travel agencies and branches

with 5200 employees. More than 1300 hotels are offered to guests. These are large luxury hotels, as well as small private ones. With a highly developed tourist infrastructure, Campania offers a wide variety of excursions.

Summing up the meeting, we can say that Campania is a piece of Italy

amazingly generously gifted by nature. There is everything for an unforgettable holiday - warm climate, wonderful nature and the sea. Rich historical heritage and cultural life of the region will make a visit informative and interesting for any tourist.

Elena Stolnikova



Openings and Perspectives

Russian engine design gives premises to optimistic perspectives

Having become the record-breaking by all criteria in its history the 10-th anniversary International aerospace show MAKS-2011 (took place in Jukovski town near Moscow last year) demonstrated serious progress of Russian aircraft industry in the development and design of aircraft and rocket engines. In the exposition of «OPK Defense industry» OJSC well sounded on MAKS the production made by the enterprises of « Joint Corporation of engine design». There one could see both modern modifications of time tested and reliable engines of national design schools and new projects that are called for lifting not only Russian airliners but to take place in the international aerospace market. It is enough to say that perspective aviation complex of fifth generation, that became without saying a principal premiere of MAKS-2011, is equipped with the engines that were designed and constructed in the factories that are parts of JCE. Moscow airshow became the first presentation ground for renewed Russian engine design.

Work for result

After the consolidation of bridge-building plants to «Joint engine design corporation», the new structure posed ambitious aims- to take hold in the world's five producers in the sphere of turbo-engines to 2020th year and export 40% of production to ensure competitiveness of home high-tech goods on world markets in the nearest 40-50 years. To realize these plans OPK carries out a line of new projects corresponding to world's level were shown at the airshow MAKS-2011. At the united exposition you could see a dummy of the engine of new generation PD-14, the first it will be constructed in the liner MC-21 the most popular military engine AL-31F, intended for the fighter Su-27 and its modifications, and a lot of other perspective military materiel.

One of the most interesting exhibits of rocket segment of OPK became engine NK-33, due to its characteristics it doesn't have any prototypes in the world. Despite the fact that NK-33 was constructed to realize «moon program», it responds all modern goals to explore the outerspace. In conditions of swerving of «Spaceshatle» program NK-33 remains the only propulsion system that can introduce hard carriers into the outer space. This year the engine will be installed on the light Russian rocket «Soyuz-2-1b».

One more hit of this airshow was presented in the segment of military aviation- engine for fighter Su-35 under the workname « item 117C». It is a wide modification of engine AL-31F. New engine has the thrust on 2 t more (14,5ts), it allows to widen plane's abilities. At the moment development-construction works with engine are being completed, from 2012 year mass production on OPK

plants will begin. The design of «item» is financed by holding itself: the amount of investments at the moment of airshow exceeded 4,149 dillion roubles.

Project PD-14: main accent

Among the most important projects of OPK-design of the engine PD-14. Motor is constructed in tight cooperation of plants and construction buros of corporation: practically all leading scientific and construction schools of this country («Aviadvigatel» OJCS, NPO «Saturn» OJCS, NPP «Motor», FGUP «Tsiam», FGUP «VIAM» and others) were attracted to designing. According to preliminary data on Ufimskiy bridge construction association the construction of working fan blades, high-pressure compressor will be conducted, on NPO «Saturn» the construction of ventilator low-pressure compressor, on «Salut»-dividing trump and gearbox, on Perm' factory «Mashinostroitel»- engine nacelle, reversion and sound-absorbing constructions of compo. Perm' «Star» OJSC will become the outfitter of control system of FADEC type and fuel apparatus. Perm' motor factory except finite assembly of engine will produce burner can, compressor and high-pressure turbine- that is, main elements of generator.

The fact is that practically first in the history of home construction of gasturbines engine with unique operation factors that exceed world's analogues on 12-18% is being designed. Now gas generator is already projected, manufactured and the tests are being held. The test of engine demonstrated technologies planned on 2012, and in 2015- the certification of basic engine PD-14. The creation of the family of engines in class of

9-18 tons of thrust made for the exploitation in perspective passenger aircraft of MC-21, SSJ-130NG family, transport planes MTS (MTA) and in remotorization of existing park of planes Il-76, Tu-204, Il-96-400 is defined by OPK to be one the most perspective projects.

