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aerospace technologies review **AIR FLEET**



Reincarnation of IL 16

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AN-148-100: GENERATING REVENUES

Ilyushin Finance Co.
United Aircraft Corporation



- *Financial and operating leasing of modern Russian-made aircraft*
- *Aircraft export financing*
- *After-Sale support*

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Hello, Merlion!



Editorial



South-East Asia presents important market for manufacturers of both commercial and military aircraft. In previous years Russia delivered mostly military aircraft and weapon systems to the region. Now, as long as the economical crisis is being overcome, Russian aircraft industry starts promoting three perspective commercial aviation products to the market. Potential customers are sure to get interested in the An-148, which has already started regular operational flights in Russia and Ukraine. New variants, including a stretched passenger and a business jet, are in development. The An-148 has attractive operational efficiency and outstanding take-off and landing performance, features that should make it a serious competitor for acquisition budgets in the region. Sukhoi SuperJet, which is claimed to be a new word in Russian aerospace technology, has been developed in wide international co-operation. Deliveries to the customers are planned to start around mid-year. The manufacturer stresses that the Superjet is aimed equally at both Russian and international markets. Aviation specialists all over the world are also closely watching the development of the ambitious MC-21 single-aisle airliner, which is intended to compete with Boeing 737NG and Airbus A320 aircraft line, the most successful modern commercial aircraft. However they are being manufactured since long ago, so they may find competition. As Airbus and Boeing are busy developing and promoting their models of higher capacity classes, Russian industry has some time to try to make this change for MC 21. Thus, it may happen to become the leader in its class of passenger aircraft capacity from 150 to 200 seats. Russia has sold substantial number of combat aircraft (MiG-29s and Su-30s) to the region, these types and their newer variants are still very competitive. The new Russian advanced jet trainer and light fighter/attack aircraft Yak-130 may well find its customers in South-East Asia as well. There are just a few countries in the world that are capable of producing aircraft engines, even less than countries manufacturing airframes. Russia and Ukraine, usually in co-operation tracing its origin to the old Soviet days, do produce aircraft engines of all classes, offering indigenous powerplant solutions for Russian and Ukrainian aircraft manufacturers. Summarising, the Russian and Ukrainian aircraft industries have modern and competitive products practically in all categories that the South-East Asian aviation markets may be interested in. It's always good to have a choice. It's even better to make a wise choice. We hope our magazine can help its readers to hear some day a famous phrase: "You have chosen wisely".

Yours faithfully,
Alexander Gudko

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AN-148-100: GENERATING REVENUES

In December 2009, first regular operational flights of Antonov An-148-100 started to bring revenues to the launch Russian customer, State Transport Company (STC) "Rossiya" ("Russia"). STC "Rossiya" is headquartered in St.Petersburg, so it was natural that the first route for An-148-100 was chosen to connect the two Russian historical capitals: Moscow and St.Petersburg. The new Russian-built regional passenger aircraft Antonov An-148-100 is the product of a joint Russian-Ukrainian development programme, and the first new indigenous commercial aircraft type to be put into service in the former Soviet Union in the last 20 years. Over 200 enterprises (70% of them Russian) participated in the development of the An-148, which was undertaken on a risk-sharing basis. The total investment in the program exceeded \$400 million, none of which was allocated from the state budgets. The fact is unique for the Russian and Ukrainian aircraft industries, which usually demand and receive government financing for their research and development programmes. By February 2010, the first three series production An-148-100s are expected to be delivered to STC "Rossiya". The deliveries were contracted via a financial leasing agreement with the leader of the Russian aviation leasing market, Ilyushin Finance Company (IFC). By the end of 2010, Voronezh Aircraft Production Plant VASO, the Russian manufacturer, plans to produce nine more aircraft. The ultimate production rate is expected to reach 36 aircraft a year. The combined domestic and export market for the An-148 is expected to be 500 aircraft.



Development history

The An-148-100 development began in 2001, and the project was first publicly presented at the Civil Aviation exhibition in 2002. The roll-out of the Ukrainian-built prototype occurred in October 2004, and the first prototype took into the air on 17 December, 2004. The certification flight tests went on for a bit more than two years, during which the aircraft proved itself as efficient, safe and reliable in a wide range of climate conditions (temperatures from -52°C to $+45^{\circ}\text{C}$) and high airfield elevations.

During the flight tests, including those in critical flight conditions, the aircraft experienced no failures, and went through the whole test programme pretty smoothly. In February, 2007 the aircraft, its D-436-148 turbofan engines and AI-450MS auxiliary power unit received type certificates in accordance with AP-25 regulations of the Aviation Register of the CIS Interstate Aviation Committee (AR IAC) as well as CS-25 of the European EASA. Handing over the type certificate, Tatiana Anodina, the MAK chairperson, stressed that "An-

148-100 meets the most modern noise (Chapter IV) and emissions (amendment 16 to Tome II) requirements of ICAO". The compliance with the European CS-25 EASA requirements was also proved and documented.

First flight of series production An-148-100

On 19 July 2009, the first An-148-100 assembled at VASO in Voronezh took into the air. After an intense acceptance, validation and certification test program of 25 flights, the aircraft was handed over to its customer — Ilyushin Finance Leasing Company — which, in turn, delivered it to the eventual operator — STC "Rossiya". Ilyushin Finance offers flexible schemes of deliveries to potential operators in Russia and abroad, including sales, financial and operational leasing. On 24 December the An-148-100 performed its first revenue generating operational flight in Russia from St.Petersburg to Moscow. Before the end of the year the second An-148-100 joined the fleet of STC "Rossiya", and the third is expected in February, 2010. All in all this

year VASO plans deliveries of 9 more aircraft to Russian and export customers.

The first operational flight of the An-148-100 made the news and was covered in news broadcasts from all major Russian national TV channels. Passengers interviewed by TV journalists admired the high level of comfort during the flight, mentioning low noise, spacious cabin luggage bins and a generous 32 inch seat pitch. "One would expect this level of comfort in a widebody airliner rather than in a regional aircraft," said one of the passengers. Up-to-date modern avionics and cockpit reduce pilot's workload. The airframe layout itself with a high mounted wing and significant clearance from the ground to engine nacelles reduce the probability of sucking a foreign object from a "dirty" runway into the compressor, thus ensuring a higher level of safety. Impressive take-off and landing performance and the ability of the An-148-100 to land even on soft unpaved runways add to the plane's flexibility of operations in remote areas. Overall, anywhere an An-24 or Yak-40, the regional aircraft most widely used on regional routes in the Soviet days, could land, the An-148-100 can also land and take-off. An in-built passenger staircase integrated with the cabin door adds to convenience of operations and eliminates the necessity to wait for mobile airport staircase to disembark or board the aircraft, thus reduc-

More than 200 companies from Russia, Ukraine, Europe and the USA participated in the An-148-100 development

Aircraft

ing the turn-around time and improving the operational efficiency. "That's exactly the set of features an airport needs to improve flight frequencies," says Nikolay Asaul, chairman of the transport and transit policy committee of the St.Petersburg administration. "The An-148-100 aircraft is a very lucky and long-awaited acquisition for STC "Rossiya", added Asaul.

An-148-100 is a success!

Yuriy Ostrovskiy, technical director of Ilyushin Finance Company, is very confident about the An-148-100: "This aircraft is definitely a success!" Sharing his impressions of the first operational flight, Ostrovsky says: "The An-148-100 smoothly and steadily flies through the air, easily enduring turbulence zones. I am sure this aircraft has huge potential not only in Russia, but at the international market as well.

Roman Pakhomov, director general of STC "Rossiya" airline, commented: "The in-

By January 2010 the order backlog reached 110



Photo by Oleg Limarev



The An-148-100 is unique as it is the only type developed by Russian and Ukrainian designers that has reached series production in the last 20 years

roduction into service of the An-148-100 will allow us to efficiently operate regional routes where aircraft of proper passenger capacity are needed. This aircraft's performance and high fuel efficiency, meets the requirements of both domestic and international routes. We are confident that this aircraft will provide us with new opportunities to develop the route network of our airline".

In December, 2009 and January, 2010, the An-148-100 of STC "Rossiya" flew four flights a day between Pulkovo, St.Petersburg and Moscow airports of Domodedovo and Sheremetyevo. With the number of aircraft growing in the airline's fleet the list of destinations will be significantly increased. So far, approval to operate the An-148-100, in addition to the the two mentioned above was released for Vnukovo, the third Moscow airport, as well as Kurumoch (Samara), Koltsovo (Yekaterinburg), Ufa, Minvody, Murmansk and Archangelsk.

The An-148-100 order backlog is growing

The number of orders for the An-148-100 deliveries is constantly growing.

