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# *aerospace technologies review* **AIR FLEET**

The Best of Motor Sich for Iran 32

NO POLITICS!

The flight safety independent 38



**ILYUSHIN FINANCE CO.:**  
**LINERS AND AIRPORT EQUIPMENT**

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Ukraine in October

# Professionals fly to Kish Island





## Editorial



The Iran Kish Air Show has always been an important event for the world's aerospace industry. And again did aviation experts gather on the island of Kish to exchange experience and conclude promising contracts. With that, many people have come here not to establish new contacts, but to develop existing business ties. The joint work between Antonov Aeronautical Scientific-Technical Complex (ASTC) and ILYUSHIN FINANCE CO. (IFC) with Iranian counterparts is a good example of such an approach. This cooperation is bolstered by the joint interest to promote An-148-family aircraft on the Iranian market. As a result, a preliminary agreement for deliveries of 16 An-158s has already been signed. Director General of ILYUSHIN FINANCE CO. Alexander Rubtsov dwelt on the prospects of the An-148 and An-158 in detail in his interview. These aircraft are becoming increasingly popular in the world. Though it is a very good trend for the Russian-Ukrainian aircraft industry, the real success is still to be reached. To this end, a number of tasks should be solved. The article "An-158: The Iranian future" dwells on this problem in detail.

By the way, despite a year has passed since the first An-148 regional jet was put into operation, its designers go on with their work. Having upgraded the An-148 to An-158 version and showed it in-flight at Farnborough-2010, they are developing its next variants. In particular, it is the new An-168 ABJ (Antonov Business Jet) regional jet on the base of An-148 and the An-178 transport aircraft based on An-158. The development of An-148's new versions is described in the article "ASTC ANTONOV: An-148, -158, -168, -178..."

Also, Russian companies have new interesting proposals for their clients in Iran. Russia's leading leasing company IFC offered them airport equipment, which will both provide flight safety as it can operate with different protocols and systems (Russian and European) and ensure relative independence from political collisions as it employs only Russian intellectual property and solutions. The Islamic Republic of Iran is one of the core trade partners of Ukraine in the Middle East. This cooperation is backed by various treaties the both countries have concluded in the civil aviation sphere. So, now a major company in this sector, Motor Sich, can offer its numerous achievements to this fruitful market. The products designed by Motor Sich are described in the article "The best of Motor Sich for Iran". In addition to the aforementioned articles, an expert can find many other interesting materials in this issue. Have a nice reading!

We hope you will find much useful information in this issue of Air Fleet specially made for Iran Kish Air Show 2010. We wish all the air show participant efficient and fruitful work and a lot of new unforgettable impressions.

Yours faithfully,  
Alexander Gudko

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# Aircraft

The Russian leasing company ILYUSHIN FINANCE CO. (IFC) has a special message for the International Iran Kish Air Show: Russia has a strong will to be the key partner of the Iranian aviation business. Despite the inevitable obstacles the IFC looks ahead to the Iranian market with optimism. Now they are to introduce the new products and services to respond to the changing demand of Iran, extending their range to diversify the client base. **Alexander Rubtsov**, IFC General Director has made some comments on this issue.

■ **Question:** Mr. Rubtsov, are there any on-going negotiations with the Iranian companies on the most promising project of the post-USSR civil aviation industry - An-148 aircraft and its derivative - An-158 made by Russia and Ukraine?

■ **Answer:** An-158 is being introduced to Iran by our Ukrainian partners from Antonov. So far they have made a great work to promote the aircraft at the international market. In Iran alone they have managed to agree on the delivery of sixteen An-158s. At the same time Iran has shown a great interest in An-148-100 (the base version of the jet) which already has a commercial operation history with the Russian and the Ukrainian airlines. However we feel that An-148-100 might be-



## ILYUSHIN FINANCE CO.: LINERS AND AIRPORT EQUIPMENT

come a part of the solid project of the industrial cooperation of Russia, Ukraine and Iran.

While the overall demand of the Iranian carriers in the new, comfort and cost-effective jets is really alarming the supply of the relevant products available with Russia's and Ukraine's industry is unfortunately limited. This sad factor we have to confess to might remain to be the major problem for all of us in the foreseeable future.

We would not like to make any forecasts but hope for the better, making the best we can to change the situation.

■ **Q:** Is there any analysis on the Iran's demand in An-148 (An-158) you could share with us?

■ **A:** The estimates made indicate Iran's demand in around 50-60 jets of An-148 family.

■ **Q:** What marketing strategy is applied to these aircraft?

■ **A:** As we may clearly see now the market for An-148/158 is not limited to the domestic carriers only and we negotiate over their supply with different nations. However it became obvious that the existing leasing model of the aircraft operation in Russia needs to be adjusted and applied with the foreign clients in the most prompt and effective manner. We have already made some steps forward in that direction with Venezuela. The latest visit of President Chávez to



Moscow started the agreement signed between the Russian and Venezuelan transportation ministries and Eurofinance Mosnarbank aimed to create the joint leasing company. This model might further be transformed and applied in the South-East Asia and the Middle East eager to see the cost-efficient modes of An-148/158 jets ownership and operation. By the way we have given such a "signal" to one of Iran's leading banks and expect the feedback now.

■ **Q:** We know that along with the regional jets like An-148 family the Iranian market requires the medium-range aircraft with extended capacity. What is the fate of the five Tu-204s contracted with Iran in terms of the powerplant issue?

■ **A:** We have suggested that the engines previously offered with those jets need to be replaced with another version. We are convinced that this will not worsen the performance of the aircraft. However we should do that to overpass some limitations that have been applied to Iran. Until now we have not heard the firm decision of our Iranian partner on this issue. Anyway we hope that the situation should be getting clear after the Kish airshow.

■ **Q:** You are set to diversify the products you offer to Iran and you are introducing the airport equipment now. How could you comment on this?

■ **A:** The airport equipment is a relatively new product we are set to deal with. However we have made a considerable marketing in the Latin America for instance. This project is being in the active marketing stage with our company now. However we have been receiving the positive feedback from the foreign market and see its interest towards the airport equipment, innovations in the air traffic control, radars, flight management computer systems, computer and information processing systems made in Russia. IFC is eager to offer the integrated solutions having reached the cooperation agreement with the Russia's leading high-tech airport equipment producers. It means that we are set to compliment the services we have for the aircraft we offer by modern on-ground flight security solutions.

**Ekaterina Sobol**

PHASES OF AN-158 PROGRAMME	
Start	2004
Test model construction	2009–2010
Maiden flight	April 28, 2010
Type certificate approval	Q1 2011
Rolling out the first series aircraft	Q3 2011

MAIN FLIGHT CHARACTERISTICS OF AN-158	
Maximum takeoff weight, kg	43,700
Maximum payload, kg	9,800
Average hourly fuel consumption, kg/h	1,790
Practical range with 86 passengers, km	3,100

## Ilyushin Finance Co. is set for the international leasing

A real sensation for the Russian aviation and finance business has marked the recent visit of the Venezuelan President to Russia. Two nations have agreed to launch the aviation leasing project. The memorandum establishing the joint leasing venture to operate in the Latin American market was signed by the Venezuelan transportation ministry, Ilyushin Finance Co. (IFC) and Eurofinance Mosnarbank.

The new leasing company is aimed to ease the delivery and operation of the modern Russian aircraft in the Latin America under the leasing contracts. The business is to start with the capital of around USD 100 million to backup the long-term export credit support available for the Russian hi-tech products.

According to the memorandum the partners are to establish the joint venture in the first quarter of 2011 with participation of IFC and the subsidiary of Eurofinance Mosnarbank – Russian-Venezuelan Development Bank. IFC will contribute its competence and capital to accelerate its sales in the region while the Binational Russian-Venezuela Development Bank will provide the financing and the Venezuela's Transport and Communication Ministry will be responsible for the state coordination and regulatory part of the project.

The IFC's targets for this region (Argentine, Chili, Ecuador, Bolivia, Cuba, Nicaragua and Venezuela) featuring the USD 700 million stock of orders for An-148/158 aircraft was put into the base of the new joint venture's draft business plan.

# ASTC "ANTONOV": AN-148, -158, -168, -178...

This April could be truly considered a month when of a brand new aircraft that belongs to "An" family — the An-158 passenger regional jet (RJ) — was born and made its maiden flight. And it was June when it made its debut at Farnborough-2010. Nonetheless, ASTC "Antonov" is not going to rest on the laurels. Having refined the 148 model, the design engineers of the enterprise have already busied themselves with future versions of the aircraft.



### The new An

An-158 surpasses its predecessor, An-148-100 in terms of sitting capacity that has been increased by means of enlarging the fuselage by 1.7 meters and also according to the words of Chief Designer of the Enterprise D. Kiva, due to the re-layout of the cabin. As the result of these measures the maximum number of seats has been increased from 80 to 99. The transit range now amounts to 2700–3100 kilometers. The luggage and cargo departments as well as habitation modules have also gained in size. The ability to take more passengers has led to the cost effectiveness of the aircraft. The new "An" consumes 9% less fuel per passenger than its predecessor. The avionics have been also upgraded. "This jet, as well as the 148 model, is able to fly under no-visibility conditions" — explains Dmitriy Kiva. — In fact, he have received the A3 category certificate that enables the jet to take off and land in automatic mode, provided the airfield is duly equipped.

Moreover the originality of the An-158 model is apparent when glimpsed upon the tail section of the fuselage, its geometry and "cut" as well as the wings terminal aerodynamic surface.

At the same time the systems of the An-158, its airframe, cockpit, power plant as well as the manufacturing procedure, service and maintenance, service record, training protocol for the crew are the same

**General Designer of ANTONOV  
Aeronautical Scientific/Technical  
Complex D. Kiva and Deputy  
Transport and Communications  
Minister, the Head of Aviation  
Authority of Ukraine Anatoly  
Kolesnikov ▶**

as with the An-148 model. It is very suitable for an operator since there is a line of RJs at his disposal that could be used to match the air traffic load on the route.

### Cooperation

Due to the cooperation of more than 200 enterprises from 15 countries that took part in the construction, the An-158 aircraft incorporates a lot of cutting edge aviation technologies. Nonetheless, Dmirtyy Kiva names Russia as the leading strategic



**The new “Antonov” jet consumes 15% less fuel in average than its predecessor, that gives an opportunity for a customer to save on fuel**





# Aircraft



▶ **Ukrainian Air Force Chief Engineer Vladimir Samuleev and Igor Kravchenko, Designer General, SE Ivchenko-Progress CEO Zaporozhye Machine-Building Design Bureau Progress State Enterprise named after Academician A. G. Ivchenko are pleased with the new aircraft**

◀ **Ukrainian Air Force Chief Engineer Vladimir Samuleev and Director General of JSC "Motor Sich" Vyacheslav Boguslayev compare notes with the press**



partner in the process of An-158 creation — some 60% of components used to produce the An-148 and An-158 jets were of Russian make.

That said, the partners in the program strive to do their best to meet the requirements of a customer who can choose the equipment that will be installed in the airplane at its own discretion. So as it was ordered by the "Rossiya" State Transport Company An-148 was equipped with four new systems of the airborne equipment. The aircraft equipped with the four new systems passed the tests and was granted a relevant appendix to the Certificate given to this type of jets.

### Doing everything for the operator's good

An-158 is not merely an improvement to the previous model, but in fact a considerable update. The choice between the

An-148 and An-158 airplanes is determined by the passenger traffic flow. The routes with low transport service demand are best suited with the capacity of An-148 that has a smaller number of seats. In case of high passenger traffic the An-158 jet will present a more cost-effective solution.