Successful realization of this problem will let to ensure dynamic development of this area for minimum 40-50 years. The cost of the program to construct the engine approximately evaluates 60 milliard roubles, the half of which are inputs of federal budget. State financing is supposed to cover main spendings on the development of key technologies of this program and will be used for construction, manufacturing and tests of experimental items. Non-budget means will secure the development of engine and the organization of mass production.

This project is principally vital not only for OPK but also for all Russian engineering industry from the point of preservation and development of competences in development of new technique. «First gates», during which the protection of conception PD-14 took place, were went in July 2008. From that moment works on projecting of engine's units, designing and mastering of critic technologies that are needed to create a new family of TRDD. The certification of the basic version is planned on 2014 that must ensure the entrance to the market in 2015-just to the moment of certification of MC-21. On Perm' industrial area mass works are being conducted- retrofitting of departments, construction of a new building for covering- in the framework of preparation for the serial manufacture of engine PD-14.

Just on the eve of MAKS-2011- in July 2011- third control boundary of creating basic engine PD-14 was successfully over. This stage is the most vital in the realization of the project because it is made for defining configuration of designing the engine, valuating its competitiveness, desiding suitability of the continuation of works on the project.

One year passed between second and third stage. In a short time main designer and other participants of the project made a lot of work: the first stage of tests of gas generator- demonstrator successfully passed; project of engine was manufactured; turbine high-pressure blades from new mate-



rials with high-performance cooling; demonstrating blocks of high-loaded details out of composite materials were manufactured; reglament documents including «Assessment of cost price of manufacturing and renovation of the family of perspective engines», technological requirements to IT support while managing the project «Engines for MC-21», complex programs of advancing engine PD-14 to the market, creation and development of systems of postsale maintenance and so on.

One should add that the realization of the project «Engines for MC-21» in the frameworks of Federal state program «Development of GAT in Russia from 2012 to 2015» will help to solve a lot of multiplicative strategic tasks including the following - to provide again creating and modernizing Russian aircraft with high-effective home engines, and to increase the sales of Russian civil aviation technique in the world to widen high-tech export, to weaken the dependence of economic growth in Russia from the state of the market and an appropriate improvement of the structure of circulation of foreign trade.

Besides, this project is called for creating modern research and experimental and design infrastructure of aviaenginebuilding. All this ensures security from interior interests of Russia in the sphere of preservation of own gasturbine technologies, forming advance scientific and technological backlog in creating aircraft, gasturbine engines, aviation aggregates and systems.

The essential growth of contribution aviaenginebuilding plants in Russia to GDP growth is supposed to be gained by this program at the expense of advancing growth of production and sale in relation to dynamics of

economic growth of this country. Meanwhile, a lot of social aims including preservation of existing and creation of new working places, improvement of demand on qualified scientific and technical staff, to prevent the outflow of talented youth.

International SaM146

Engine SaM146 is the first combined manufacturing of Russian and French plants (NPO «Saturn» and SNECMA) that allowed to implant technical decisions of world's level in Russia. Just engine SaM146 rose new Russian regional plane SSJ-100 into the sky, that was created in the times the USSR.

SaM146 went through certification in Russian and European aviation security, last year it gained certificates of AP MAK and EASA factypes. Incidentally, there is an important fact: first in history European certificate of correspondence was got by Russian engine producer, and certificate of the type on engine was got earlier than on plane. Thereon with the broadening of SSJ-100 plane family now the works on creating the modification of engine SaM146 with improved on 5 % thrust. The possibility to use this engine in an alternative way in other aircraft is worked out.

Airline «Gazprom avia» behind its director Andrey Ovcharenko and company Powerjet (SP of French Snecpo «Saturn» created in July 2004) behind Jaque Deklo chairman of committee of directors and main executive director signed on MAKS-2011 an agreement about post sale support of 20 power plants SaM146 designed for mounting on a plane Sukhoi Superjet 100 (SSJ100). Besides, «NPO «Saturn» OJSC and airline «Moskovia» signed on airshow a long-term treaty accjding to which «Moskovia» will during 5 years transfer planes Sukhoi Superjet100.