Alexander Roubtsov, the IFC director general, says that 110 aircraft have been ordered, this includes firm orders and signed pre-contract agreements. The majority of these orders comes from Russian operators. STC "Rossiya" signed up for six firm and six optional deliveries. Polyot and Moskovia ordered ten each, Atlant-Soyuz signed up for 30. Pre-contract agreements include Vladivostok-Avia (four plus two options), Saratov Airlines (five), Cubana de Avaiacion (three plus three options), Aerosvit (ten), Dagestan Airlines (15). Ilyushin Finance Company plans to achieve a backlog of 100 firm orders. Negotiations are under

Variant	Passenger capacity	Production	Range, km
An-148-100	75	100–150	4400
An-148-200 (An-158)	99	100–150	2500
An-168 (ABJ E)	8–12	50	7000
An-168 (ABJ CS)	38	50	5350

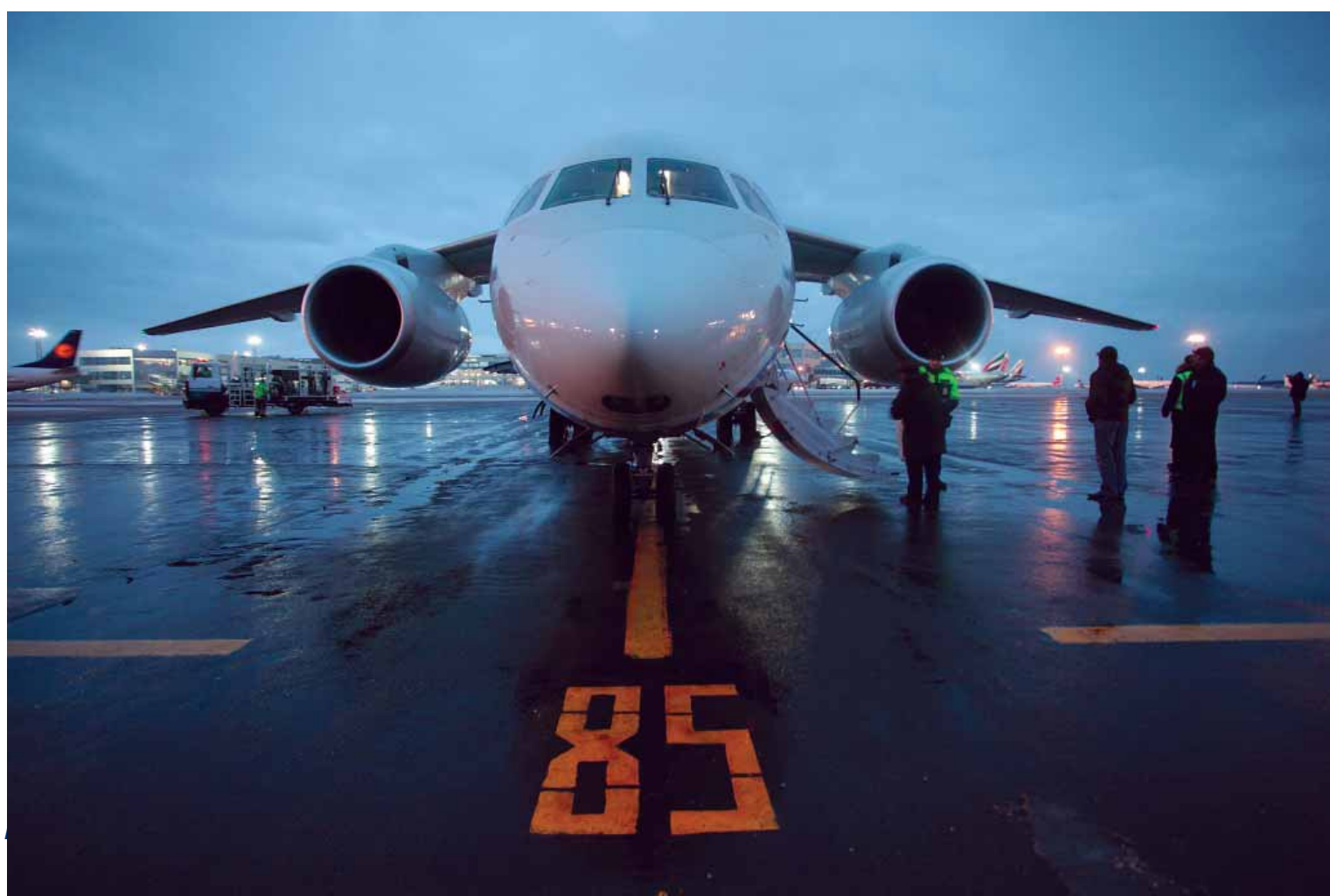
way with potential customers in Cuba, Venezuela, Bolivia, Syria and the CIS countries.

Alexander Roubtsov has no doubts that interest in the An-148-100 will grow with the beginning of its operations. In

addition, Roubtsov thinks that the export potential of this plane may significantly increase if its choice of engines expanded beyond the Russian-Ukrainian D-436-148. "So far Ilyushin Finance Company has not made its choice of a partner for an alternative Western engine", Roubtsov said. He acknowledged that proposals from Pratt & Whitney and Rolls-Royce are under consideration.

Yuriy Ostrovsky stressed that because of interest from export customers, an international version of the aircraft is in

The overall sum of investments in the program has exceeded \$400 million, none of which was allocated from the state budgets



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production with a full set of documentation in English. This one was ordered by the Ministry of Defence of Myanmar.

For successful operations of all the An-148-100 aircraft, the manufacturers introduced modern maintenance and after sales support. The United Aircraft Corporation (UAC) promises to allocate 400 million roubles for organisation of a spares depot at one of the Moscow airports. The same amount of investment will be allocated by IFC to organise spares depots at regional airports of the An-148-100 operators in Russia as well as abroad.

According to analyses undertaken by UAC, the combined domestic and export market for the An-148-100 is estimated at 500 aircraft. The development partners of the An-148-100 programme are going to offer a variety of modifications for the market, including a business jet, a freighter with side cargo door, a convertible cargo/passenger variant and a back-ramp military transport. Aviation experts estimate the number of aircraft to be produced for the programme to reach the break-even point at 250.

The forecasted production breakdown of various versions is in the table below.

The An-148 (An-148VIP, or ABJ — Antonov Business Jet) is expected to be built in 2010. As of January, the specifications of this variant are being finalised, and various salon layouts of two versions, ABJ E and ABJ CS, are being considered. They differ in range and passenger capacity, as shown in the table. The volume of the passenger cabin and the capability to operate from any airfield, including unpaved, will distinguish these business jets from their competitors, and, consequently, should attract customers.

An-158 is a stretched by 1.7 m version with increased to 99 passenger capacity. The deliveries may begin in 2011 after subsequent tests and certification, says Yuriy Ostrovsky, the IFC technical director. The Ukrainian airline Aerosvit is the launch customer for that model. It signed up for five An-158s and five An-148s.

The An-148 is a regional aircraft with a 68- 85 passenger seats capacity jointly developed and produced by Russia and Ukraine. In Russia, series production of the type is undertaken at VASO of Voronezh. 70% of the aircraft's parts and components are of Russian origin. The aircraft has received type certificate in accordance with AP-25 regulations of the Aviation Register of the CIS Interstate Aviation Committee (AR IAC) as well as CS-25 of the European EASA. The aircraft has been in commercial operations in Russia and Ukraine since 2009. The overall production run is planned at not less than 500 aircraft. The pilots training centre in St.Petersburg (Russia) is equipped with Computer-Based Training (CBT) and Full Flight Simulators (FFS).

The plane's maximum range is 4,400 km (2,376 nm) and cruise speed is 820-870 km/h (443-470 knots). The aircraft's lifetime is 80,000 flight hours and 30 calendar years. Operational expenses are 20-25% less than those of its competitors: Bombardier CRJ-700 and Embraer E-170. Average fuel consumption on a typical route is 1,600 kg per hour.

The An-148-100 is powered by two D-436-148 turboprops developed by ZMKB Ivchenko-Progress of Zaporozhye (Ukraine) and produced jointly by Motor-Sich of Zaporozhye (Ukraine) and MNPP Salut of Moscow (Russia).

Ilyushin Finance company offers aircraft sales on conditions of export financing. Technical maintenance support is provided by IFC Technick on the basis of payments per flying hour.

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HEAVYWEIGHT IS BACK



Efficient development of the native cargo aviation was not disturbed even by the financial crisis. Russian companies increase their activity in the market, get revenue and are even going to acquire new planes.

Cargo going up

According to Russian officials native cargo aviation proved to be almost the only branch of the country's transportation system capable of efficient operation in financial crisis conditions. Gennady Kurzenkov, Chief of Federal air transport agency (FAVT), stated that air transfers of cargo and mail in 2008 increased by practically 6% reaching 779 thousand tons. At that cargo turnover increased by 10% nearing the level of 15 bln ton/km. Even though during first months of the year all Russian aircraft companies recorded dramatic decrease in conjuncture, no disaster took place. In January — August cargo air transfers decreased only by 20%, the decrease in cargo turnover was even less — only by 14,6%. But in September already the negative trend was overcome and the branch saw raise. At the same time market leaders are sure that it will be long term, and there is no reason to expect the second wave of the crisis. Thus, "Volga-Dnepr Group" President Alexei Isaikin directly stated that, "no dramatic decrease on the general cargoes market is anticipated as to year summary: life did not stop, and the necessity in main products, cheap clothes is still big". He noticed that "Volga-Dnepr" is now increasing its market activity and already generates enough income to pay bank loans back. And senior vice-president of the company Sergei Shklyanik confidently promised that at the end of the year his company will get income even regardless of the fact that cargo transfer decreased by 10–15%. "Financial result this year will be positive for us — that is for sure", — claimed Mr. Shklyanik.