An-148 and An-158 have a very high compatibility — the similar cockpit and many modular systems. In other words if the operator has An-148, the expenses for the training of the crew to fly the An-158 model, its maintenance and bringing into service are going to be little.

### Thou shalt order it!

Today some Russian and Ukrainian companies as well as the companies from Asia, Africa and Latin America have already expressed their wish to purchase the An-158 airplane. The decision is driven by the positive experience of

◀ **General Designer of ANTONOV Aeronautical Scientific/Technical Complex D. Kiva, Director general of "Ilyushin Finance Co." A. Rubtsov and Director general of "Atlant-Soyuz" airlines E. Bachurin discuss the construction of the An-158 jet**



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# Aircraft



**D. Kiva names Russia as the main and strategic partner in the An-158 jet construction. Around 70% of component parts for An-148 and An-158 are produced at the Russian enterprises**

the An-148's putting in service. Only the Ukrainian operator "AeroSvit" using the An-148 aircraft has transported 40300 passengers since June 2009 only at regular flights. Five An-148, assembled in Voronezh, are now owned by the "Rossiya" State Transport Company.



The main supplies of the An-148 either to foreign or Russian operators are fulfilled by a Russian leasing company "Ilyushin Finance Co." The marketing and sales of the An-158 in Russia are decided to be carried out by the same company. The total number of 20 foreign and Russian operators have already expressed their wish to purchase the An-158 airplane (both preliminary and inked agreements). Also, the Russian Ministry of Defense, EMERCOM as well as other governmental agencies and institutes have shown their interest towards the An-158.

According to Alexander Rubtsov, CEO of "Ilyushin Finance Co", the total number of orders for An-148 and An-158 shared between OJSC "Ilyushin Finance Co" (IFC) and OJSC "United Aircraft Corporation (UAC) amounts to 174 aircrafts.

Notably, Dmitry Kiva, chairman of the board of ASTC "Antonov", reported that

recently Ukraine has signed purchasing and production agreements for An-158 jets with Iran. "We have signed agreements on production and purchase of An-158 aircrafts with Iran; currently we're training the specialists and pooling experience with our foreign colleagues". Mr. Kiva stressed that the agreement concerns only the civil air transport. It refers to "passenger planes that are only used for civil purposes". Currently the An-158 model still undergoes the certification testing.

### The way you want it

Looking after the consumer appeal, ASTC "Antonov" embarked on the work-out of different variants based on the An-158 (as it was with An-148 before). The design concepts implemented in the An-158 aircraft allowed creating cargo variants including variants with side access

hatch, with rear hatch for disembarkation as well as variants of patrol and special task aircraft for civil and military aviation.

### An-168

Today the result of on-going work of design engineers of ASTC "Antonov" is rendered in making of An-168, a high-class next-gen jet airliner, tailored to transportation of 12–14 passengers up to 7000 kilometers. According to estimates of the designer, ASTC Antonov, the demand for such type of aircrafts amounts to 60 units up to 2015 and 120 — to 2025.

According to Alexander Rubtsov, CEO of the leasing company OJSC "Ilyushin Finance Co", the new regional jet An-168 (ABJ) on the base of An-148 is planned to have enriched the Russian President's air fleet by the end of the year. Also, he reminded that United Aircraft Corporation with its partner aircraft manufacturer OJSC "VASO" has been chosen to become the sole supplier of civil aviation for airlines and governmental agencies of Russian Federation.

### An-178

Among other attractive projects of ASTC "Antonov" there is a cargo aircraft An-178

**Today some companies from Russia, Ukraine, Asia, Africa and Latin America have already expressed their wish to purchase the An-158 airplane**





# Aircraft

on the base of An-158 with the load of 13.5–15 tons. An-158 will be given the upgrade standard to the cargo aircraft class version. The fuselage, for example, has been extended and enforced. This is intended to substitute cargo aircrafts An-26, An-12 and C-160, whose term of service is about to end. However during the long time of their operating cycle aircrafts of these dimensions have been associated with a huge number of cargo transferring applications. The statistics shows that 70% of cargo transferring tasks for An-26, An-12 and C-160 aircrafts are shipping operations of 7–15 ton cargo at distances up to 2000–3000 kilometers. The primary objective for An-178 is shipping operations of 13.5 ton cargo at distances up to 1400 kilometers or 10 ton up to 2900 kilometers. The An-178 model features transportation of all kinds of packable cargo, including M2 containers with diametrical size of 2.32x2.04 meters.

An-158 will undergo the standard changes made for cargo version of the aircraft. For instance, the fuselage will be expanded. It is not a secret that Antonov's cargo planes, An-26 and An-32 are being discarded as of now. The process is highly possible to gain momentum in 2 years and by that time there will be a substitute for out-of-date models — An-178. These 2 years will be just the time for drafting the project, creating the development prototype and its testing.

Specialists predict a big share of UAC's active participation in the An-178 development program, particularly financial. That hardly comes as a surprise since Russian enterprises show a great interest in partnership with Ukraine in aviation field. It is due to the fact that these enterprises produce the lion's share of components for the Ukrainian aircraft. There is no doubt this venture is bound to be a success. Already there is a positive example of such a partnership. Thanks to Russian-Ukrainian partnership the An-148 production has been started at Voronezh aircraft production association. The accuracy of predictions is backed up by the fact that pursuance of such a big project with similar features by Russia alone will lead to comparatively sizeable expenses. The most active users of

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## AN-158

The new generation An-158 regional jet is designed for transportation of 99 passengers. The jet was made on the base of An-148. The An-158 is an all weather aircraft and can be used:

- During day and night, at any time and under simple and adverse weather conditions;
- Within the range of geographic latitudes from 70 grad North up to 55 grad South;
- Under natural icing conditions at a temperature up to –30 centigrade;
- Under the outside air temperatures at zero altitude from –55°C up to +45°C;
- On the airfields with elevation from –300 up to 3000 meters above sea level;
- On the B-RNA V and P-RNA V class international air paths with the RNP1 accuracy;
- Within the SID, STAR, Approach schemes;
- At the IIIA ICAO category landing, etc.

**The An family have significant level of unification, i.e.:**

- Chassis and main airplane systems;
- D436-148 power plant;
- The package of avionics and with extensibility of their functionality;
- Cockpit and command and control system;
- Maintenance and service systems;
- Forms and records system;
- Passenger modules of the cabin.

**The distinguishing features of An-158 from An-148 are:**

- Increased number of the passenger seats;
- The 2.5 meter-enlarged passenger cabin;
- Enlarged volume of overhead compartment in the passenger cabin;
- Improved design of the wing;
- The 9%-decreased fuel consumption;
- The 12%-decreased direct operational costs.

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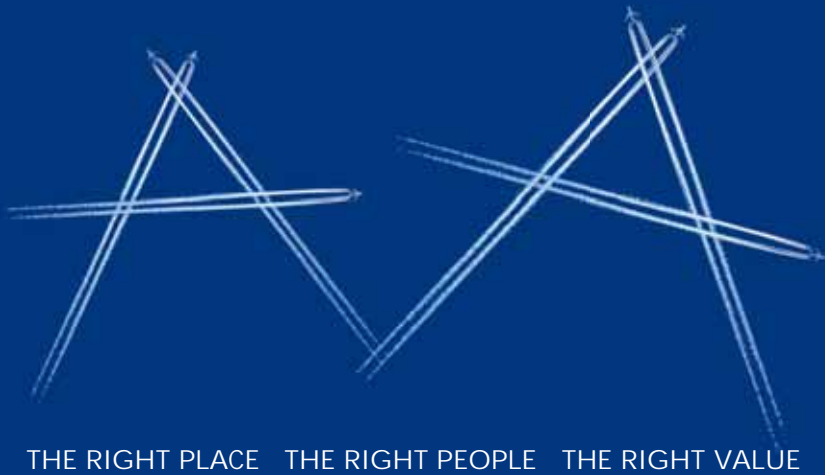
aircraft under brand Antonov are air forces of Middle East countries, Africa and Russia (these states are in possession of 350 units of An-32 and 1000 units of An-26). Therefore these countries and also some Asian and Baltic states will become the main distribution areas of the new aircraft.

Production volume of a new model could reach 70–75 units per year: some 60 units in Russia and 10–15 in Ukraine. In other words only the Russian-Ukrainian distribution area of An-178 is estimated at 700–

800 units in 10 years. The price of An-178 aircraft is taken to be fluctuating from 20 to 25 million dollars which leads to market size of 15–19 billion dollars.

The peer aircrafts to match the yet-to-come An-178 are Lockheed Hercules C-130 and Casa C295. However to do them justice one need to point out that the price of these aircrafts is 30–40 % higher than that of An-178.

**Alexander Gudko**



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# Aircraft



## AN-158: THE IRANIAN FUTURE

The actual non-participation of Russian UAC in An-158 project forced the Ukrainian party to consider independent promotion of this product on home and international markets. Some sources reveal that ASTC "Antonov" secured a contract with Iran for supplies of 16 An-158. The estimated contract value is some 400 million dollars; the delivery schedule is yet to be announced. One way or another the Iranian example shows that the interest in An-148 series is not limited by the post-Soviet space. But before celebrating the achievement, Russian-Ukrainian aviation industry still has to address a number of issues.

Today's Iran has a dire need in new airplanes. At the time Iranian fleet withdraws from operational use of Tu-154s which are beyond their service life. McDonnell Douglas will serve as a temporary replacement for them, but everyone agrees it is a palliative solution. Fleet renewal should be carried out by introducing new airplanes

that meet certain requirements. However, Dmirty Kiva, CEO of ASTC "Antonov", has told the journalists at the "Aviasvit" air show that there were talks in progress with Iran about supplying 20 An-158 airplanes and production some extra 60 liners on Iranian territory under Ukrainian license. Now the results of these talks are

more clearly outlined. The Ukrainian party has worked out the memorandum of intent to supply 16 An-158 airplanes.

In the light of talks freeze with the Russian party on Tu-204 SM liners, An-158 became a way out of no-win situation. It is worth reminding that the most advantageous liners for Iran are those whose spare



## **Taking into consideration the dynamics of the production of these planes and the Iranian urgent need in them, the contracted An-158 could be in demand in the nearest future**

parts can not be penalized by the US department of state. Strange though it may seem, but these penalties were applied to Russian airliners — Iran Air was compelled to reject the 3 billion dollars worth project in the spring 2010 when it became known that American company Pratt&Whitney had vetoed this decision on the grounds of owning the rights to PS-90A2 motor made in Perm.

On the one hand, the Iranian airline was to receive 5 airplanes within the contract with “Ilyushin Finance Co” (IFC) and on the other — establish the airplane production in partnership with UAC in Iran. Notably, the matter in question was to produce a hundred planes under Russian license. By the way, “Ilyushin Finance Co” suggested rigging the planes with PS-90 motors. “We haven’t yet received the Iranian reaction to this proposition” — tells us Alexander Rubtsov, CEO of “Ilyushin Fi-

nance Co” leasing company. However it is clearly evident that without the new motor the liner will lose its economic appeal. True, IFC still continues the talks on selling An-148-100 to Iran. It is most likely that the parties will come to an agreement on this model too.