Science and Engines of the 21st century

As the leaders of OPK has mentioned, one of key tasks of the corporation is renewal and support of modern engineer thought in the sphere of creating gasturbine technique. The fact is that during last two decades years intellectual potential of specialists in the branch was not claimed and was not used. OPK sees its mission in «growing in the country a new generation of engineers, constructors, organisators of production, JPkN who will create new items of new technics of the world's level». According to OPK leaders, it can be made only at the expense of creating new technics of world's class.



april 2012

Eighty-year Background

Chernyshev Moscow Machine-building Enterprise – an example of implementation of the national machine-building projects

As Russian machine-building industry overcame the most difficult time of its development, surely it has a real technological assets which historically are able to be not only an example of industry leadership and solution of difficult tasks, but also to be a multiplicative tow which is able to lead the largest national projects and programs, providing for industry branches an upward transition to new technological and competitive levels. Certainly the Chernyshev Moscow Machine-building Enterprise is one of such assets (as a part of United Engine Corporation). It is one of the oldest and the most experienced Russian machine-building enterprises approaching to its eighty-year date. Nowadays its aviation engines operate in the sky of tens of countries.

Being advanced and perspective industry, the Russian engine-building is represented now with a variety of well-known enterprises including the Chernyshev Moscow Machine-building Enterprise. Supported only by its own resources all above mentioned enterprises overcame the perestroika and post-perestroika times which were characterized by critical lack of government buyings, heading fluctuation, destruction of cooperation system and so on. Nowadays, all these enterprises associate their future with successful joint activity within the frame of United Engine Corporation which succeed in consolidation of advanced manufacturing and constructive resources of industry. In this case it is very important to mention that the leading Russian engine-building enterprises saved not only its human resources and technologies, but de facto they saved the global relevance of Russian engine-building industry through the technical continuity support and home investments.

Associated by United Engine Corporation, all enterprises became a real international technological and constructive power ready to compete with world leading manufacturers under certain conditions. In this regard, it is difficult to overestimate the experience of Chernyshev Moscow Machine-building Enterprise as it also has a rich portfolio of international projects and delivery including high traditions of Soviet engine-building school. If we will talk about such important and responsible thing as keeping and multiply the industry technological tra-

ditions, based on it construction of the technological development forward logic – the Chernyshev Moscow Machine-building Enterprise holds one of the leading places not only in Russian but also in the world aviation engine-building industry. As follows from the experience of the enterprise it is very important at present stage of industry development that Chernyshev Moscow Machine-building Enterprise is capable of playing the role of an integrator within the frame of large national projects and programs. The enterprise has a large history of successful cooperation with business associates. For example, once the enterprise transferred the guiding technologies for VK-1, R11F-300, R27F2M-300 engines to Ufa Engine Industrial Association and other guiding technologies for RD-33 engine to Omsk Baranov Engine-building Enterprise.

There is one more important thing. Historically the Chernyshev Moscow Machine-building Enterprise at all times including present days was the heading enterprise for serial production and maintenance factories. That is why all new engines exploration and production startup procedures were accompanied with large-scaled works on technical reequipment, formation of new departments and workshops, elaboration of new technologies of the enterprise. In such a way a new equipment including advanced machining centers were obtained and explored. Currently the enterprise has the most serious equipment stock in Russian machine-building industry. In fact, at all times since the middle of the

last century the enterprise used the most advanced engine-building technologies.

Moreover, at difficult times of perestroika the enterprise maintained the high rate of its production. Statistically, since 1982 it never stopped its RD-33 engines manufacture which were used for MiG-29, MiG-29SE, MiG-29SMT, MiG-29M1/M2 and MiG-29K fighters by now. During this period, the enterprise produced more than four thousand of RD-33 engines. In fact, nowadays the Chernyshev Moscow Machine-building Enterprise products are used in more than forty countries of the world. In recent years, the effective cooperation with Rosoboronexport and MiG Aircraft Corporation helped the enterprise not only to build its business in developed markets but also to increase its export activity.

In the early XXI century, the enterprise increased its production rate. Contrasted with 2001, in precritical 2007 the Chernyshev MME raised the average salary of its employees by 3.7 times at the same time increasing the average number of employees by 1.35 rates. At that time, the gross output was also increasing – from 2001 till 2007 its volume increased by 8 times. Before crises, in 2007 every employee of the enterprise had Ruble 1.050 million of profit. Meanwhile, the enterprise conducted research of new competences in order to be multifunctional, competitive and more useful for the industry. So, shortly before the crises, the Chernyshev MME got the license of the aviation equipment developer. The enterprise formed a special development unit which was tasked to upgrade already produced models of engines in order to increase its reliability and service life as well as to participate in development of new engines especially in cooperation with other engine-building departments.