Similar situation has the main competitor of "Volga-Dnepr" — "Polet Airlines". As it

was stated by its general director Anatoly Karpov, "Polet Airlines" not only increases the amount of air transfers but also actively expands its air fleet. "We have already purchased three cargo Il-96-400T and next year we intend to keep on purchasing", Mr. Karpov informed. New planes will provide with cargoes for Northern and Far East regions of Russia as well as operate on Asian and European directions. But next order for liners of the type will depend on how they perform during operation. "If everything is successful and market accepts the planes we will order three more planes of the same kind", — Mr. Karpov informed.

Overall "Volga-Dnepr" and "Polet Airlines" control almost three thirds of world air transfer market for super heavy and large size cargoes. The rest share is occupied by Ukrainian company "Antonov Airlines". At that all the three players get main part of revenue from air transfer sales by An-124 "Ruslan" aircraft. These liners, created middle of eighties by defense order were meant for fast redeployment of divisions with heavy machinery from Siberia and Far East to western borders of the USSR. Now the same planes transfer parts of American space rockets, satellites, turbines for hydro electrical stations, elephants and even gold bullions of Swiss banks. Nevertheless, "Ruslan" not only turned to commercial transporter of non-standard cargoes up to 150 tons weight, — it also successfully joined logistic chains of largest western corporations, having become their key link. Now the market capacity is estimated approximately \$2 bln. That is almost as much as all Russian cargo aviation earns annually. According to experts' forecasts, already by 2030

Aircraft



Victor Livanov, UAC vice-president, Alexei Isaikin, president of Volga-Dnepr, and Dmitry Kiva, designer general of ANTONOV ASTC, signed technical specification for the development of the newest version of the A-124 "Ruslan" transport aircraft.

cargo transfer market of cargo planes (An-124 and Il-76) can increase up to \$7 bln. But most probably our companies will not be able to make use of favorable conjuncture. Almost all "Ruslans" that are being operated have already exceeded their life cycle and will be reclaimed in the nearest years. And till present our aircraft industry has not even tried to construct new planes for their replacement.

Risks connected with "Ruslan"

We remind that An-124 is produced in series since 1980-ies in two plants — "Aviastar" in Ulyanovsk and "Aviant" in Kiev. All in all 56 planes were built mainly for Soviet Air Force. But as the USSR collapsed series production of "Ruslan" was stopped, — the unique plane happened to be of no need for Russian Army. Thus, it's not surprising that UAC could not find proofs that revival program of "Ruslan" construction will be successful. Much too expensive and risky the project seemed to

our aircraft constructors. The smallest estimation of its realization equals to no less than half billion dollars.

But air transporters need in new machinery was not considered by UAC chiefs. At the same time market researches made by "Volga-Dnepr Group" showed that overall market requirement by 2030 will make 100 planes of An-124 family. UAC calculated a bit less — about 70 planes. However even this quantity of potential orders was quite enough to start series production. In 2008 UAC gave up and offered to "Volga-Dnepr Group" to become start-up customer of "Ruslan" planes, which was done by "Volga-Dnepr" shaping the order for 40 An-124-100 planes, 20 of which — confirmed contract and 20 more — option. At present moment, besides "Volga-Dnepr

Group", 15 "Ruslans" can be purchased by "Polet Airlines", and 9 more — "Antonov Airlines".

And thus, at MAKS air show "Volga-Dnepr" chief Alexei Isaikin, general designer ANTONOV ASTC Dmitry Kiva and UAC vice-president Victor Livanov signed technical specifications for development of new version of the world biggest defense transport aircraft An-124-100 "Ruslan". According to the document the plane cargo capacity is to increase from 120 to 150 tons. Life cycle of the new "Ruslans" is to increase up to 60 flight hours, and flight range — to 4 thousand km. Aircraft equipment will also be upgraded. All the innovations will decrease the liner crew from six to three people. To realize the project will require no less than RR4 bln.

To realize the project will require no less than RR4 bln

New agreement is only the first step to series production of upgraded "Ruslans". And whether it is going to be a success now totally depends on the state financial support that is mainly Ministry of Defense.

But our military department is not in a hurry to invest into the project. Though Air Force commander in Chief Alexander Zelin admitted that Air Force defense transport fleet requires dramatic renovation, he refused to purchase new "Ruslans" in the nearest future and decided to stop with the existing An-124 upgrade. "Only avionics of the aircraft wants renewal which is already being done", commander in Chief emphasized. That means that the new armament state program does not imply money for "Ruslans" production renovation. Thus, the summary is

that UAC will not construct the planes in the nearest years. "The customers must be ready for this variant as well, — so believes general director of Audit and consulting group "FinExpertiza" Agvan Mikaelyan. — If Ministry of Defense is interested in the upgraded "Ruslan" for which technical specifications have already been signed, it will prove that the aircraft has future. But in case defense people do not give money for "Ruslan" production renewal, cargo transporters should pay attention to Il-76 planes". Mr. Mikaelyan is sure that cargo transporters revenue from upgraded planes of Il-76 family operation can be far more to compare. But the most important thing is that the liners production renewal process is already in full swing.

In line for Il-476

For instance, technical specifications for the new Il-76 are already developed, and again by the initiative of "Volga-Dnepr Group". Specifically for such purposes inside SC back in 2002 "Volga-Dnepr-Leasing" company was established. Namely that was to get busy with Il-76TD plane upgrade program development which implied PS-90A-76 engines installation as well as modern avionics so that the aircraft corresponded to the global standards and could again fly to countries which were closed for it before.

We remind that since 2000 some countries of Europe, North America, Australia and Japan introduced tight constraints for admission of aircraft whose engines did not meet international standards as to the



Aircraft

noise level and harmful substances emission. Because of the new ICAO requirements Russian planes users including those of Il-76 considerably decreased flights to world biggest airports and concentrated the business around CIS and Middle East. The share of the market lost even in 2003 made \$110 mln, and by 2015 the losses can increase to \$450 mln.

As to "Volga-Dnepr-Leasing" general director Andrei Pahomov, "things not typical of the aircraft company had to have been done — for own money arrange and then coordinate operation of design bureau, aviation institutes, avionics suppliers, engine constructors and manufacturing plants". Risk was immense but the aircraft company efforts were rewarded. In 2003 "Volga-Dnepr Group" concluded a contract for two Il-76TD-90VD planes construction with Tashkent aircraft plant and option for 15 more planes of the type. So, two planes are already operated by the company, three planes from the option are being built. The first one of them will join the fleet of "Volga-Dnepr" at the end of 2009. All in all the aircraft company will require 15 — 20 upgraded planes of the type. And it is clear that the upgraded Il-76-TD-90VD planes can

now fly to all countries of the world without limitations.

It is curious that the project which was performed almost solely by "Volga-Dnepr Group" soon acquired the status of a national one. A cargo transporter idea was transformed to confirmed interdepartmental decision of Ministry of Transportation and Rosaviakosmos about Il-76 planes upgrade order. The project was not financed but was supported morally and its implementation was not hindered. And soon UAC created a new project of defense transport planes Il-76-MD-90A series production renewal which now got a new name Il-476. Besides renovated engines PS-90A-76 the planes will be furnished with new radio electrical equipment including "glass cockpit" and new wing.

Historically Il-76 planes of different modifications were produced in Uzbekistan in TAPOiCh, however after the USSR collapse the plant decayed and since 1991 can fulfill only single orders. The disrupted contract for 38 Il-76 and Il-78 planes supply to China is a bright illustration of that. That is why series production of Il-476 will be handled in Ulyanovsk plant "Aviastar-SP". According to general director of the plant Mikhail

Shushpanov, "as Il-476 will become first Russian transport aircraft, completely created by non-paper technology, for its production implementation large scale technical re-equipment was required including equipment upgrade and staff re-training". To support the production RR8,5 bln were provided. The money is coming to the plant since 2008 within the frames of Federal task program of native aircraft industry development realization.

UAC states that the first flight test sample of Il-476 will appear at the end of 2010, series production will start in 2011, and planes supplies will start in 2012. Mikhail Shushpanov assures that Il-476 already has a line of potential customers as the plane does not have analogues. The main thing as to UAC is that start-up customer for 38 Il-476 planes will be RF Ministry of Defense as namely this aircraft is included into the state armament program for 2011 — 2020. Besides, UAC believes that many countries where Il-76 is operated, will replace the liner with new models. Il-476 will cost around \$100 million whereas its European competitor — A400M — is almost twice as expensive.