However, it is likely that IFC will join the talks on An-158. After all, it was the Russian leasing company that made supply agreement with “Antonov” during the Farnborough-2010 to deliver first 10 An-158s in 2011–2013, the deal amounting to 250 million dollars. Taking into consideration the dynamics of the production of these planes and the Iranian urgent need in them, the contracted An-158’s could be in demand in the nearest future. There is also a fact that leads us to the same conclusion — IFC plans to create a leasing company with Iran (as previously with Venezuela). This matter is in talks

between “Ilyushin Finance Co” and major Iranian banks.

The spokesperson for ASTC “Antonov” neither confirmed nor denied the fact of such talks. According to him the corporation is acting within the framework of the agreement with the Russian partners (UAC) and in any way selling An-158 (enlarged version of An-148) is in equal interests of both Russia and Ukraine. Despite the fact that final assembly will take place on the Ukrainian territory, more than 60% of the parts and components for the liner are made in Russia. Therefore, the An-158 project investments will be shared with the Russian aviation industry represented by suppliers of materials, parts and equipment.

Also, bearing in mind the volume of Russian participation in An-158 project, this plane according to customs code is considered of Russian origin and therefore exempt from duties when receiving customs clearance. Moreover, in the light of joining of the two aviation industries — the Russian and the Ukrainian — such division should vanish fast. It is worth reminding that on October 22 founding documents for establishing OJSC “UAC-Antonov” are slated to receive notarial certification so that they could be signed at the sched-



# Aircraft



**These issues addressed, as specialists note, An-148 may become one of the most successful projects in Russian aviation industry in post-Soviet era and make a real profit to the industry**

uled meeting of the economic cooperation Committee of Russian-Ukrainian interstate commission which will take place in Kyiv on October 26.

One of the first to air this scenario for the An-158 project at Farnborough-2010 was Alexander Fyodorov, CEO of UAC. He told that the work on establishing the business unit "UAC — Commercial aircraft" is under way at full speed. The par-

allel process of merging Russian and Ukrainian aviation industries has also begun. It can take one to one and a half year. According to the plan put forward by UAC, the joint venture will come into effect the following March. In other words, the Russian-Ukrainian joint venture that will coordinate the processes of cooperation, PPO selection and other support for the Russian-Ukrainian aviation industry

products is going to start its work in March 2011. Most likely, the present day ASTC "Antonov" will join the business unit "UAC — Commercial aircraft".

Still, there is a fly in the ointment for the radiant future of An-148 and An-158. Taking into consideration the present day rate of output and the demand for An-148 series, the Russian aircraft producer VASO is loaded with work orders



for two decades. According to Alexander Rubtsov, CEO of the leasing company "Ilyushin Finance Co," accomplishing the current stock of orders at current output rate will take 17 years (presently there are 170 planes ordered). "No airline

moil in UAC, "Irkut" (the future business unit of "UAC — Commercial aircrafts") rendered a bigger price that, according to airline companies, has nothing to do with current situation on the market. On the other hand, it is pretty evident that even with

the "Aeroflot" group — the company has signed agreements with IFC on An-148 jets. Previously the "Moskva" airline company voiced grievances against the pricing policy. Evgeniy Batchurin, CEO of airline company doesn't rule out the possibility to



company will wait for 17 years. We ask and demand that our colleagues at UAC start working on expansion of production capacities" — says Rubtsov. Therefore, the companies promised to reach a faster pace of production of 60 An-148's a year through consolidated effort — announced at "Aviasvit" air show Dmitriy Kiva, chief designer of ASTC "Antonov". Kyiv promises to assemble nine planes in 2011 and Voronezh claims to produce 18 aircrafts. It should be noted that this roadmap includes also An-158, which is an enlarged version of An-148 (An-148-200). Only is it possible for the manufacturers to meet their claims?

Alongside production rate problem there is a concern regarding the price of these liners. On the one hand, due to inner tur-

the adjusted price the limited output will make the profits marginal.

Nonetheless, customers are far from getting in the shoes of aircraft assembly plants. The aviation business is of a small profit as well and airlines count every dime. Therefore airline companies may review the current An-148 agreements. In particular quite questionable seems the prospect of signing the contract to supply 9 An-148 to "Rossiya" airline. "Aeroflot" who is to approve the contract is dissatisfied with the new price of the plane. Similar issues may arise with "Vladivostok Avia" now joining

make a contract for a different model, for example, SuperJet 100.

Everything that is happening to An-148 series doesn't mean the lack of prospect for it. It is rather that there is a major issue to tackle in the sector of aviation industry where Russia has her own mass product. These issues addressed, as specialists note, An-148 may become one of the most successful projects in Russian aviation industry in the post-Soviet era and yield a real profit to the industry.

Ekaterina Sobol

**Kyiv promises to assemble 9 An-148**  
**in 2011 and Voronezh claims to produce**  
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**roadmap includes also An-158, which**  
**is an enlarged version of An-148**



# Aircraft

The outsize freight market built up by the unique Antonov An-124 ramp aircraft continued advancing at pretty high rates even during the crisis period — 10–12% per year on average. According to experts, the value of this market will reach \$3 bln by 2020, whereas it will grow to nearly \$7 bln in 2030. At present, the Russian segment of the international outsize freight market is over 75%. To maintain this top position, we will need 50 Ruslan aircraft in the next 10–15 years. Volga-Dnepr Group of Companies has been engaged in promotion of the program on renewing the mass production of Ruslans since 2003. **Valery Gabriel**, Executive President, Volga-Dnepr Airlines, explains to **Svetlana Komagorova**, AirFleet journalist, what the present status of this project is; how the outsize freight market is developing; and what efforts were made to successfully overcome the crisis.

■ **Question:** Mr. Gabriel, at the last MAKS-2009 air show, you signed specifications for the development of an upgraded version of the An-124-100 Ruslan ramp freight aircraft. What were your achievements in the past year? How is the project going?



## “ACTING IN SHORT ORDER LIKE A FIREFIGHTING TEAM”

■ **Answer:** The project is in progress. The most important event for the project in the past year was the State Council held in Ulyanovsk in autumn 2009, where President Dmitry Medvedev ordered the Government of Russia to prepare a resolution for the full-scale production of the An-124. All relevant ministries and agencies are participating in the elaboration of this document. Even now, we can certainly say that this project has a good future. However, only a state order from the RF Ministry of Defence can become an actual startup for the renewal of the Ruslan aircraft production — the project will get distinctly different implementation rates, new advancement due to this order.

■ **Q:** In other words, if the aircraft were ordered by commercial companies only, the production renewal would be highly improbable?

■ **A:** Apparently, yes. Because the renewal of this aircraft class production is a national program. Thus, the State Council held in November last year became a major event in the development of this project. We hope that critical decisions on the production renewal will be taken; a clear work schedule will be determined; and particular assignments and contractors will be announced late in 2010.

If we speak about technical requirements, then the Ruslan aircraft should obtain a totally new technical appearance — as the

An-124-300 version entirely meeting all current and future ICAO requirements for avionics, engines and other systems. The thing is that these requirements have become very stringent and they will be introduced in the near future. That is why we carried out intense activities with the Antonov State Enterprise in the past year and particularized, as much as possible, every technical assignment especially for flight and navigation and radio communication systems, which will be upgraded based on this new aircraft.

■ **Q:** Please give details about the engine upgrading.

■ **A:** The engine will meet new ICAO requirements as regards Chapter 4 Noise

## Batch manufacturing of An-124 would truly be a helping hand for Ulyanovsk's economy



and Emission standards. And what is most important — this engine will be equipped with the FADEC digital control system enabling integration of all aircraft systems on the platform of this new aircraft. In our case, the aircraft will meet the latest requirements as regards navigational accuracy — including future requirements for low-visibility approach — these are so-called Landing categories II and III by ICAO, when an aircraft is capable of auto-

matic landing. Technically, it can be done only on the basis of the new upgraded engine with the FADEC digital control system.

■ **Q:** Who will participate in the upgrading of the D18T?

■ **A:** The General Designer of this engine is Ivchenko-Progress State Enterprise/Motor-Sich Plant. We discussed a package of issues on upgrading of the D18T in Kiev in mid-August. We agreed upon joint financing of these activities. We determined

how we should act further. By October, we will work out specific time limits and operating schedules for the upgrading of this engine.

■ **Q:** Before 2024, the Air Force should renew the entire air fleet, i.e. nearly 20 aircraft. How many new Ruslans will you get and when?

■ **A:** We have prepared and officially submitted to the United Aircraft Corporation a firm order for 20 An-124 aircraft, and for 20 more as an option. All these 40 aircraft should be built before 2030. So far, our leading aircraft have already had a record of 21–22 ths flight hours, though the average flying time for this aircraft type is substantially lower. However, the flight time of our aircraft will be at least 50 ths flight hours, which has been documented in a corresponding program signed by the Developer — Antonov State Enterprise. The service life extended from 21 ths to 50 ths which means that our Ruslans will fly for 15–18 years more. So it is exactly 2026–2030 when they should be withdrawn from service and replaced by new ones. This is the content of our order.

Delivery schedules are tied up with the market development tendencies and fore-



Showing a great concern for the fate of “Ruslan” are Vildar Zinnurov, vice-chairman of Ulyanovsk region's government (on the left), Sergei Morozov, governor of Ulyanovsk region (in the center) and Grigoriy Rapota, plenipotentiary of the President in Privolzhsky Federal District



# Aircraft

As the worst of the recession passed, there is more confidence in market development, the outlook and also in Ruslan's capabilities. Flying time of Ruslan before the recession amounted to 5.5 hours per day, while during the crisis some Ruslan planes were up in the air for 8–10 hours a day





casts. It should be mentioned that the civil market of outsize, unique super-heavy cargoes, which was formed only due to the Ruslan aircraft appearance in this market segment, is characterized by higher growth rates compared to the freight market, which are, generally, 9–10% and 5–6%, respectively. Naturally, new aircraft will be required to satisfy these market needs — in the long term for 10–15–20–25 years ahead.

■ **Q:** Is Aviastar-SP Plant located in Ulyanovsk ready to start the full-scale production of Ruslans?

■ **A:** I believe this question should be answered by Aviastar-SP JSC's General Director, though from my experience with this enterprise, I would like to rally my spirits and answer — Yes, it is. This plant was built purposely for Ruslans. I can confirm that Aviastar-SP Plant has maintained all manufacturing processes, all aircraft fixtures that enable assembly of new aircraft. This enterprise has preserved all jobs. The only problem is to have orders and money for the enterprise to purchase materials and component parts required for aircraft manufacturing. From my point of view, for this enterprise as a local economic mainstay, it would be a truly saving order, which will guarantee full-scale loading of the enterprise.

■ **Q:** Waiting for permission?

■ **A:** We are waiting for a governmental regulation, which will initiate financing of this order by corresponding ministries and which will ensure that the enterprise receives the money. Then, certain works on the renewal of our production will commence.

■ **Q:** The aircraft production for the Ministry of Defence will be financed by the government. Where will you get the money from for such an ambitious order?

■ **A:** This will be credit money because it's impossible to pay the entire amount at once; no air company in the world can afford it. Like most of other companies, we work under financial plans with the support of biggest banks including state banks. We will cooperate with VTB and VEB since they specialize in leasing; what is more, they are heavily supported by the government.



# Aircraft

■ **Q:** Earlier, a question about construction of hubs, in particular, in Krasnoyarsk, has been brought up. However, this issue is not covered nowadays. What interfered with the implementation of this project? What is the situation with these hubs now; what are the projects that Volga-Dnepr Group of Companies is interested in?