For the benefit of all-generation fighters

The Chernyshev MME has a long background: from the time of plank-built workshops till now – one of the most

famous aircraft-building industry leading enterprises. The enterprise team has a great engine-building history and they are proud with it. It is enough to say that the Chernyshev MME is a highly specialized enterprise taking active participation in development and manufacture of gas-turbine engines for fighters of all generations.

In 1940s and 1950s of the last century, the enterprise became the first one started the manufacture of RD500, VK-1 and AM-5A gas-turbine engines for MiG-15, La-15, Yak-23 and Yak-25 aircraft. Furthermore, the enterprise became one of the leading manufacturers for R11-300 engines family (R11F-300, R11F2S-350, R11AF2-300 and R11V-300). At that period, the enterprise manufactured more than 12000 engines of R11F-300 family for MiG-21M, MiG-21PFM, Su-15, Yak-25RV and Yak-28 aircraft. Since early 1970s, the enterprise started serial production of R27F2M-300, R29-300 engines family and its R29B-300 and R-35 versions for MiG-23, MiG-23MLD, MiG-23UB, MiG-27 and Su-22 aircraft. The total number of R27 and R29 produced engines was about four thousand. By the way, the R-35 engines were used on MiG-23ML supersonic fighter-interceptors.

At the same time, there is one more important thing of professional honor – the enterprise developed its advanced trends even in hard years. So, within the conversion program in 1990s, the Chernyshev MME began manufacture of TVD TV7-117S engines for Il-114 passenger aircraft. In 2000, the plant started manufacture of the first RD-1700 engines. In the middle of the first decade of new age, the enterprise began manufacture of TV7-117SM upgraded engines. The TV7-117ST documentation for Il-112V military light cargo aircraft engines has been received.

The enterprise is aimed for permanent serial production of TRDD RD-1700, TVD VK-3000 helicopter engines for Mi-38 and TVD TV7-117ST engines for Il-112V military cargo air-



craft. Another ongoing challenge is to use the enterprise resources for serial production of VK-2500 designed for TVD TVZ-117 replacement on «Ka» and «Mi» brand helicopters. A little knowledge of Chernyshev MME history will be enough to know that at all times the enterprise operated using the most advanced technologies. Moreover, the enterprise created these technologies itself being the most powerful serial manufacturer. So, in the period of 1947-1949 the plant began manufacture of RD-500 Derwent engines.

In the beginning of 1960s, by plant director's order the Ural-3 computer-based data-processing center was organized. In 1971 the NC machines were accepted for manufacture. For the first time in USSR, the magnetic tape rewind directly in machine workshops got accepted. It allowed to enhance the manufacture standards and increase its working life and efficiency due to machine service standards improvement. So, one employee could operate

three or four machines simultaneously. The production control system was upgraded due to its computerization. Employment of data acquisition equipment allowed transmitting the course of manufacture data from workshops and warehouses directly to data-processing center.

Use of new technologies helped to fulfill the most difficult tasks. For example, there was a situation when it was required to re-equip the Air Force with hundreds of new MiG-29 fighters and more than one thousand of RD-33 engines annually. The Chernyshev MME fulfilled this task successfully through the re-equipment of its machinery stock, learning new technological procedures and NC machines. By the way, the enterprise was one of the Russian leaders who began to operate the NC machines. Nowadays, the CALS-technologies are used on the plant effectively and became the essential part of the leading departments and units of the enterprise.

The beginning of the long machine-building process

The Chernyshev Moscow Machine-building Enterprise is one of the most well-known aviation manufacturers of Russia. It was established in 1932 at Tushino on the basis of civil aviation aircraft repair workshops. The first radial engines for Soviet light-engine civil aviation have been designed here. It was M-11, MG-11, MG-21 and MG-31F engines designed by A.Shvetsov, A.Nazarov and M.Kosov with engine power from 150 up to 330 hp.

During the Great Patriotic War, this plant produced the most powerful aircraft diesel engines designed by A.Tcharomski, F.Tulupov and V.Yakovlev: AN-1, M-30, ACh-30B with engine power from 900 up to 1500 hp for Pe-8 and Er-2 long-range bombers.

Within the first postwar years, the plant started the wide serial production of the first Soviet turbojet engines. It was widely used by Ilyushin, Lavochkin, Mikoyan, Sukhoi, Tupolev and Yakovlev design-engineering departments.