Svetlana Komagorova



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Large scale implementation of advanced technologies in cargo defense transport planes production will enable our aircraft constructors to create new models of liners capable of efficient competition in global market.

In the nearest fifteen years JSC "United Aircraft Corporation" (UAC) intends to manufacture and sell no less than 900 cargo planes of all types. Our defense people are to become main buyers of the liners. Russian Ministry of Defense already by 2015 will have to discard bigger part of its defense transport planes fleet. But Russian defense people are not in a hurry to purchase new planes. And demand — from cargo aircraft companies and foreign customers — which is not high enough prevents UAC from quick arrangement of new planes series production and making their manufacturing economically rational. Under these circumstances the corporation administration decided to radically change the existing system of the liners production. That will make it possible not only to reduce costs but also to increase manufacturing processes efficiency, and consequently — competitiveness of our planes in the global market.

How new technologies are going to be implemented and which models of new planes will be put at stake will be speculated upon in the interview



REINCARNATION OF IL

to our magazine by Chief of defense transport division (UAC), general director of "Aviation Complex n/a S. V. Ilyushin" **Viktor Livanov.**

■ **Question:** Russian Prime-minister Vladimir Putin directly stated that UAC is fully in debts and its administration can't align series production of new planes. Total debts of the corporation have already increased RR120 bln, moreover, half of them are not ensured by the companies' revenue. Furthermore, a number of

contracts for air liners construction are bringing multimillion losses to the corporation. Why does it happen this way?

■ **Answer:** It is true that now the production of some our planes is unprofitable, first of all those that has been designed and put to production 20–30 years ago. They are all constructed by old technologies, their production labor intensity is high. But there is no reason to re-design the models, new ones must be created.

Another cause of losses is non-efficient production structure. Frankly speaking, restructuring of companies within UAC frames has not been completed yet. Now our aircraft plants are manufacturing literally everything: from rivets to final aircraft assembling. This increases overhead expenses which are high as it is. As a result production labor capacity increases and cost-effectiveness decreases. But it should not be like that. That is why UAC performs systematic

work on costs reduction. We are working at companies' specialization, building optimum cooperation and so on. If it is not done air liners production proves to be loss-making.

■ **Q:** Which models of defense-transport planes are put at stake by UAC?

■ **A:** There is a concept of Russian defense-transport aviation development. There priority is given to three products. Firstly, this is light defense-transport plane Il-112V cargo capacity of 5–6 tons, which will be manufactured in Voronezh. Secondly, medium defense-transport plane MTA which will be developed and produced together with the Republic of India. Its cargo capacity is 20 tons. It will replace An-12. I believe full-fledged development of the model will start since January 1st next year. Budget already implies money for that. And finally, thirdly, heavy transport plane Il-476. This model will differ from Il-76 by new engines — PS-90, higher cargo capacity, new wing and a number of other systems.

Now production of some of our planes results in losses, first of all those that have been designed and launched into production 20–30 years ago

■ **Q:** Which of the projects is more prospective?

■ **A:** We consider all the three projects prospective. But Il-476 will be done fastest. The first flight sample will be ready as soon as 2011, and since 2012 its series production will start. This liner has an important competitive advantage — promoted brand. All in all around thousand planes of the type are manufactured, out of them more than two hundred are flying abroad. And that will help us in selling it. If its predecessor's — Il-76 — cargo capacity was 40 tons, then Il-476 will have 60 tons. It is clear in advance that it will be expensive. And that of course narrows marketing outlet as far and away not all countries can

afford buying expensive planes. And not everybody needs them. If we consider world statistics we will see that the biggest number of cargo planes was manufactured in America. But America is a rich country, it can afford producing for example S-17 around \$200 dollars cost and purchase them for itself. We have a different situation, our domestic market is not that capacious, that is why we'll have to put into the lime-light Il-476 sale to foreign customers. Nevertheless I am sure that the aircraft will occupy its niche.

■ **Q:** How many planes are to be manufactured to cover the expenses on the project?

■ **A:** We need around 70 orders. But potential marketing outlet for the plane is



Aircraft



much higher. The plane happened to be very chancy, flexible, it can be operated all over the world, any cargo can be airdropped from that, both with and without parachute. Far and away not all cargo planes existing in defense transport aviation possess such properties. And the fact that our new plane will be competitive in its niche is out of the question. The price must be profitable for production and at the same time competitive in the global market.

■ **Q:** And then will only grow?

■ **A:** Yes, prices escalation exists all over the world, and that is inevitable.

■ **Q:** Who is the main customer of cargo planes?

■ **A:** Mainly defense. And not only Russian.

■ **Q:** And who else?

■ **A:** Our traditional market — India, Algeria and other countries. Besides, now we are trying to penetrate South America markets. And we see that the interest in our production here is rather high.

■ **Q:** It was high before the crisis, and now even such countries as India and China, with whom preliminary agreements have already been reached, have to spare...

■ **A:** Well, the crisis disturbed everybody. But nobody cancels anything, negotiations are going on.

■ **Q:** Globally start-up customers of new planes get big discounts or some other preference. What about us?

■ **A:** In each particular case this issue is solved individually.

■ **Q:** But contract with CPR, concluded four years ago, for Il-76 and Il-78 purchase more than billion dollars cost went wrong. Has the situation changed now?

■ **A:** It is not as if the contract went wrong, but did not come into force, as its cost parameters clearly did not match the reality. Consultations with China are going on. As to cooperation with Uzbekistan, it is continuing. For instance, we manufacture there Il-76 planes for "Volga-Dnepr Airlines".

■ **Q:** And are the Uzbeks ready to work with you?

■ **A:** This is more likely to be a question to the Uzbek party. Two years back intergovernmental agreement was signed about TAPOiCh entering UAC. Russia ratified it, but Uzbekistan did not. They delayed the process for two years.

■ **Q:** So in two years they will

■ **A:** We'll see.

■ **Q:** How will you build cooperation as to Il-476 production? Where will final assembly take place?

■ **A:** Within UAC frames as main assembling platform for all large defense transport aircraft production was chosen "Aviastar-SP". Specialization is vitally important to decrease expenses and finally product cost. We must strive for that.

■ **Q:** Leading global aircraft construction corporations have already totally shifted to computer design of new planes. And in Russia engineers and designers are still working with drawing machines. How long will that last?

■ **A:** Well, drawing machines are almost out of use now. We start Il-476 project completely in digital performance. Thus there is no paper at all: neither in design, nor in technological preparation, nor in processing. For that we had to spend whole year, create data environment, train people. More than thousand working positions has been created, youth was attracted. And what is very important, young guys like this work. When I come to work at 7.30 in the morning I often see youths of 25–30 years running in front of me to take a seat at computer faster. In the same way we launch Il-112V.

■ **Q:** What is the essence of 3D-modelling?

■ **A:** All the components, and Il-476 has more than 66 thousand of them, are initially created in 3-D space and then checked by a designer. Each component is developed and then directed to teamcentre (TEAMCENTRE is a software enabling to "assemble" virtual aircraft model). Mating must be perfect. If something does not

As to MTA two start-up customers have been defined. 100 planes will be purchased by Russia and 45 — by India. These 145 planes are quite enough to provide for the program to be breakeven

fit somewhere everything is proceeded from the very beginning, hundred times specified. Actually during 3D operation labor capacity increases 2–2.5 times. But instead labor capacity in production decreases dramatically as the number of changes is brought to minimum. Here is the effect! Thus when the part comes to building berth it must fit the framework perfectly. And no adjustment is required.

■ **Q:** As to Il-476 everything is clear.

And when will other projects start?

■ **A:** Il-112 will be launched into series production since 2012, and MTA will enter market in 2016–2017.

■ **Q:** What production volume are you planning?

■ **A:** It must be understood that now defense transport planes production in Russia equals to zero that is why we won't be able to reach large output at once. I guess at the beginning ten,

During 3D operation labor capacity increases 2–2.5 times. But instead labor capacity in production decreases dramatically as the number of changes is brought to minimum

well, maximum twenty planes will be produced annually, and then — increase production as far as orders increase. Here a lot depends on which purchases will be included into new state program of armament. As to MTA, the situation is more definite. We signed intergovernmental agreement with India. There two start-up customers are defined. Hundred planes will be purchased by Russia and 45 — by India. These 145 planes are quite enough to provide for the program to be breakeven.

■ **Q:** Well, and will that be enough to get revenue?

■ **A:** Yes.

■ **Q:** And to get rid of debts?

■ **A:** These programs will not help to get rid of the debts, no matter how profitable they can be. That is why we suggested to the government to perform readjustment of the plants to eliminate the accumulated debts with the help of the state. The government is ready to do so but only at the condition that all our programs of new aircraft development





will be profitable. No other losses will be covered by them.