■ **A:** Indeed, we have discussed a business idea to create transit points — hubs, through which cargoes are delivered to Russia and then distributed in different Russian cities. However, after AirBridgeCargo obtained new Boeing-747-400 aircraft, the major part of cargoes is shipped from China, Hong Kong, Japan directly to Moscow. It is the most effective business model so far.

In this context, Krasnoyarsk, being a transit hub in our business model, was vital when Boeing-747-200 aircraft were in service. However, with these aircraft it was impossible to compete with worldwide leaders — we have to operate more advanced models, such as the Boeing-747-400F and Boeing-747-ERF, because they represent higher efficiency by their operational economy — firstly, from the point of fuel consumption.

Today, we are facing a challenge of developing Moscow hubs. In the first place, Sheremetyevo as our main port. However, it should be noted that Sheremetyevo, unfortunately, is not completely capable of managing cargo handling operations and providing the required amount of parking areas. Thus, our carrying facilities as well as operations will be partially transferred to Domodedovo in the near future. We have to improve the rate of operations, the

**Experts predict that growth of outsize freight market that will achieve the bar of 3 billion dollars by 2020 and 7 billion by 2030**







## Company's air fleet includes 10 units of Boeing 747-400F and Boeing 747-ERF that outperform other planes in terms of operation economy thanks to their reduced fuel intake

number of serviced points at our routes, in order to increase, as much as possible, the flying time and reduce the ground time. To effectively compete with world's largest companies, we must have a daily average of 13–14 flight hours per aircraft.

■ **Q:** It means that the hub in Krasnoyarsk is not required any more because aircraft are so effective that they can fly nonstop from Moscow to Hong Kong ...

■ **A:** I guess, not yet. At present, we have insufficient cargo volumes delivered to the Siberian region, so the Krasnoyarsk hub cannot operate effectively. However, after the economy starts developing and after flow of cargoes to Siberia increases, we will renew this subject for sure. Today, we are giving a serious consideration to the Far East, in particular, to Khabarovsk. Perhaps, this very place will be subsequently the key point in the development of regional hubs.

■ **Q:** How tough is the competition in the freight market? Who are your principal competitors?

■ **A:** The competition is very tough. We have to fight for each penny with companies that are recognized in Europe as the world's leaders. These are Lufthansa, Cargolux, Air France. Moreover, we compete with Chinese air companies that are substantively supported by their government. More simply, the government appropriates budgetary funds to purchase aircraft for these companies since it set them a task to be competitive. In our case, we have to compete in good faith, i.e. purchase and rent aircraft for our own money. Moreover, we have to pay high customs duties — we are certainly unequal in our positions.

■ **Q:** But you bring money to the budget?

■ **A:** Absolutely — by paying taxes. By creating jobs.

■ **Q:** How has Volga-Dnepr Group of Companies survived the crisis? Can we say that it is over for you?

■ **A:** Generally, the recession years for Volga-Dnepr Group of Companies became a period of very difficult challenges,

especially for AirBridgeCargo. This company carried out intense internal work on reducing the intercompany expenses. It was done to adapt for the depleted scheduled freight market.

Incredible as it may seem, but the demand in the market of unique oversize cargoes was high enough at that time — we exerted our maximum efforts and showed quite a serious result. After the crisis, we became more confident in capabilities of the Ruslan aircraft, market growth, and its prospects. In the pre-crisis period, it had 5.5 flight hours per day, whereas some aircraft spent 8–10 hours in the air during the crisis. We all worked 'in short order'. And we have always been ready for everything like a firefighting team.

Generally, Volga-Dnepr Group of Companies operated well and profitably. However, the most important thing is that due to the crisis AirBridgeCargo has become stronger and more organized than before. This company has expanded its fleet including absolutely new Boeing-747-ERF delivered directly from the enterprise, and today AirBridgeCargo's park consists of 10 aircraft of the Boeing-747 family. We have increased the flight frequency, expanded the network of routes and essentially upgraded our business model. Generally, Volga-Dnepr Group of Companies has overcome the crisis and has become more powerful — and this is the basic result of its activities.

■ **Q:** What factors facilitated your success?

■ **A:** While the crisis was raging, we were actively looking for possibilities to not just survive but to grow — expand our customer base, extend the network of air routes in order to provide more opportunities to customers so that they would apply specifically to our company. What are the most valuable things for them? Delivery rate and convenience, acceptable network — the things that we have worked on in the most serious way.

■ **Q:** What are your plans?

■ **A:** Expanding our network of air routes including the one to the American continents using up-to-date aircraft — this is the basic objective for Volga-Dnepr Group of Companies in the post-crisis period.

# Aircraft

“Polyot” airlines, based in Voronezh, expects to receive the first batch of two Russian-Ukrainian An-148 airplanes this year.

**Anatoliy Karpov**, Director General of “Polyot” airlines, explains why the company that operates mainly Swedish SAAB-2000 and SAAB-340 airplanes decided to purchase An-148.

■ **Question:** So, what influenced the selection of this very airplane? What is the reason?

■ **Answer:** SAAB and An-148 are airplanes that have different purposes. SAAB is a short-haul aircraft used for regional flights within a range up to 2100 km. An-148 is, after all, a medium-haul airplane with a maximum flight range of up to 5000 km. Its efficiency comes into full after two hours of flight only. This would be ineffective to use it for Voronezh-Moscow flights. Thus, each airplane takes its own niche.

Besides, when we bought SAAB-2000, An-148 was not in production yet. We have negotiated on this aircraft since the time when legendary aircraft designer Piotr Balabuyev started drawing it on paper. So, we saw it in drawings, we followed all its tests, we had comprehensive information on it, and after An-148 came into being we signed the agreement on delivery. The airplane was not designed from scratch, but on the basis of An-74,



## WE NEED RUSSIAN AIRPLANES

An-74-300TK. And it turned out to be very good, reliable and not at all demanding.

■ **Q:** How many An-148 airplanes will you receive this year?

■ **A:** We hope to get at least 2 airplanes. If more of them come, that would be great, we would take more.

■ **Q:** By comparison of airworthiness and continuing cost, which airplanes are more advantageous — the new Russian made An-148 or the used SAAB?

■ **A:** Russian airplanes come much cheaper. Besides, new airplanes — Il-96,

which we already operate, or An-148, which has already started flying, do not fall behind their Western analogs in the sense of efficiency. Because maintaining airworthiness for Western aircraft is very costly. This is because periodic checks of the aircraft’s technical condition over a certain amount of time or flying hours should be carried out, and spare parts should be purchased, which is expensive; moreover, customs raise certain barriers. We do not have such problems with the Russian airplanes. Everything is

much cheaper. We maintain airworthiness ourselves, we have certified bases for that.

■ **Q:** Where will your crews be sent for training?

■ **A:** To the certified training centers. Although, a center for An-148 has not yet been arranged in Russia.

This is why the flight and technical personnel for An-148 is trained at Antonov design bureau, where this airplane was created. Centers like that will be arranged in Russia, too. That is not a problem. The main thing is to

have at least 2–3 of them, and not only in Moscow. After all it is not very convenient to travel from Vladivostok to Moscow to practice on a simulator. We have been considering various location variants for these training centers.

■ **Q:** What routes are the SAAB airplanes used on, and where do you plan to fly An-148?

■ **A:** SAAB short-haul airplanes are operated in the Central federal region, they fly to Lipetsk, Belgorod, Tambov, Kursk, Voronezh. There is an offer from Samara, since due to the bankruptcy of their local airline they only have flights to Moscow, but no flights from Samara to Saratov or Sverdlovsk, Chelyabinsk, Nizniy Novgorod. But there is a demand, and the regional airplanes are of great need, and there we have a terrible gap.

We will fly An-148 from Voronezh to UAE, Egypt, Tunisia, Munich, Spain, where SAAB cannot reach.

■ **Q:** These flights are mostly westward. Do you plan to develop the eastward direction?

## We will supply our needs with the needs of the market taken into consideration, because an airplane, grounded and not flying, is of no use

■ **A:** Novosibirsk, Norilsk, Sverdlovsk and farther all over Siberia.

■ **Q:** Will they be the new routes made specifically for An-148?

We have not yet flown to Egypt or Sharm el-Sheikh; these routes were started based on offers from tourist companies, because there is demand. SAAB-2000 was flown to Norilsk, Ekaterinburg and Novosibirsk. But 4-hour flights were very hard both for the passengers and the crew. Besides, the pay load of 50 passengers on these routes is insufficient. An-148 will make it a lot faster.

For example, in summer of 2008 there were 14 flights to Antalya weekly, which is 700 passengers. An-148 would make that in 10 flights, besides it has a larger luggage compartment. We have

SAAB-2000 fly to Yerevan; the distance is short, but Armenians usually have a lot of luggage. That is why we will set An-148 for this route, too. A 34-seat SAAB-340 will continue flying from Tambov to Moscow, for it fits perfectly a small amount of passengers — only 10-15 passengers. Thus, each airplane takes its own niche.

■ **Q:** The Samara region is going to sign an agreement with you on expanding the transportation. In return they will finance your airplanes and leasing.

■ **A:** It is too early to talk about this. All this is still in the initial stage. We are negotiating, but the papers have not yet been signed.

But the demand for the regional transportation development is enormous. Moreover, we have offers not only from







Samara. Other regions, such as Stavropol, Murmansk, Kostroma also are offering their assistance for us to fly and develop the inter-city transportation network.

Last summer An-26 used to fly from Kostroma to Sochi via Voronezh, though it is a cargo airplane. There is a need for a flight, but no aircraft is available. An-26 was used out of despair. This is the situation in the Central district. Can you imagine the situation over the Urals?

Airlines there are even in a worse condition.

■ **Q:** You said that regions are offering you help. What kind of help?

■ **A:** There are different options. For example, attracting local investors and business. Funding from government is more of a problem, but this kind of a support is under consideration, too.

■ **Q:** Anatoliy Stepanovich, how many airplanes would you like to have in your fleet?

■ **A:** Twelve thousand. As many as the Soviet Union Ministry of Civil Aviation had. Ten thousand out of these twelve thousand, operated by "Aeroflot", were regional flight airplanes. Now the state register includes around 2000 airplanes, and 95 % of them are the large long-haul airplanes, the Boeing and Airbus type, and 5 % are regional ones, which mostly comprise 50-year-old An-24 and Yak-40 airplanes.

■ **Q:** Let's be serious. How many airplanes should the "Polyot" company have?

■ **A:** As many as we can afford. We have an agreement signed for 10 An-148 airplanes, plus an option for 20 cargo An-148. We have the fourth Il-96-400 airplane under construction, and in the 5-10 years to come we want to have 10 of them.

I'd put it this way: we will supply our needs with the market taken into consideration, because an airplane, which is standing in the hangar and not flying, is of no use. Correspondingly, the market



would grow, and the airlines' fleet will grow, too.

■ **Q:** So you have an option for 20 cargo An-148 airplanes.

■ **A:** Yes, we do, because airplanes like that are not yet produced. The Joint Aircraft-Building Corporation collects offers from the airlines to figure out the demand for cargo An-148 in the market. It is planned to arrange two to three cargo hubs in Russia behind the Urals. It is very important for us professional freight carriers. Because Il-96 brings in up to 90 tons of cargo, and small airplanes distribute this cargo to various cities and towns. A hub like that will be arranged in Yakutsk for certain, maybe construction will also start in Krasnoyarsk and Khabarovsk. The cargo An-148, able to carry up to 10 tons, would be very much needed for such system of hubs.