In 1947 the diesel engine was replaced by RD-500 turbojet with 1.6 t thrust power and OKB-500 (OKB-500) designed centrifugal compressor on the basis of Derwent-V. It was used on Yak-23 and La-15 fighters.

In 1950 the plant started production of a new serial VK-1 (BK-1) turbojet engines with 2.7 t thrust power. The engine designed by V.Klimov allowed the MiG-15bis fighter-interceptor to extend its range of flight up to 2000 km as well as the MiG-17 tactical fighter to become the first Soviet aircraft that overcame the speed of sound at horizontal flight.

In 1952 the new OKB-300 (OKB-300) designed turbo jet engine equipped with AM-5A axial compressor was assembled under supervision of A.Mikulin, B.Stechkin and S.Tumanski. It was used on Yak-25 all-weather fighter-interceptors. Since 1958 the plant began to manufacture the R11F-300 engines with 6.2 t thrust power that allowed MiG-21 to break the world records in speed and altitude of flight. In 1947 Chernyshev V.V. became the head of the plant.

Since 1960 the plant started the serial manufacture of powerful two-shaft turbo jet uprated engines (ТВДФ) with compressor supersonic cascades. The R11V-300, R11AF-300, R11F2S-300, R27-300, R29-300, R29B-300 and R-35 engines with the thrust power from 3 up to 13.2 t. were designed by S.Tumanski, M.Metskhvarishvili and K.Khachaturov. The above mentioned engines were used on high altitude reconnaissance aircraft and supersonic tactical fighters, fighters-interceptors and bomber-fighters designed by Yakovlev, Mikoyan and Sukhoi.



HANNOVER MESSE 2012: Best of the Best

Irina Weisshaar: "The Hannover fair of innovations is strengthening its worldwide significance"

From page 1

If before, visitors arrived, bought a catalogue at the entrance, sat on a bench with a bottle of beer, looked through the catalogue and decided where to go; now the preparations are held at the workplace. That is, any visitor knows beforehand what will be exhibited and what exactly interests him above all. Besides that, the attitude to exhibitions is changing around the world... The focus on "hanging out and drinking cognac" is passing away, and somehow, it is due to the crisis. The time of the exhibition is very expensive and valuable. You can make contacts for years to come, there is no time for hanging out... In recent years, I see a change in attitude towards exhibitions on behalf of Russian participants. They are more focused now; they try to make the best of every minute. They often come for a day or two, and they spend their time very effectively. They have no time for brandy in the stands.

— **Another round of financial crisis is turning to Europe, how does it affect HANNOVER MESSE?**

— The exhibition in 2009 demonstrated, and the exhibitions of 2010 and 2011 confirmed that, in fact, the crisis had only increased the real value of HANNOVER MESSE for the global industry, strengthening the status of Hannover as a unique global platform of effective technological solutions. During a crisis everyone understands that there is a need in constant search for new business tools, focusing on the world's best technologies and developments, tracking the latest industry achievements. European governments (and not only European) focus on high technologies in their economic development plans, and even in a difficult situation of a crisis the governments allocate considerable budget for the development of high-tech industry. In this situation HANNOVER MESSE is in great demand: nowhere in the world you can see so many latest developments in various sectors of industry and energy at one and the same time.

— **Does that mean that a crisis is not a hindrance for industrial exhibitions?**

— Industrial exhibitions and forums have been and will be in great demand. No Internet can replace them, as only at the exhibition you can actually see with your own eyes and "touch" with your own hands high-tech products. High-tech equipment is not ordered via the Internet.

The exhibition is an important and active process of communication between exhibitors, producers and buyers. It is also worth noting that during a crisis a cooperation with other producers becomes very important, especially in terms of globalization processes.

— **It is not a secret that during a crisis many people refuse themselves in exhibitions to reduce their expenses...**

— Yes, of course, the crisis has deeply affected the economies of all countries; and many companies had to reconsider their strategies. But no one of the leading producers skimmed on marketing, or their participation in leading exhibitions, or their business information. Everyone understands that it is not possible to overcome a crisis successfully while being isolated. Companies are looking for other ways of reducing their expenses. If you reduce budgets for promotion of goods and visiting exhibitions in difficult times, you will get only one result – you will lag behind the market. These are the exhibitions, where you can get value added information, find efficient suppliers, learn about the latest developments, and extend a potential demand for your products... When a situation is complicated, it is a crime to sit on your hands. On the contrary, you should do your best and be active not just to survive, but to start expanding your business

If a country considers itself a sports power, there is no way that it is not represented at the Olympics. The same way is in the industry: if a country claims for a status of a highly technologically developed country, it can't but represent itself at HANNOVER MESSE - an internation-

al venue, where a number of Governments send their official delegations to assess the level of advanced technologies and adjust their own industrial policies.