■ **Q:** In UAC production line there is no product which would cover the niche of super-heavy large size cargoes air transfer. In the USSR this function was performed by An-124 "Ruslan". But these planes production was discontinued a few years ago and multiple projects of "Ruslans" production renewal in our country are still on paper. When will the matter finally move from the dead point?

■ **A:** We have an instruction from the President of Russia Dmitry Medvedev to work at the matter. Now we are preparing materials for the project. But the deeper I dive into the topic, the more I understand the uniqueness of the plane. Here we should pay the tribute both to the Soviet Union and to the Antonov company. In the nearest years the world will not see another plane of the class and such cargo capacity. The plane perfectly earns in the global market. Researches done by Ernst & Young proved that it will be in demand. But launching decision is not taken yet.

■ **Q:** How many such aircraft could be sold?

■ **A:** According to preliminary estimations, about 70. At least Ernst & Young put this figure in their business plan.

■ **Q:** Is the order from Ministry of Defense included into the quantity?

■ **A:** No. These are only commercial orders. Ministry of Defense has not decided yet.

■ **Q:** And what if Ministry of Defense still will not purchase the plane, will commercial orders be enough to renew production?

■ **A:** That will be enough! And business plan has clearly proved that. Only required investments are to be found.

■ **Q:** And can "Volga-Dnepr" afford the project on its own?

■ **A:** On its own? Indeed, why! Il-76 and An-124 give revenue but this is not the money to support the project. We will probably call them as well as "Polet Airlines" and "Antonov", aircraft company and other co-investors at some stage but they will not be the basic source of the project financing.

■ **Q:** When the final decision for the project will be taken?

■ **A:** Besides the money there is another important question — technical part of the project. An-124 should be launched in new version as we do with Il-476. That is an engine is required that would comply with Chapter IV of ICAO as to noise, emission and so on. Airload should be increased to 150 tons, life cycle should be increased to 40 thousand hours, cockpit should be upgraded. Now our specialists are visiting plants, studying the issues. I think by the end of the year we will have more or less clear picture.

■ **Q:** If we do not consider Il-476, then series production launch of the rest of our transport planes will start no sooner than after three-four years. Meanwhile in Europe they have already started tests of a new transporter A400M. How serious will be the competition between the plane and our models?

■ **A:** A400M occupies the niche between MTA and Il-76. The Europeans want to conquer the market of planes with cargo capacity from 20 to 40 tons. And when they make the plane it will create considerable competition for us. Now defense transport aircraft production in Russia equals to zero that is why at first only ten, maximum twenty planes will be manufactured annually

Svetlana Komagorova

Now defense transport aircraft production in Russia equals to zero that is why at first only ten, maximum twenty planes will be manufactured annually

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MOTOR SICH ON ASIA MARKET

Motor Sich JSC is one of the leading factories in aviation industry of Ukraine and belongs to the oldest companies in the world manufacturing aircraft engines, which production has been commenced during the first World war.

Motor Sich today denotes several tens of thousands of gas-turbine engines operated in the aircraft of more than 120 countries worldwide, developed by the world-known airplane- and helicopter-building design bureaux, such as Antonov, Beriev, Tupolev, Yakovlev, Mil and Kamov. Apart from this the engines of Motor Sich JSC are installed in the trainers and combat trainers of Aero Vodochody a.s. (Czech Republic) and HAIG Co. Ltd. (PRC).

The very first gas-turbine engines of our factory appeared in India 49 years ago when deliveries of An-12 airlifters for Indian AF began in 1961.



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

Today about 1,000 engines with the nameplate of Motor Sich are successfully operated in the Indian Armed Forces: in more than 100 airlifters An-32 (specifically built at that time to the order of MoD of India), in several Il-38, in nearly two hundred combat and transport Mil and Kamov helicopters with the world-biggest Mi-26 among them, in missile systems Uran. The repair depot was organized in Chandigarh with direct participation of Motor Sich JSC for overhauling the AI-20, TV3-117 and AI-9V engines operated in India.

Today our engines, which are quantity-produced and are at various stages of building for passenger, transport planes and airlifters, include turboprop and open-rotor engines featuring power from 400 to 14,000 hp as well as bypass engines featuring thrust from 1,500 to 23,400 kgf.

It is expedient to point out from this number the D-436-148 engine for passenger planes of An-148 family. This engine is the next modification of D-436T1 and meets the present requirements of ICAO as far as emissions and noise level is concerned. In the context of its characteristics this series-produced engine is not inferior to the foreign analogs that are still at the stage of development.

A two-shaft auxiliary gas-turbine engine AI-450-MS has been built at Motor Sich JSC for various modifications of An-148 and other passenger and transport planes with propulsion engines of D-436 family. It ensures starting of the propulsion engines as well as supply of compressed air and electric power to the plane airborne systems with the propulsion engines inoperative.

High efficiency of using AI-450-MS is achieved by means of low specific fuel consumption, which is the result of high parameters of thermodynamic cycle, high efficiency of assemblies and selected pattern with air offtake from auxiliary compressor and also due to low operating costs.

The airplanes An-148-100 of different modifications ensure transportation of 80 passengers to a distance from 2 to 5.2 thousand kilometers providing a high level of comfort. It surpasses all analogs as far as proportion of cost and quality is concerned. The superior airplane performance, possibility of using it at the airfields, which are far from perfect condition, due to high arrangement of engines above the runway and low cost of life cycle make us hope that the airplane will attract the attention of the airlines in the Republic of India and other countries of the world.



An-148

At present the work is underway to build transport planes on the basis of An-148 capable to deliver 20 t of cargo to a distance of 2,000 km and deliver 15 t to a distance of 3, 200 km.

The ever-increasing role of combat aviation poses high requirements both to training of new pilots and to maintaining flight skills and training the pilots of combatant forces to use the airborne weaponry. In this respect the trainers and combat trainers occupy an important place in the AF of any country.

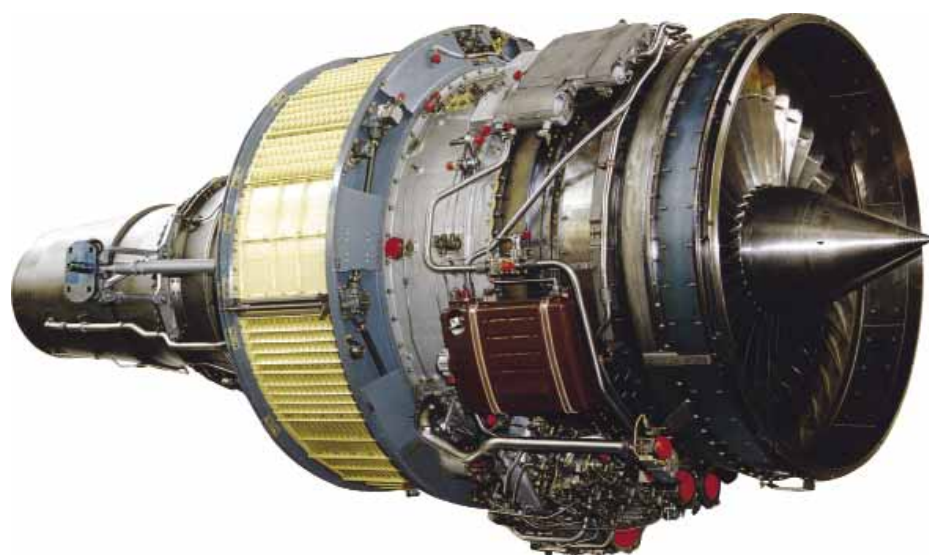
Our factory specializes during 80 years in the development and manufacture of engines for trainers and combat trainers. Since 1927 we supply engines for trainers. Presently, more than 3,000 trainers and combat trainers with the gas-turbine engines of our factory are operated in 41 country of the world.

In continuation of this tradition we take part at present together with SE 'Ivchenko-Progress' in the development of a family of AI-222 engines. They provide maximum

thrust of 2,200 to 3,000 kgf, and even 5,000 kgf in afterburner version.

Lately, we have launched quantity production of AI-222-25 engine with minimum thrust of 2,500 kgf for trainer Yak-130, which will begin to arrive in the nearest future at the centers for training pilots of Russian and Algerian AF.

In 2007 Motor Sich JSC received a Type certificate for a new helicopter engine TV3-117VMA-SBM1V. This engine is going to replace the previous modifications of TV3-117V family. Depending on the type of helicopter, the ACS allows to adjust take-



D-436-148

In the context of its characteristics this series-produced engine is not inferior to the foreign analogs that are still at the stage of development.

Engines



Yak-130

off power within the range from 2,000 to 2,500 hp. This power is flat-rated to higher ambient temperatures. So, the takeoff power of 2,200 hp is flat-rated to +44°C. In case of operational damage of one engine, the other one shall change-over to 2.5 min power rating equal to 2,800 hp and then to 30-min power rating equal to takeoff. Also available is the 30-min continuous takeoff power rating with both engines operating to ensure an urgent climb to altitude. The engine also allows to perform start-up and flights at higher altitudes (6,000 and 9,000 m, accordingly) than its predecessors.