■ **Q:** It is said that An-148 can be operated almost 24 hours a day. How long do you plan to fly them?

■ **A:** Only long-haul airplanes can be operated around the clock. They fly up to six thousand hours annually. For a regional

## Airplane should easily fly

# 2–3 thousand km

## to alternate aerodromes

airplane a flying time of 200 hours a month is a very good figure.

This is why if the monthly flying time for An-148 is 250 hours, that would be very good. With that much flying time this airplane has a good profitability and payback rate. It is very effective.

■ **Q:** Now An-148 is being produced with D-436-148 engines made by Ukrainian "Motor Sich" company. It is said that there is a possibility to manufacture An-148 airplane with alternative engines, for example the ones from the Canadian Pratt & Whitney. What is your opinion about this?

■ **A:** D-436 are good engines. Do you really think that Americans can make better engines than Ukrainians? Not likely. It is more important to arrange production of aircraft engines in Russia.

There are many orders, demand for engines will be great, within short terms and in great amounts. Cooperation with the Ukrainian party is very important, but if the Ukrainians cannot provide the required amount, why don't we start production of D-436 in Russia? It is very important both for airlines and airplane manufacturers.

For example, there is a mechanical factory in Voronezh that produces rocket engines. We could use some of its facilities for production of the Ukrainian engines. I do not think that producing airplane engines is more complicated than rocket engines. This is what we should be thinking of.

■ **Q:** Recently the British presented in Russia a short-haul Avro RJ85 airplane

# Aircraft



made in the '90s. It is much like An-148. Is there a future for such airplane? After all, SAAB airplanes that you buy are used ones, too.

■ **A:** Well, in the first place that is an old airplane, designed in the '60s -'70s. It is a bit too much for a short-haul airplane to have 4 engines, its fuel consumption is

too high, as well as the cost of maintaining airworthiness.

It may find a field of application, but our company has never had an interest for it. We have a program of our own, we know what we want.

Do you want to know why we buy foreign-made airplanes? Because we need

to cover the market with something, we need something to fly on. Airplanes of that kind are not produced in Russia. Moreover, not many regional airplanes are produced all around the world. As for the new foreign-made airplanes, you have to wait for years to get one, the waiting lists are very long. At the same time it is not recommended to import airplanes older than 10 years into Russia. And what do we have left to do? Nothing but purchase used airplanes.

■ **Q:** What airplane for regional transportation would you buy with pleasure?

■ **A:** We need a medium-size airplane, up to 30 seats, with good flight range, because the aerodrome network in many Russian regions, especially in the North and Far East, is not developed at all. In other words, we need an airplane that easily can fly 2-3 thousand kilometers to alternate aerodromes. It also should be cheap to operate. Unfortunately, airplanes like that are not even in project in Russia. The 34-seat SAAB-340 is much like that, so we buy it. Russia had a chance to purchase a factory, producing 19-seat turbo-prop Beech-1900 airplanes with the flight range of 3 thousand km. New





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# Aircraft



**Il-96-400T is a reliable airplane. It spent 136 flying hours in the air in the first month, flew over 100 thousand kilometers and carried 688 thousand tons of cargo**

Beech-1900 with good avionics and big luggage compartment costs \$4 million. But another buyer turned out to be faster. I wish we could make airplanes like that in Russia, that would be wonderful.

Because passengers from small towns need to be transported to larger airports. More than 35 million people live behind the Urals, there are no roads and the need for transportation is great. It isn't good for regional transportation to collapse forever.

■ **Q:** How fast did you master the cargo Il 96-400? How much time did you need to bring it into the market?

■ **A:** In the times of the Soviet Union mastering a new type of aircraft required at least two years. Nowadays, it took only 8 months from the moment the airplane delivery agreement was signed till the first commercial flight. Here, look: in February we signed a leasing agreement for three Il-96-400T airplanes with "Ilyushin Finance Co", in April Voronezh Aircraft-building Corporation gave us the first airplane to operate, in August the first Operator's certificate was received, and in September there was the first commercial flight from Domodedovo airport on the route "Moscow-Yakutsk-Shanghai-Novosibirsk-Munich". So we brought Il-96-400T to the market quite fast. Of course, that required a tremendous work — we had to prepare the technical facilities, train the technical and flight personnel, obtain the Operator's certificate, obtain accreditation in the countries, where we planned to fly to, etc. It was drudgery, but we accomplished our mission.

■ **Q:** What were the first results of operation?

■ **A:** Il-96-400T is a reliable airplane. It spent 136 flying hours in the air in the first month, flew over 100 thousand kilometers and carried 688 thousand tons of cargoes

This airplane showed no serious flaws. Everything is well designed — spacious compartment, upgraded avionics, low fuel consumption. Il-96-400 is equipped with new and powerful PS-90A-1 engines, this is why the fuel consumption turned out to be even less than stated in the technical requirements.

There are some little things that were corrected during operation. For example, in the first airplane we found out that when the cargo hatch is open, water gets into the units. On the next airplanes a protective shield was installed to avoid this.

■ **Q:** Where do your Il-96-400T fly to?

■ **A:** To Moscow, Novosibirsk, Yakutsk, Petropavlovsk-Kamchatski, Liege (Belgium), Tel-Aviv (Israel), Manstone (Great Britain), Minsk (Belarus), Almaty (Kazakhstan), Shanghai (China).

■ **Q:** Now you are operating three Il-96-400T airplanes. How many of them will be there in total?

■ **A:** We have a frame agreement for 6 airplanes and we hope to have them before 2012. The factory could have made them even earlier, but now they are working on the two airplanes for the Administrative Affairs Office of the President. In December of 2009 we signed a contract with "Ilyushin Finance Co" for the delivery of the fourth airplane. We expect this airplane to arrive in September of 2010. This is the way the frame agreements turn into good contracts. We plan to bring the number of these airplanes to 10 altogether.

**Svetlana Komagorova**





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## THE BEST OF MOTOR SICH FOR IRAN

The Islamic Republic of Iran is one of the core trade partners of Ukraine in the Middle East. It became possible due to concluding specific intergovernmental treaties concerning development of trade and economic relations, primarily, in aviation sector, that is, in civil aviation sector. So now the giant of aviation industry, Motor Sich, is able to offer a full range of their achievements to this fruitful market.



**Vyacheslav A. Boguslayev**  
Chairman of the Board of Directors,  
Motor Sich JSC

It refers to fulfilling the treaty concluded in 1995, which relates to organizing An-140 passenger airplane manufacture under license in Iran, with the airplane dubbed IrAn-140; and the treaty concluded in 1997, which relates to TV3-117VMA-SBM1 turboprop engine manufacture under license in Iran for this airplane. Currently, a run-up is underway to conclude similar treaties concerning An-158 passenger airplane and D-436-148 engine to power it. Moreover, activities are carried out to assure operation of Motor-Sich-JSC-made engines on Mi and Ka helicopters operated in Iran.

Given multiple international sanctions against Iran, which have been lasting for more than 30 years, this cooperation is implemented under strict control of State Export Control Committee of Ukraine, with national legislation requirements rigorously observed with regard to controlling international transfer of goods intended for military and military-and-civil purposes. This legislation is based on provisions of international surveillance policy, with Ukraine taking an active part in it.

According to quite objective appraisals, aviation industry of Ukraine is still among the ten leading nations of the world in terms of its scientific and industrial potential, with Antonov aircraft, Motor Sich JSC aero engines, and Ivchenko-Progress state design agency being the face

of Ukraine at all the aviation shows. An-140 and An-148 passenger airplanes and transport convertible An-74TK-300 aircraft were developed and commercialized in Ukraine after the USSR collapse. Currently, 100-passenger An-158 airplane is at its final development stage, and An-70 military cargo aircraft is ready to be commercialized; An-124-100M-150 Russian cargo aircraft has been successfully upgraded and certified; and implementation of the contract has started to upgrade 105 An-32 cargo aircraft of India Air Force. Motor Sich JSC manufactures engines for all the aircraft specified.

## D-436-148



To expand its presence in the market of aeronautical propulsion systems, Motor Sich JSC is undertaking efforts to develop and commercialize manufacture of a variety of new promising aero engines and to upgrade commercial ones, with D-436-148, AI-450-MS, AI-450M, TV3-117VMA-SBM1V, and MS-500V among them. Those engines are developed by designers both of Motor Sich JSC and Ivchenko-Progress state design agency, a long-term partner of Motor Sich JSC, with scientific and industrial Ivchenko Corporation founded between the two companies in 2007.

D-436-148 engine has been developed around the best design solutions; it is intended for An-148 passenger family airplanes that are to come to Iranian airlines in the near future. An extensive package of design-and-research works related to the engine combustion chamber and enhancement of engine acoustic performance make it possible to provide emission and noise levels substantially lower than ICAO standards. In terms of its performance, this commercially manufactured engine is as good as its foreign competitor products. The engine is manufactured by Motor Sich JSC in cooperation with Salut FGUP MMPP, Moscow, Russia.

Motor Sich JSC has developed AI-450-MS two-shaft auxiliary gas tur-



An-158

bine engine (APU) for various An-148 versions and other passenger and cargo aircraft powered by cruise engines of D-436 family. It is intended to start cruise engines and supply compressed air and electric power to airplane aboard systems, with cruise engines inoperative. High efficiency of AI-450-MS APU is attained through low specific fuel consumption that is a result of high thermodynamic cycle parameters, high efficiency of subassemblies, as well as a result of selecting air bleed from an ancillary compressor; and through low operation costs.

While offering new An-148 and An-158 passenger airplanes, Ukraine keeps on working on enhancing An-140 operational performance. Thus, to meet requirements of Iranian airlines concerning An-140 takeoff with the maximum payload from high-altitude airfields, Motor Sich JSC is working to update a cruise engine that would be able to keep its take-off power up to high environment temperatures.

Motor Sich JSC pays great attention to manufacturing engines for utility helicopters. AI-450 is the smallest helicopter engine developed by Motor Sich JSC along with Ivchenko-Progress state design agency. Various engine modifications can provide take-off power at the range of 370 to 600 hp. Currently, this company is fo-

cused on developing AI-450M engine version intended to re-motorize Mi-2 helicopters previously manufactured, wherein it is to replace GTD-350 gas turbine engine. We hope that a huge world fleet of Mi-2 helicopters opens good prospects for AI-450M engine manufacture, with re-motorizing a substantial part of the fleet being profitable.

To enhance middle class helicopter performance when operating at high altitudes and high temperatures, Motor Sich JSC has developed a new TV3-117VMA-SBM1V helicopter engine that possesses extended life limits: time before the first overhaul and time between overhauls (TBO) are 4,000 hours/cycles; total life is 12,000 hours/cycles. In terms of its performance, the engine meets actual technical requirements; it possesses Type Certificate No. CT 267-AMД issued by Aviation Register of Interstate Aviation Committee (AR IAC) on 5 September 2007. The engine has been designed by Motor Sich JSC around industrialized TV3-117VMA-SBM1 turboprop engine well-known in Iran, with its core engine and free turbine used. When designing the helicopter engine, the best design solutions were introduced to assure higher parameters and time limits that had been streamlined previously on a prototype en-

## AI-450-MC



# Engines

engine. Thus, using TV3-117VMA-SBM1 engine turbine has makes it possible to avoid application of covering turbine disks with restricted service life, which were used in TV3-117V family engines, including VK-2500 engine, and, thus, to extend its life limits up to the levels above mentioned.