Another very important point is as follows: HANNOVER MESSE shapes public opinion and attitude to the economies of countries, how sound they are. As one journalist once said about HANNOVER MESSE: "He who is not here, does not exist."

— **Does the Russian participation in HANNOVER MESSE increase or decrease in respect of a crisis?**

— The actual Russian participation in HANNOVER MESSE increases. Mainly due to business visitors who come to Hannover to see the best innovations and technologies in the world. A reduction in the number of exhibitors from Russia is based upon objective economic reasons. But everyone understands that to overcome post-crisis difficulties one should rely upon the most advanced and best technologies, which are widely presented in Hannover. Many Russian companies come to Hannover every year in order to obtain value-added information, and to show themselves. There are also new-comers who want to see what's it all about and try to "put on" their potential participation. I believe that this year HANNOVER MESSE will be as effective for the Russian participants and their partners from other countries as before.

— **As far as I know, this year Deutsche Messe AG offers a new service that helps to search potential partners before a trade show...**

— It is common knowledge that search of good contacts is an integral and important part of business success. Deutsche Messe AG has developed special packages which assist exhibitors and visitors in achieving their strategic goals, including expansion of business, search of new partners and customers, raising investments, etc. This service is called Match&Meet. It helps to initiate contacts with potential business partners before a trade show begins, which can then be pursued face-to-face at the event.



— **What is Match&Meet in terms of HANNOVER MESSE?**

— Match&Meet is based on an internet platform of more than 500,000 actual profiles from different countries. The platform matches suppliers and potential customers based on their profile information and help them get in touch. What also important is that Match&Meet platform is operating for a whole year, ensuring you get right contacts for your business even after a trade show.

— **Who is the Match&Meet service for?**

— Match & Meet is for visitors and exhibitors, and also for journalists. The service can help anyone who is looking for new customers, networking partners, information sources or investors. After all, personal contact is the basis for business success.

— **Sounds good! What are the options for Match&Meet?**

— There are three options. First, the registration of a profile. At free registration you create your personal interest and cooperation profile. You see the number of potential Match&Meet contacts according to your business interests. And you can receive and confirm contacts and meeting requests. The second option is Match&Meet Online. For a one-year flat fee you get an access to the extensive Match & Meet database, you have

an individual list of matches with potential business partners, plus search and filter functions. And of course, you receive, initiate, and confirm contact requests.

And the third option is Match&Meet Onsite. It gives you an access to tools for managing your onsite meetings. It includes all features of Match&Meet Online as well as: appointment calendar, appointment setting function, matchmaking support and a Gold Premium Pass (with exclusive services such as fast-lane entry, shuttle service on the grounds, free admission to the show and use of the Premium Lounge, including refreshments). The Match&Meet team will support you actively by sending matching business contacts to you. We also offer specially tailored packages for delegations that allow delegation members to network with the right contacts online and to optimally plan their trade fair visit.

— **How can one order a Match&Meet service?**

— Exhibitors can order Match&Meet service in OBS, and visitors can do it at www.hannovermesse.de. In Deutsche Messe Moscow bureau you can get detailed information on Match&Meet options as well as other supplementary services. Our Match&Meet team will be happy to assist you.



Founder and Publisher

Industrial Weekly Corporation
The edition was registered with the Russian Federation Ministry for the Press, Broadcasting and Mass Communications PI No. 77-12380 from 19.04.2002. Re-registered after a change of publisher PI No. 77-14566 from 07.02.2003. Re-registered after

a change of publisher PI No. FS77-19251 from 23.12.2004. With the Federal Oversight Service for the Enforcement of Mass Communications Law and the Preservation of Cultural Heritage

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Fax: 7 (499) 194-10-33

www.promweekly.ru

Printed by

OOO "Viva-Star"
Elektrozavodskaya 20,

Moscow, Russia
Tel. (495) 720-62-28

#902
5000 copies