Engine TV3-117VMA-SBM1V features increased life periods, as follows: first overhaul period and TBO is 3,000 hours/cycles and the total service life is 9,000 hours/cycles. At present the work is nearly completed in order to increase the first overhaul period and TBO to 4,000 hours/cycles and the total service life to 12,000 hours/cycles.

Engine TV3-117VMA-SBM1V has the same weight-dimension characteristics and mounting dimensions as the engines installed in Mil and Kamov helicopters.

The installation of the TV3-117VMA-SBM1V engine makes it

possible to re-engine helicopters without modifying the helicopter airframe and its systems, thus, doing this at low cost and in short time, and improve significantly the performance of helicopters especially for high-altitude and hot climate applications so indicative for the Republic of India.

Motor Sich JSC offers the produce with high functional characteristics manufactured at the certified production facilities to the international market. The production of up-to-date engines and overhaul of all engines produced earlier is certified by the Aviation Register of Interstate

AI-222-25

High AI-222-25 engine performances along with perfect Yak-130 aerodynamics ensure maneuvering aircraft capabilities corresponding to those of the 4th and 5th generation fighters



Aviation Committee and State Aviation Administration of Ukraine.

The quality system of the Company is compliant with ISO-9001:2000 International Standard requirements that is proven by the Certificate of Conformity granted by Bureau Veritas Certification company.

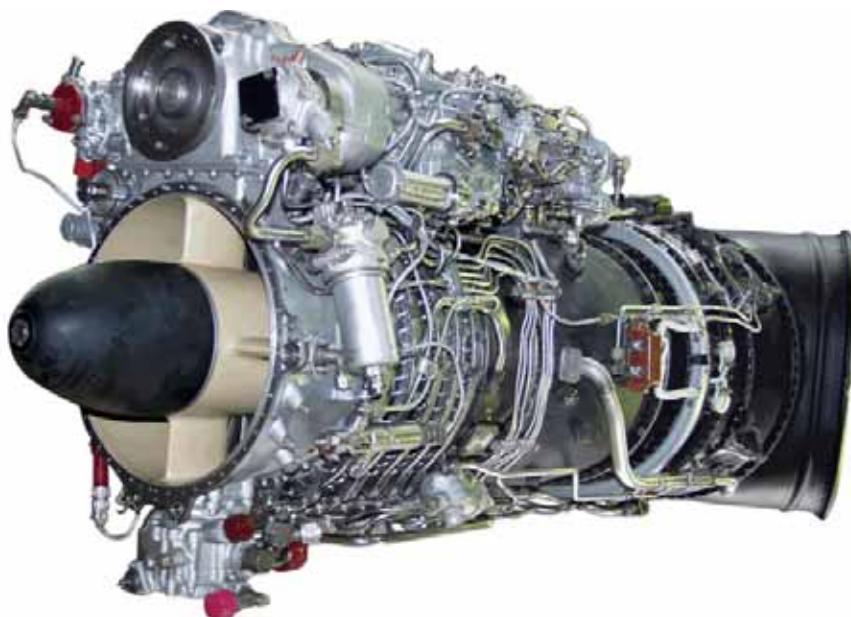
We have accumulated vast experience in the field of cooperation with the customers in order to ensure maintenance of engines within entire period of operation. The Company communicates permanently with its representatives all over the globe, and has representation offices in several countries including the capital of the Republic of India, Delhi.

Motor Sich JSC has accumulated vast experience in the field of cooperation with CIS and overseas countries and is ready to offer to the market a widest



TV3-117VMA-SBM1V

In case of one engine failure, a second one will start operating in 2.5-minute power setting whose power is 2800 shp, with its power in 30-minute power setting equal to takeoff power.



spectrum of new promising airplane and helicopter engines.

Our goal is to produce the durable and reliable products fully compliant with the demands of customers and bringing maximum convenience to the users. We aspire to further strengthening of the existing positive image of our factory distinguishing Motor Sich JSC as a dependable and substantial business partner.



Motor Sich JSC

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November

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Sergio Jardim, Director

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E-mail: sergio.jardim@clarionevents.com

June

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David Lim, Project Director

Phone: 65 6780 4669

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

November

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2011

SUKHOI PAK FA: FIRST FLIGHT

On 29 January Sukhoi PAK FA (Advanced Aviation System of Tactical Aviation), also known as the T-50, performed its maiden flight from the airfield of Komsomolsk-on-Amur Aircraft Production Plant (KnAAPO) in the Russian Far East.

Sukhoi director general Mikhail Pogosyan commented: "Today we have started the flight test programme of the 5th generation [fighter] aircraft. This is a big success of Russia's science and designer's thought. This achievement was made possible by industrial co-operation of more than a hundred enterprises. The PAK FA programme advances Russia's aircraft and co-operating industries

to the new level of technological quality. These aircraft, alongside with modernised aviation systems of the fourth generation will determine the capabilities of the Russian Air Force in the coming decades. Sukhoi company plans further development of the PAK FA programme together with Indian partners. I am confident that our joint project will outperform western competitors by efficiency-to-cost criteria, and not only will allow to strengthen the defence might of Russia and India, but will take a decent place on the world market".

The first flight of the new fighter lasted for 47 minutes with Sukhoi test pilot Sergey

Bogdan at the controls and was declared a complete success. Bogdan shared his impressions of the first flight: "We have made initial evaluation of the aircraft's controllability, engine operations and functioning of the main systems. The standard procedure of landing gear retraction/extension was performed. The aircraft showed itself favourably at all phases of the planned flight programme. It is easy and comfortable to control". The flight test are anticipated to take about five-six years.



Photo by NTV channel



Photo by "Sukhoi"

Airports

Sheremetyevo is going to become the best hub airport in Europe with an annual traffic of 35 million passengers after the reconstruction and building of the third runway area. International Airport Sheremetyevo's Aviation Marketing Direction Chief **Markus Klaushofer** appointed to this post in October 2008 is going to tell Air Fleet correspondent **Svetlana Komagorova** about these plans in detail.

Markus Klaushofer was born in Austria, finished the Vienna Business School and worked in the Vienna International Airport as a marketing and business development director.

■ **Question:** What is Sheremetyevo's strategic goal?

■ **Answer:** Due to a number of successful investment projects, Sheremetyevo International Airport is rapidly becoming an advanced and comfortable airport. Our main task is to provide comfort to our passengers enabling them to rapidly get to the airport or hotels and change terminals without any jams. Also, we are trying to organize comfortable connections for transit passengers. Our strategic goal is to become Europe's best airport by service quality by 2015.

■ **Q:** Is it really possible?

■ **A:** To make Sheremetyevo an advanced hub, we should ensure



SHEREMETYEVO WANTS TO BECOME THE BEST

high quality of all its services and comprehensively improve operating processes. In order to achieve the strategic goals and implement key tasks, Sheremetyevo Airport and British company Scott&Wilson have developed the master plan of its development up to 2030 considering the creation of the second flight zone with the third runway. We think

our plans are ambitious but quite feasible. We are doing our best to reach these goals and create an airport of the future, i.e. an airport which will be comfortable for passengers who will warmly remember it.

■ **Q:** What is going to be done in particular?

■ **A:** Sheremetyevo has five terminals including those being built now. First of

all, it is the Sheremetyevo-1 terminal constructed in the 1960's chiefly handling domestic flights. Its passenger turnover exceeds 5 million people. Due to the increasing passenger traffic and rapid airport development, about 60% of all flights will be shifted from Sheremetyevo-1 to new terminals D and E as well as upgraded Sheremetyevo-2

within 2010. After that, Sheremetyevo-1 will be converted to handle low cost airlines.

In the future, a new cutting-edge comfortable airport with an annual capacity of over 40 million people will be built instead of Sheremetyevo-1. The rebuilding of this terminal and constructing a new one will be carried out step by step according to the airport development master plan up to 2030 and passenger traffic growth rate. Also, the construction will include new passenger galleries, two satellites (piers) connected to terminals by subways, a railway station, multi-storied parking as well as hotel and business centres. Thus, one large terminal allowing connection of international and domestic flights will be created in the north of the airport.

The Sheremetyevo-2 terminal built for the XX Olympics in 1980 handling 6-7 million people a year is located in the southern part of the airport. In

In the future, a new advanced comfortable terminal with a throughput capacity of over 40 million people a year will appear instead of Sheremetyevo-1

December 2009, it is planned to finish the reconstruction and expansion of Sheremetyevo-2, which will be linked to another wing as an independent terminal — Terminal E.

It will unite Sheremetyevo-2 (Terminal F) and Sheremetyevo-3 (Terminal D) being built for Aeroflot-Russian Airlines and its SkyTeam partners under one roof. An 11-storied International Business Centre will be erected near the railway terminal.