Subject to helicopter type, the automatic TV3-117VMA-SBM1V engine control system makes it possible to adjust take-off power within the range of 2,000 hp kept up to the temperature of 51°C to 2,500 hp kept up to the temperature of 35°C; in these conditions and with one engine inoperative (OEI), another engine provides power of 2,800 hp at 2.5-minute power setting irrespective of take-off power adjustment, with its power of 30-minute power setting being equal to power of take-off power setting.

Preset when developing TV3-117VMA-SBM1V engine, higher performance, in terms of keeping take-off power subject to environment temperature and altitude, was confirmed when testing the engine in the thermal altitude test chamber at Baranov P.I. CIAM FGUP wherein the engine demonstrated sustain-

able starting up to an altitude of 6,000 m, as well as sustainable operation at an altitude of 9,000 m within the full range of probable environment temperatures.

Thus, installing TV3-117VMA-SBM1V engine makes it possible to enhance significantly performance of both new helicopters and ones previously manufactured, especially when operating them at high temperatures and altitudes, with costs being unsubstantial. It also makes it possible to increase payload and assure high safety of landing with one engine failed in operation.

TV3-117VMA-SBM1V engine has the same weight and dimensions, overall and fitting, to fit the engine to helicopter fitting points, like the engines that power Mi and Ka helicopters., which allows it to be installed on all the helicopters of Mi-24, Mi-8MT/Mi-17, and Kamov families previously manufactured, with the minimum alterations made in helicopter airframe and systems.

Due to their high performances, powered by TV3-117VMA-SBM1V engines, Mi and Ka helicopters are invaluable for carrying out humanitarian and rescue oper-

ations in case of earthquakes that, unfortunately, are quite often in the mountain regions in Iran. Those helicopters rank second to none for carrying out construction-and-assembling operations at high altitudes.

Equipped with FADEC automatic control system, TV3-117VMA-SBM1V series I engine version is designed for new helicopter projects. This automatic control system is intended for further enhancement of engine and helicopter performances.

On 19 May, 2010, powered by TV3-117VMA-SBM1V engines, Mi-8MTV helicopter took off from the airfield of Kono-top aircraft repair and overhaul plant. The helicopter climbed up to an altitude of 8,100 m for 13 seconds in the course of tests, with the world's record set up. Powered by TV3-117VMA-SBM1V engines, Mi-24 helicopter showed record rate of climb earlier in the course of previous tests: it climbed up to an altitude of 5 km for 9 minutes only, which means 2.5-time increase in rate of climb. upgraded Mi-24 helicopter powered by TV3-117VMA-SBM1V engine has been introduced into service by the Ministry of Defence of Ukraine.

Given changes of the world helicopter market conditions, Motor Sich JSC is undertaking efforts to develop a new generation of MS-500V family engines of 600 ... 1,000 hp power class, which are intended for utility helicopters whose take-off weight is 3.5 ... 6 t.

As experts predict, the market sector of this class helicopters is going to be one of the most promising one in the coming up years due to helicopter versatility.

A leading version of MS-500V model line is going to be an engine of take-off power of 630 hp designed according to requirements specification by Kazan Helicopter Plant JSC for Ansat type helicopter.

To design MS-500V engine family, Motor Sich JSC draws on its experience obtained when developing AI-450-MS auxiliary power unit (APU) for An-148 aircraft; also the company applies design solutions advanced and proved available. It allows the company to develop engines that are as good as their foreign competitor prod-

## TV3-117VMA-SBM1V





ucts in terms of their performances, with development term being short and costs being reasonable. It also makes it possible for helicopters to achieve high economic performances when being commercially operated.

Currently, refinement of gas-dynamic parameters is carried out at the test bench, as well as on the core engines and full engines. A number of specific test benches are manufactured at Motor Sich JSC to refine engine units for certification purposes.

Now, developing an engine family around the basic core engine is a widely used world practice that assures economic advantages at all the stages of engine life cycle. Therefore, when designing MS-500V engine, design solutions were used to make it possible to develop engines of other types and for other purposes around promising engines, such as turboprops and by-pass engines for small business jets and general aviation airplanes, auxiliary power units (APUs), gas turbine drives, etc.

Motor Sich JSC along with Salut FGUP MMPP keep their long-term tradition of developing engines for trainers, and they have started commercializing AI-222-25



engine of 2,500 kgf for Yak-130 operational trainer that currently is coming to the flying training centres of Russia.

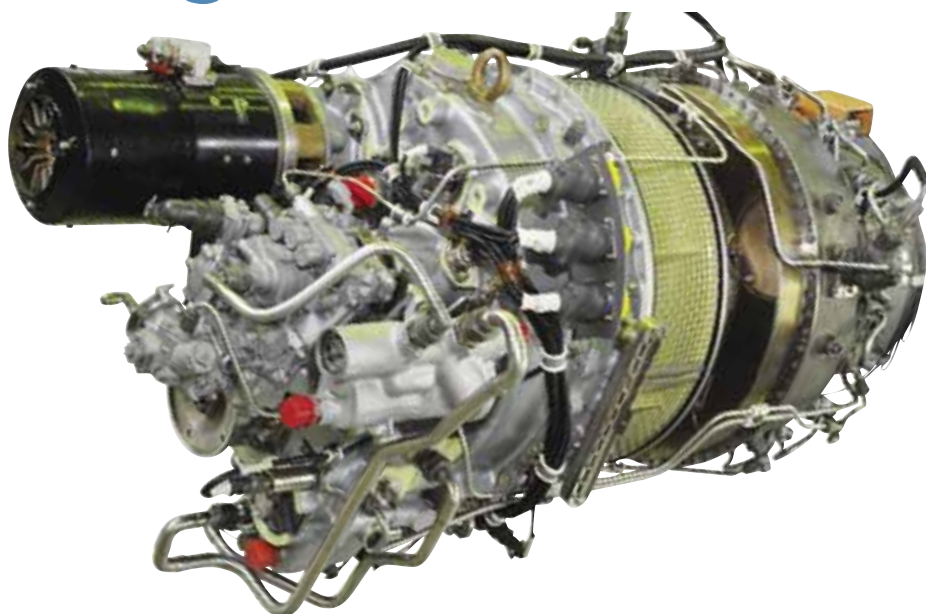
Augmented AI-222-25 engine version has been designed for further versions of Yak-130 operational trainers and similar supersonic aircraft that belong to other nations. This version is AI-222-25F engine whose take-off thrust is equal to 4,200 kgf. Its gas-generator part is aligned with AI-222-25 turbojet by-pass engine virtually in full, with additional accessories and systems installed on it to assure augments operation and jet nozzle adjustment.

Currently, AI-222-25 and AI-222-25F engine versions are installed on L-15 pilot-scale Chinese operational trainers.

To summarize, it is pertinent to say that aeronautical propulsion industry of Ukrainian can offer a wide range of advanced engines within actual international surveillance policy.

Developed and introduced by Motor Sich JSC, its advanced technical and design solutions are based on state-of-the-art achievements of science and technology. Close collaboration with designers and multiple partners allows the company to design and develop engines that assure the future of air transport, including air transport of the Islamic Republic of Iran.

## MS-500V



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[eo.vtf@motorsich.com](mailto:eo.vtf@motorsich.com)  
<http://www.motorsich.com>

# Schedule of Aerospace and Defence Exhibitions

November

## Airshow China 2010

16–21 November



8<sup>th</sup> China International

Aviation and Aerospace Exhibition  
Zhuhai, China

www.airshow.com.cn/en

Phone: +86 756 336 9235

Fax: +86 756 337 6415

E-mail: zhuhai@airshow.com.cn

## Indo Defence & Aerospace

24–27 November



International Aerospace

Exhibition Jakarta, Indonesia

www.indodefence.com

Phone: +62 21 8650962, 8644756

Fax: +62 21 8650963

# 2011

February

## AeroIndia 2011

9–13 February



8<sup>th</sup> India Aerospace Exhibition

Bangalore, India

www.aeroindia.in

Phone: +91 11 23371987

Fax: +91 11 23371987 0849

E-mail: contact@aeroindia.in

April

## LAAD 2011

12–15 April



8<sup>th</sup> Latin America International

Aerospace and Defence Industry Exhibition

Rio de Janeiro, Brazil

www.laadexpo.com

Sergio Jardim, Director

Phone: +55 11 3214 1300 Ext: 200

E-mail: sergio.jardim@clarionevents.com

June

## Paris Air Show. Le Bourget

20–26 June



Paris International Aerospace Show

Paris, France

www.paris-air-show.com

Phone: +330 826 465 265

Fax: +330 147 20 00 86

E-mail: siae@salon-du-bourget.fr

September

## Asian Aerospace 2011

8–10 September



Hong Kong, China

www.asianaerospace.com

David Lim, Project Director

Phone: 65 6780 4669

E-mail: david.lim@reedexpo.com.sg

## Aviation Expo / China 2011

21–24 September

Beijing, China

The 14<sup>th</sup> Aerospace Show in Beijing

www.cpexhibition.com

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Fax: +852 25117427

Office in Baijing: +86 10-87730641/42/43

October

## LAVEX 2011

3–6 October



Mitiga Airport, Tripoli, Libya

Libyan aviation exhibition

www.lavex.ly

Eng. Anwar El Mezraghi

WAHAexpo General Manager

Phone: + 218 21 726 9417

Fax: + 218 21 362 2360

E-mail: info@wahaexpo.com

November

## Dubai Airshow 2011

13–17 November



Dubai, United Arab Emirates

The 12<sup>th</sup> International Aerospace Exhibition  
in Dubai

www.dubaiairshow.aero

Phone: + 44 208 391 0999

Fax: + 44 208 391 0220

December

## LIMA 2011

6–10 December



Langkawi, Malaysia

Langkawi international maritime &  
aerospace exhibition

www.lima.com.my

35F-1-6, Jalan Wangsa Delima 5,

Section 5, Wangsa Maju,

53300 Kuala Lumpur,

Malaysia

Ahmad Dzuhri Abdul Wahab

Managing Director

Phone: +603 4142 1699

Fax: +603 4142 2699

E-mail: dzuhri@hwlima.org

# 2012

February

## Singapore Airshow 2012

14–19 February



International Civil

and Military Airshow Singapore

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E-mail: dannysoong@singaporeairshow.com.sg



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# NO POLITICS!

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It seems to be the right time now to revise the Russian-Iranian partnership in the hi-tech. Most of the “made in USSR” gadgets found in Iran now were good for some time but now they need to be replaced by something new, updated and effective. However any new product to appear in Iran should be supported by the decent aftersale support and be a part of the integrated solution. For the civil aviation this should be the new jets accompanied by the modern solutions for the flight safety support. IFC has something to offer here and now. They have investigated the airport equipment produced in Russia and approached the industry with an offer to integrate all those systems in one package supported by the financial instruments. Now IFC is ready to offer the Iranian airports the integrated solution in the flight safety and control capable of working under the different protocols and compatible with the European standards.

The surveys made on the current state of Iran's airport equipment have demonstrated the urgent requirement in the advanced meteorological systems, radars, lightning equipment and air traffic control systems.

"We have reached the agreement with the different Russian vendors, - says the IFC spokesperson, - and we are eager to act as the financial engine and integrator for the airport equipment sales". Now the airport authority does not need to approach the dozens of the equipment producers and then make everything working and serviced without the integrated support. That is where IFC is ready to solve the problem with its expertise in the procurement, logistics, financing and the aftersale support.

However IFC still requires the feedback from the Iranian airports to develop the tailor-made solutions for the repair and modernization of their equipment. Meanwhile it is ready to introduce the sanctions-resistant Russian-made systems independent from the foreign vendors. All that equipment is adjusted to work with GLONASS system, which serves as a good alternative for GPS with the transmitting functions. At the same time it is compliant with the European air navigation standards.

Along with purely technical and logistical solutions IFC is willing to give the Irani-



an airports a hand in receiving the export loans from the Russian banks within the framework of the state support program for the Russian-made hi-tech devices. This facility provides a long-term loans (around 10 years) with the competitively low interest rates. The IFC has already a successful story to tell about its experience of delivering the Russian aircraft to Cuba.

### IFC partners in equipment supplies GBAS systems

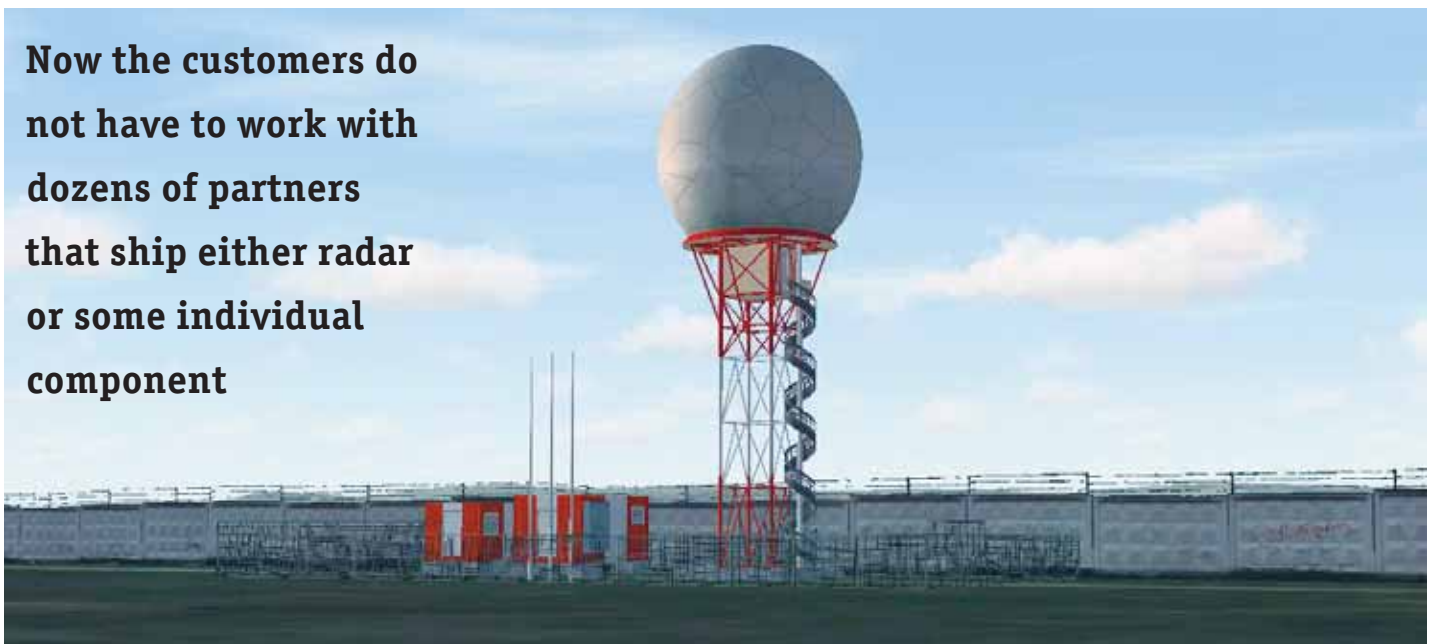
A cornerstone in the 2005 development program for Russian airports was development of ground based augmentation system (GBAS) for landing approach to comply with categories I, II and III of International Civil Aviation Association. Now Russia is ready to share this hi-tech solution with her partners. The system provides

security for important stages of the flight, which is reinforced by GPS/GLONASS cross check. This implies the standard package for position measurement (SPS) and makes provisions for the high level of performance in all aspects of flight navigation: approach, landing, missed approach maneuver and for operation in the coverage area.

### NITA

The NITA company carries out the whole complex of development, production, supply, startup, repairs and technical support for all products. NITA specializes in development, production and supplies of equipment and special software for handling flight navigation tasks, airspace usage and flight control for civil and military aviation. The main areas of business are: Equipment

**Now the customers do not have to work with dozens of partners that ship either radar or some individual component**



# Airports

for flight control centers, communications, navigation and surveillance systems for air traffic management (ADS-B), building design, radio-technical support and communication, simulation and training units, production and construction of installations (including mobile). Also, the company provides multi-purpose equipment and software.

In the research process NITA resorts to the most up-to-date technology and latest technique in microelectronics, hardware and software. NITA pioneered in Russia in creating a computer-aided system for ATC based on Windows NT technology and also developed software complex for ATC automatic control based on Linux operating system. Moreover, NITA implemented a technique to combine analog and digital radar data to output it to

CRT monitors and developed a single circuit scanning converter. In the series of further technological advances are linking of landing radiolocators to modern visualization system, development of digital recorder able to combine voice and radar flight information, and introduction of digital communications switching system, utilizing touch-sensitive displays. Also, the company has developed the accurate time system based on GPS/GLONASS, found the way to combine radar data with ADS-B output, created the mainframe-based system of 3D visualization for training simulators for pilots and traffic controllers.

NITA possesses all licenses needed for development, production and repairs of aviation equipment, including that of dual use, armament and military weaponry.

Also the company has the license for information security product development.

The products of NITA serve more than 180 aviation enterprises, ATC centers, air training centers in Russia and in foreign countries. More than 100 ATC centers utilize automated systems and equipment made by NITA.

## Institute of radar meteorology (IRAM)

The main areas of activities are development, production and integration of automatic systems for meteorological support, development of special hard- and software, repair works and upgrading of hydro-meteorological equipment.

The "Ilyushin Finance Co" leasing company offers the most advanced solutions







**All equipment is adjusted to work with GLONASS, which enables to propose an alternative for GPS and at the same time act as a transmitter, also being in compliance with European air navigation facilities**

of IRAM. Particularly, CRAMS-4 — complex radar airfield meteorological station, intended to collect and measure meteorological data, consisting of critical parameters of airfield weather. Then this system processes this data, creates meteorological reports, displays and broadcasts them to ensure safe flight operations of taking-off and landing.

The system serves the following purposes: automatic broadcast of weather reports to display and record facilities; automatic creation and further transmitting of meteorological reports in METAR (SPECI), MET REPORT (SPECIAL), ATIS and KN-01 codes; status reports for all measuring meteorological equipment; in case of total hardware failure the system polls MOR and cloudbase height detector elements, wind conditions, air pressure, temperature and air humidity meters of the back-up set of equipment. Also it allows broadcasting of such data to display facilities; real-time input and data storage with daily tolerance of  $\pm 5$ . Allows for time tracking correction; stores meteorological data log for 30 days; AB-6 weather logging station activity logging; processes pilot balloon information and prints KAE-1 logbook; receives and displays information from automatic meteorological radar facility AMRF "MeteoYacheika" ("Meteo-MeteoYacheika") for more accurate detection of cloud form and dangerous

atmospheric effects in the airfield area, thunderstorm cells mapping and ATIS-reporting.

The key component for data transfer is "MeteoTeleks"/"MeteoServer" automated information system. Optionally, data transfer is available through central control systems of other vendors, supporting standard communication protocols and messaging formats (UniMAS, Consul, Transmet and others). The system supports direct data transfer to various ATIS.

CRAMS-4 station monitors the following parameters: air pressure, air temperature, relative air humidity, wind speed and direction, cloudbase height, meteorological luminous range, precipitation rate and rainfall amount and lightning strikes. It supports manual input of weather conditions that are not automatically monitored. Also, manual input is possible in case of metering equipment fault.

### "Azimut" company group

"Azimut" company group is a developer of communication system and facilities, navigation, control and automation of ATC. Equipment, developed and produced by enterprises owned by "Azimut" group, serves more than 100 airfields and ATC centers.

Company's expertise is development and production of various monitoring systems, remote control systems for pow-

er and industrial facilities, avionics equipment complexes. "Azimut" group's enterprises develop and produce special hi-tech avionics equipment. Primary users of said equipment are airports and avionic industry enterprises attracted by the high level of quality, humble cost and fast-response production.

Particularly, the Iranian customer is offered Azimut Doppler Radio Beacon DVOR 2000 integrated system. It is worth noting that Doppler azimuth tachometric beacons DVOR/DME were supplied to Russian airports in Samara, Krasnodar, Irkutsk, Krasnoyarsk, Volgograd, Magadan and Rostov-on-Don. The system proved reliable and meets all market needs. Radio beacon consists of radio equipment, two monitoring antennas and RCE 2000 remote control. Radio beacon is embedded into its column and equipped with heating system. Antennas are made of one central and 48 radial elements fashioned in a circle of 13.5 meters.

Power supply for the beacon is tailored to use supply lines and back-up generator 380/220 V, 50 Hz. Radio beacon can run on batteries for 30 minutes. Uninterrupted duty of the device is 24 hours and does not require continuous operator's presence. Hardware components and production comply with IEC 297 standards.

**Ekaterina Sobol**

# Exhibitions



## AVIASVIT NO.7: CURRENT EVENTS

Over 200 enterprises from 32 countries attended the 7th International Aerospace Exhibition Aviasvit-XXI held at the Antonov flight test base in the city of Gostomel, Ukraine in October.

Thousands of people watched magnificent demonstration flights of An-148 and An-158 passenger and An-74 multifunctional aircraft as well as the world's largest transport aircraft An-225 Mriya and An-124-100 Ruslan. All of them attracted attention of experts and other guests. An-148-family regional jets showed by the Antonov state enterprise enjoyed the largest popularity. This company demonstrated its newest airplanes including the An-148 and An-158 and their executive version An-168 as well the newer An-178 transport aircraft. In addition, it exhibited the An-74 marine patrol version, upgraded versions of the An-124-100 Ruslan super-heavy transport and An-32 light transport aircraft.

The exhibition included a Ukrainian-British business forum aimed at exchanging information about advanced aviation technologies by both countries. Eight British companies, namely Apollo Aerospace Components, BAE Systems, Wall Colmonoy Ltd, Didsbury engineering Co Ltd, Godrich Control Systems, Rolls-Royce International Ltd, Spectrum Technologies Plc and Shropshire International Trade made their reports. This event was to promote further cooperation of British companies with Antonov. Scientific-practical conferences organized by Antonov experts concerned important problems of employing information and computer technologies in aircraft design and manufacturing. Aviasvit-XXI

was attended by the Chairman of the Supreme Council of Ukraine Vladimir Litvin and Ukraine's Minister of Industrial Policy Dmitry Kolesnikov.

### With a Stroke of the Pen

On October 1, DAP Ukraina and Antonov have signed a letter of intent proving the airline wants to buy six An-148 airplanes in 2011-2012, of which two are in VIP versions.

The successful operation of the An-148 by AeroSvit airline made another two Ukrainian carriers — Dnepravia and Donbassaero voice their plans to use the plane on their routes. Chiefs of Antonov (aircraft designer and manufacturer), Lizing-



## **Antonov is planned to buy out 50% of the share capital in UAC — Civil Aircraft management company for 12.5 million rubles. The rest half will be owned by UAC. The joint venture will be named UAC — Antonov**

techtrans (orderer), AeroSvit, Dneproavia and Donbassaero signed an agreement on buying An-148s on leasing terms. Ukrainian carriers are planning to operate 7 An-148s jointly with Antonov by 2011 year-end.