The completion of the multi-terminal complex will allow creating a unique

zone for the operation and long-term development of the SkyTeam alliance and other carriers in one hub. The united terminal complex will handle up to 25 million passengers a year. The only thing curbing its full-fledged development is the lack of runways and aircraft parking places. That is why, the master plan allows for the construction of the third runway in the northern sector — the main development area in the long run. The southern and northern sectors of the airport will be connected by the underground automated transport system. Also, the

The symbol of Sheremetyevo airport of old days: the shotglass-shaped building of Terminal 1



Photo by Vladimir Voronov

Airports

master plan envisages the construction of the aircraft maintenance base and Russia's largest multimode cargo complex.

According to Scott&Wilson, in case all the plans are implemented, Sheremetyevo will handle up to 64 million passengers as a hub of two alliances and process over 1 million tons of cargo in 2030.

■ **Q:** What are the key trends in the airport development?

■ **A:** Developing and improving aviation and passenger services are our main tasks. Sheremetyevo must become the most comfortable airport not only in the Moscow aviation hub.

In addition, we are going to develop low cost routes by building special infrastructure and creating friendly environment both for low cost carriers and passengers. Third, we want to inspire American traditions in Sheremetyevo when people use cheap airlines. It is simple and convenient. If a

Our strategic goal is to become the best European airport by service quality by 2015

passenger wants to get to another city, he does not need to spend the whole night in the train, he can just go to the airport and reach the destination in a few hours.

■ **Q:** There are few Russian low cost carriers. They are Sky Express and Avianova, both basing in Vnukovo. Did you try to persuade them to move to Sheremetyevo?

■ **A:** We have talked with Sky Express on our cooperation, but it is too early to discuss it.

■ **Q:** What air companies came to Sheremetyevo while you have been working here?

■ **A:** First of all, it is Hungarian company Malev operating flights to Budapest and Chinese Hainan Airlines.

In 2008, seven new airlines came to Sheremetyevo. Besides Malev and Hainan Airlines, it is Hellas Jet (flies to Athens, Heraklion and Thessaloniki), Blue Wings (flights from Dusseldorf, Leipzig, Munster and Karlsruhe), Armavia (flights from Yerevan), Nord Wing (flights to Hurghada, Sharm El Sheik, Antalya and Salzburg) and PIA (Pakistan International Airlines operating flights to Dubai and Karachi).

By the way, the airport increased charter traffic by 85% in 2008. The main directions are Antalya, Sharm El Sheik, Dalaman and Dubai. And we are not going to stop.

■ **Q:** You told us that Sheremetyevo would become the main Russian airport by 2015. What are the probabilities?





■ **A:** We want to be the first. But it is not enough. We should work hard. And we are working and believe in success. We hope the passengers will appreciate our efforts. The latest researches by independent international companies prove that Sheremetyevo's market share is growing.

■ **Q:** How did the financial crisis influence your plans?

■ **A:** We have comprehensively analyzed our operational activity and optimized expenses. Sheremetyevo's passenger turnover, the most important parameter, has been growing for three months.

We do not refuse from our plans to open new terminals. In particular, the construction of Terminal E will soon be over. It will be put into operation in 2010.

■ **Q:** How much money and time is needed for Sheremetyevo to become a world-class airport?

■ **A:** I cannot tell you about investments. As regards the time, Sheremetyevo may become a competitive airport by the end of 2010 after the

infrastructure is improved and all terminals are put into service.

■ **Q:** What do you think Sheremetyevo's largest problem is?

In nine months of 2009, Sheremetyevo handled 11 million 124 thousand people, which is 94% against 2008.

In September 2009, the international passenger traffic totaled 990,000 people like in the same period of 2008. In January-September 2009, Sheremetyevo handled 7 million 510 thousand passengers on international routes, which is 95.4% as much as in 2008.

In September 2009, the passenger traffic on domestic routes equaled 488,000 people, which is 101.3% against the previous year. In the first nine months of 2009, Sheremetyevo's domestic passenger traffic totaled 3 million 614 thousand people, which is 91.2% against the same period in 2008.

Opening new comfortable Terminal E in 2010 will allow attracting new carriers and increasing passenger traffic in Sheremetyevo.

Airports

■ **A:** It is obsolete infrastructure. But we know all the drawbacks and are successfully combating them.

■ **Q:** What is the goal you are trying to achieve? Can you name the best airports in the world?

■ **A:** As for Asia, it is certainly Incheon in South Korea. In the US, all airports are bad. The best airports in Europe are Zurich, Copenhagen and, surely, Vienna. Vienna's airport has a minimal connection time of only 25 minutes. It is very important for passengers. Much has

been improved to achieve such figures. We applied advanced technologies in the Vienna airport to speed up passenger and baggage check-in and aircraft maintenance.

■ **Q:** Will you employ the same technologies in Sheremetyevo?

■ **A:** No doubt, we will use the most advanced technologies meeting the best world standards. We have installed self-service kiosks for passengers of some airlines, e-ticket check-in counters, introduced the Baggage Reconciliation

System, passenger voice announcement system and integrated video monitoring system. The unique Russian Sinkhron system estimating the work of all airport production services and equipment is being successfully employed. We are paying much attention to enhancing airport security. Presently, it matches the most strict international standards and requirements, which is proved by the US Transport Administration and Security Department of Israel's Transport Ministry. So, we can say that Sheremetyevo is becoming increasingly

Terminal E provisional drawing



popular for passengers. For example, the maximum connection time will equal 30 minutes. It is absolutely real.

■ **Q:** What would you like to change?

■ **A:** To improve does not mean to break everything. Sheremetyevo has its own history and name, which in no way should be changed. The airport needs stability, development and improvement of passenger service quality. We are trying to modernize the airport, which should become more attractive for airlines and business partners.



Scott&Wilson expects that by 2030

Sheremetyevo will be able to handle up to 64 million people as a hub of two alliances and process over 1 million tons of cargo in case all the plans are implemented

■ **Q:** Are there any differences between airport management systems in Russia and Europe?

■ **A:** Of course and there are quite a lot of them. For example, one should give clear instructions to Russians. Only in this case everything will be done. In Austria, people are more independent and it is not necessary to repeat their task to them several times. They assume risks of their work. Also, red tape is prospering in Russia and one has to fill in a lot of papers. And if two signatures are enough in Austria, here one should put twenty!

But it is much merrier here than in Europe. In Vienna, everything is transparent and predictable, which is boring. And here the effect of suddenness is always present. You have to solve almost incredible problems, so you won't be bored.

■ **Q:** So, what particularly makes you feel happy in Russia?

■ **A:** It is bureaucracy and people's emotionality. Russians are like Italians.

■ **Q:** With whom is it easier to work, with experienced or young people?

■ **A:** With the latter. Young employers always want to raise their skills, which is good both for their career and the whole company. They are easy to work with, to teach. They try to make everything better and faster.

■ **Q:** Did you plan to take your Austrian team to Sheremetyevo? It would be still easier to work.

■ **A:** A mixed team is better. Sheremetyevo's business is aimed at attracting airlines from different countries, so both Russians and foreigners should be in the team by all means — it helps understand the partner's mentality and, thus, build efficient business relations.

■ **Q:** And nevertheless, why did you choose Russia?

■ **A:** When I learnt about the prospects of the airport, I understood that it creates a great freedom for work and creativity. There are a lot of opportunities for its modernization and development. So, I decided to try. Different mentality and culture attracted me.

■ **Q:** I see Russian alphabet on your wall. Are you studying this language?

■ **A:** I am trying to do it to learn more about the country you are working and living in.

■ **Q:** Where do you stay? How do you get to the airport, by car or air train?

■ **A:** I am staying at the Novotel Hotel, ten minutes from work. (He is smiling).

■ **Q:** Is your family living here with you?

■ **A:** No, it is still in Austria. My wife has a good work in a large corporation. Perhaps, it will open an office in Moscow in the future. I spend my weekends at home with my family. By the way, there are a lot of Russians in Austria, who are working there and returning to Russia on the weekend. It is a common practice.

■ **Q:** What is the period of your contract with Sheremetyevo?

■ **A:** Three years and it can be prolonged.

■ **Q:** How did you come to airport business?

■ **A:** It is a family story. There is a proverb in Austria that kerosene is flowing in our veins instead of blood. When a child, my grandfather used to take me to the airport with him. It was our family business. Since then, I like airports and everything related to them.