Antonov and Lizingtechtrans have also signed a letter of intentions where the latter plans to buy another 10 An-148 airplanes for other Ukrainian and foreign companies on leasing terms.

The exhibition included one more important event. Russia's Joint Stock Company "United Aircraft Corporation" (UAC) Aleksey Fyodorov said Antonov and UAC had set up a joint venture in order to coordinate An-140, An-148, An-74, An-70 and other projects. The sides decided to pursue unified pricing and marketing policy to avoid internal competition. This company will deal with after-sales services and cooperative deliveries. Mr. Fyodorov said it had been planned to sign the documents later. And this happened on October 26. The agreement was signed in the presence of Russia's Chairman of the Government Vladimir Putin and Ukraine's Prime Minister Nikolai Azarov. The agreement on the execution of rights was signed by UAC Pres-

ident Aleksey Fyodorov and Antonov Chairman of the Board Dmitry Kiva.

Antonov is planned to buy out 50% of the share capital in UAC — Civil Aircraft management company for 12.5 million rubles. The rest half will be owned by UAC. The joint venture will be named UAC — Antonov.

"The joint venture of UAC and Antonov should become a platform for the Russian-Ukrainian aircraft industry teamwork, said Aleksey Fyodorov. The primary goal of the enterprise is to coordinate our activities related to the jointly developed AN-series aircraft marketing and promotion including sales and after-sales service. Another





# Exhibitions

er important objective for the joint venture is to prepare further proposals for the Russian and Ukrainian aircraft industry integration”.

Aviasvit-XXI helped promote international cooperation, too. During the exhibition, Antonov experts met with representatives of embassies and enterprises of foreign countries including Russia, Argentina, Brazil, Guinea, Germany, India, Canada, Lithuania, Serbia, USA, France, Republic of South Africa and Iran. In particular, Chairman of the Board of Antonov Dmitry Kiva reported signing an agreement for the acquisition and production of the An-158 with Iran. At the press conference, he said that Iran planned to lease two and buy eighteen aircraft. Also, the agreement provides for the production of these aircraft in Iran. 60 An-158s are to be assembled under the project.

“We have signed an agreement for buying and manufacturing An-158 aircraft with Iran, so the training and exchange of specialists is carried out”, said Kiva. He stressed that only civilian sector is concerned, so Ukraine will not be criticized by other states. “We are talking only about civil aircraft used for civil purposes”, he added. The An-158 is undergoing certification tests to be over this year. The aircraft will receive its certificate in 2011. The new-



**Although these planes have been operated by STC “Russiya” for only nine months, they have already carried 120,000 passengers and made more than 2,400 flights this year**



er An-158 worth \$27 million will carry 86 passengers. According to Mr. Kiva, Iran is going to assemble An-140 at HESA factory in Isfahan. Iran already operates 10 An-140s.

## Professionals Speaking

Antonov’s Chairman of the Board Dmitry Kiva made a report at Aviasvit-XXI. He said that both Ukraine’s main enterprises and foreign companies supplying respective equipment took part in the An-148 project. The preference is given to Russian or Ukrainian equipment, which should certainly meet the highest security, safety and reliability standards. According to Mr. Kiva, if there are no adequate Russian or Ukrainian systems, foreign-made ones are acquired. The client may choose various configurations. Mr. Kiva reported that respec-



el tanks. It can carry 19 passengers at a speed of 850 km/h at the range of 7,000 km like the most advanced business jets.

The An-178 transport aircraft is another Antonov's project. According to Mr. Kiva, the main part of R&D studies has been fulfilled and design documents will soon be ready. This aircraft carrying 15 tonnes of cargo will become a good replacement for well-known An-26, An-74 and An-12 aircraft. The An-178 features improved fuel-saving and efficiency performance as it was made employing advanced computer technologies and has cutting-edge control systems. The wing, body length, engine and equipment of this aircraft are similar to those of the An-158, but the body is deeply modernized.

The An-124-200 programme has been resumed. This aircraft will have state-of-the-art digital control systems. At present, the An-124-100 is very popular among airlines, no free aircraft can be found. Such planes are employed by the US to transport NATO troops and cargo, so they fully meet US requirements.

Mr. Kiva mentioned the ongoing works on the An-70 project. "This aircraft is not worse than the A-400M and even surpasses it by main parameters, said Ki-

five studies carried out by aviation experts showed that the An-148's reliability is even higher than that of Boeing. "Of course, airlines have some questions during the operation, but they are rapidly solved and all the bugs are eliminated. The An-148 has already been modernized since it received type certificate and started regular flights. Now it can use Cat III ICAO runways and the respective certificate is available. Aircraft meeting this standard is able to land and take-off almost in zero visibility conditions as well as use unpaved runways, which largely increases its operational performance.

Mr. Kiva reminded that the operation of the An-158, a deeply upgraded version of An-148 with altered tail unit, began this year. The body was extended by means of insert retaining all the take-off and landing characteristics. The configuration was changed, too. A single-class variant can carry 99 passengers. Mr. Kiva thinks the market for the An-158 is rather large. He stressed that airlines should have different versions of An-148-family aircraft for their passenger capacity to meet various air routes, which, in his opinion, could raise airline efficiency. In 2010, the certi-

fication of An-158 is to be completed. Its design documents will be submitted to the plant starting from next year.

Also, Antonov is developing the An-168 (ABJ — Antonov Business Jet) based on the An-148. It will be a corporate jet with higher comfort and increased fu-





# Exhibitions



**According to Mr. Kiva Iran is going to facilitate the assembling of An-140 at HESA factory in Isfahan. Iran has already operated 10 An-140 aircraft**

va. So it will have great market prospects". The current efforts are focused on equipping the aircraft, which was designed rather long ago, with advanced element base. It will feature a digital powerplant control system and indication of other systems. The first two series aircraft are being manufactured at Aviant Kyiv Aircraft Plant.

The An-140 is made at the Kharkov State Aircraft Production Enterprise as well as

in Russia and Iran. The plane proved very well during its operation in Russia's Yakutia. There it flew 362 hours a month, thus demonstrating high reliability performance.

Speaking about Antonov's regional aircraft projects, General Director of State Transport Company Russia Sergei Belov said that Pulkovo Airlines operated the Tu-134 and faced the problem of its replacement. "We talked with An-

tonov on the An-300TK intermediate version directly as we kept in touch operating the An-12. As for the An-148 operated by STC "Rossiya", we helped to create this plane. Dmitry Kiva said clients might choose the equipment they want and I can say that this has been done in aircraft made for our company. We think the aircraft is becoming better. The first aircraft we received included various options. We





got the first An-148s in December and started its operation in January. Despite we have been operating such planes for only nine months, we have got five of them in service now. They have already carried 120,000 passengers and made more than 2,400 flights this year. And in mid-September the passenger traffic equaled only 90,000 people. It is a modern aircraft that can and should fly. On some days, our An-148s fly up to 14 hours. The operator has to estimate aircraft performance and, of course, we are monitoring all the defects, accumulate desired improvements and analyze its operation. We voice our remarks and wishes at conferences we hold in St. Petersburg. We invite manufacturers, designers, leasing companies and suppliers to them in order to examine the respective system, estimate aircraft behaviour and schedule the needed activities.

This year we are going to receive the sixth plane but think it is not enough. The contract provides for buying six aircraft with an option for another nine planes. And we are going to continue the acquisition.

STC "Rossiya" carries three million passengers a year. Half of our flights are made in Russia and half — abroad, as a rule, in Europe and South Europe. That is why, it is only natural that flight cleanness, reliability and high-quality services are very important for us in Western airports. That is why we even discuss ground handling operations apart from other issues. We have created a unique continuing airworthiness programme jointly with Antonov experts. This programme was audited without any remark. It is only natural that we face different problems and complicated situations. They are timely solved and these solutions are introduced in our everyday activity. It is normal like in any progressive process. If STC "Rossiya" did not do this, our aircraft would not fly so much as they would be entangled with unsolved problems".

General Director of Ilyushin Finance Co. leasing company Alexander Rubtsov said the main task is to improve quality and reliability as well as reduce labour intensity of An-148 aircraft. He thinks that Antonov's regional aircraft is a successful programme, which has good prospects in Russia and



abroad. In addition, he said: "Of course, we should upgrade aircraft, their engines including the auxiliary power unit and certify them in Europe and USA. Though it is a very big programme, it will be undoubtedly implemented. Ilyushin Finance Co will surely help our operators and is already doing it now. Aftersales support is not the best side of the Russian aircraft industry, but nevertheless we will work in this

direction, we will create spare parts depots. We have already built one in Moscow and another one is under construction in St. Petersburg (Pulkovo), where our first client, STC "Rossiya", is located. We supply there engines, aircraft spare parts and auxiliary power units. In addition, we send to STC "Rossiya" our engineers on a regular basis in order to provide our client with 24/7 support. Of course, there is still much



# Exhibitions



**Antonov Business Jet can carry 19 passengers at a speed of 850 km/h at a range of 7000 km that makes it equal to the majority of advanced business jets**

to be done to raise the aircraft quality and reliability as it was put in operation almost at once, which increases requirements for it. Indeed, it is a commercial aircraft that should earn money”.

Now, Ilyushin Finance Co. is considering establishing the Ukrainian affiliate to sell An-148 and An-158 planes made in Ukraine. Alexander Rubtsov thinks that Ukrainian leasing company Lizingtekhttrans will be able to provide funding to the production of Ukrainian regional aircraft in full. He reckons a pool of leasing companies including Ilyushin Finance Co. can be set up. “Probably, we will create our affiliate in Ukraine. But now it is just an idea”. Leasing companies are ready to help the Voronezh and Kyiv plants get the needed funding. They need about \$225 million of investments.

Recall that the Russian-Ukrainian An-148 aircraft is now assembled at Aviant factory

in Kyiv and Voronezh aircraft plant in Russia. The Russian company plans to manufacture five aircraft in 2010. In 2011, 12 vehicles are scheduled for production at Aviant. In 2011, the Ukrainian aircraft industry will make 7 An-148s and five An-158s to be ordered by Ilyushin Finance Co.

## Participants

The exhibition was attended by such companies as UAC, Russian Technologies State Corporation, “MMPP “SALUT” and others.

In particular, the Motor Sich's production, that was exhibited on the stand of A. Ivchenko Scientific-Production Enterprise, attracted wide interest. Experts shown interest in many full-scale models including the D-436-148, the most advanced engine designed for An-148 and An-158 civil aircraft. Also, the visitors could see a new development of Mo-

tor Sich — the MS-14S turboprop engine for An-3, An-38 and Be-132MK short-haul airplanes with a capacity of up to 30 passengers. They could also examine the AI-450M engine designed for the re-equipment of Mi-2 helicopters. Much attention has been paid to the newer TVZ-117VMA-SBM1V turboshaft designed by Motor Sich. Its high efficiency was proved during testing the Mi-8MTV helicopter on May 19, 2010 at the airport of the Kono-top Aircraft Repair Plant, when it rose up to 8,000 m in 14.5 minutes. Also, we should mention the MS-500V — a promising turbo-shaft, one of the latest developments of Motor Sich. It will become the baseline powerplant for engines with a power of 600-1,000 hp designed for helicopters with a takeoff weight varying from 3.5 to 6 tonnes.

**Alexander Gudko**