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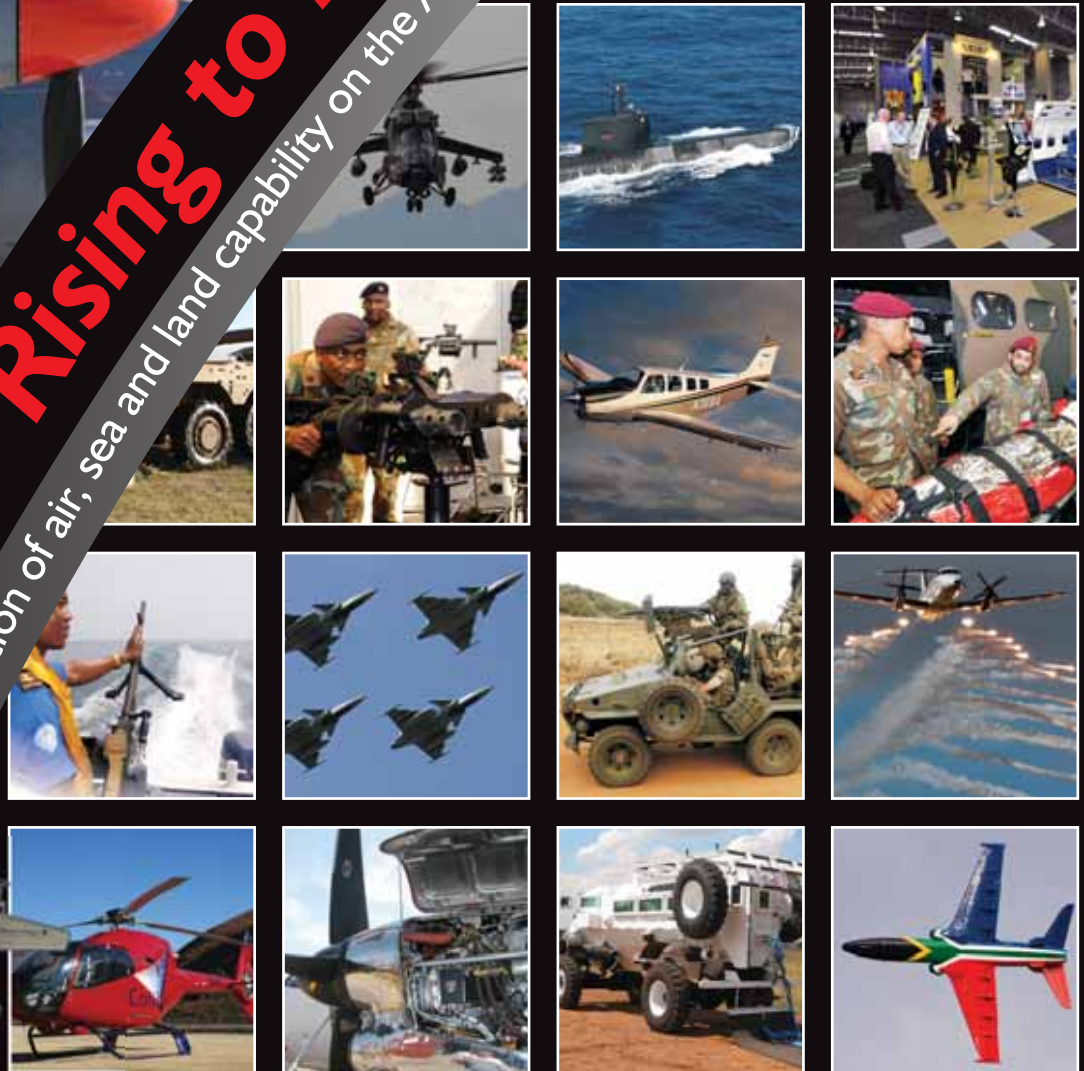
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BIZJET MARKET RECOVERY TO LOOM IN 2 YEARS

Like any other industry in the world business aviation has faced the greatest challenges over the past 18 months. The sharp drop in charter flights, record production cuts and insolvency of some enterprises made analysts believe this recession to be the worst since the Great Depression of the 1930s. However, an air of cautious optimism loomed in the second half of 2009, when key industry indicators such as flights operations and used aircraft sales began to show some positive signs. Today, while most industry leaders say "recovering is a word to use with care", there are still some specialists who predict there will be another wave of the financial crisis involving even further fall in used aircraft transactions, more order cancellations and production cuts.



Flight activity shows stabilization

The market is improving but there is still a long road to recovery, says JP Morgan. Reminding of cycles and of a role corporate profits play in business jet deliveries, JP Morgan's analysts foresee another decline in 2010 that will be followed by a "moderate increase in 2011, though visibility is limited".

The first signs of stabilization came late in 2009 when Aviation Research Group/U.S. (ARG/US) registered that business aircraft activity in October for the first time climbed to 2.5 percent over October 2008 and then continued its strengthening, which resulted in 22.7 percent year-over-year rise in November.

According to UBS Investment Research's latest business jet update, flight activity

in November was "roughly unchanged" compared to the same period of 2008. On a seasonally adjusted basis, cycles (total take-offs and landings) were roughly 1 percent higher from October and 18 percent above the March low. Though the flight activity in November still showed 23 percent decrease compared to its peak in 2007.

"While we think year-over-year growth can continue to accelerate into early 2010, we remain focused on sequential improvement over the near term," UBS analyst David Strauss wrote in the latest business jet update. "For 2010, we continue to forecast double-digit year-over-year cycle growth in the first half, moderating in the second half to yield 8 to 10 percent growth for the full year."

UBS analysts registered flight activity growing in all three range classes of business jets (long, medium and short) but the short range aircraft — which were mostly affected by the downturn — have seen the most significant improvement so far, up 21 percent of the March bottom. Both medium-range and long-range aircraft activity was up about 15 percent, UBS said.

Used aircraft sales

Used aircraft market has been hardly hit by the economic downturn. Since the crisis broke out a substantial part of world aircraft fleet went for sale and priced dipped down to unprecedented level.

"Going back to November 2007 there began a steady, at times meteoric,

Business Aviation

increase in the number of biz-planes coming to market. The inventory of for sale airframes was growing well in excess of 100 units a month for a time," says Director of Sales and Marketing, JETNET LLC, Paul Cardarelli. However, the summer of 2009 brought some stabilization and at the close of October 2009, there were 4262 business turboprops and jets offered for sale, 14.3% of the in-service fleet compared to the peak of 4630 jets for sale in July 2009.

"But of course stabilization of inventory does not alone make for a recovery, — Mr. Cardarelli adds. — Buyers must return. Prices must firm. Certain models that sold in the low \$20M range just a year ago now struggle to command \$10M in the market of the moment. And bear in mind this sobering point; although the resale inventory is finally trending down it is still nearly 1700 airframes above the November 2007 inflection point of 2585 aircraft listed for sale."

Mr. Cardarelli believes the inventory is stabilizing, but still there is a long way to the market recovery. "We are cautiously hopeful that the new-year will mark the point where buyers conclude that the bottom has been reached and now is the time to jump in before prices begin to rise. Of course such consumer confidence is dependent upon a myriad of economic factors far from the control of business aviation. But barring the unforeseen we expect 2010 to show steady improvement in terms of an increasing number of transactions and a firming of prices. However, the forward progress may well be slow in pace and full recovery could certainly be two or more years off," he says.

The recent JP Morgan Business Jet Monthly Report indicates that the used business jet inventory — the number of jets for sale in proportion to the active fleet — in December 2009 saw a decrease of 12.8 percent compared to the same period of 2008. Inventories still remain at

high levels, historically, and "a continued gradual decline seems likely". The average asking price in December was flat after decreasing for 12 straight months, while on year-over-year basis prices were still 22.2 percent down, JP Morgan noted.

Schedule adjustments

The previous year can well be considered a turning point as the industry has already got used to the idea of living in crisis and started to seek some solutions in response to the market instability. Almost all manufactures were tremendously hit by order cancellations, which crept into the sizable order backlogs, and had to adjust their production rates and revise their schedules. For example, due to the economic downturn Cessna was forced to cancel the development of its long-ranged large Columbus program. The airframer planned to invest nearly \$800 million in the Columbus jet, which would have involved building a \$200 million production plant in Wichita, Kan., as well





as hiring 1,000 new employees. However, the company said it might build a wide-body business jet in the future.

The same fate was discarded for Hawker 450XP and Falcon SMS — the programs were put off for the better times. Hawker Beechcraft said it would delay the service entry of its Premier II business jet by at least two years, till 2011, hoping that by that time the market would rebound. Honda Aircraft had to put off the deliveries of its light HondaJet till 2011, too.

But even in such hard times some manufacturers declared their strong intentions to stick to the scheduled programs and managed to surprise the public by some announcements.

For example, at the 62nd Annual Meeting and Convention of the National Business Aviation Association Embraer unfolded its new Legacy 650, developed on the successful platform of the super midsize Legacy 600. The manufacturer reported two Legacy

650s were performing flight tests and the certification of the aircraft and first deliveries were scheduled for the second half of 2010.

The new business jet will boast a longer range and will fly up to 3,900 nautical miles (7,223 km) nonstop with four passengers, or 3,800 nautical miles (7,038 km) with eight passengers, which is approximately 500 nautical miles (926 km) farther than the Legacy 600.

"One thing our Legacy customers kept telling us is that the aircraft should have more range," said Claudio Camelier, Embraer's vice-president of market intelligence for executive jets. "The 650 is a response to that demand."

Moreover, the Brazilian airframer sticks to its plans and continues to develop the midsize Legacy 500 and superlight 450, which are on schedule for service entry in 2012 and 2013 respectively.

For Gulfstream Aerospace the previous year marked success with

two largely expected premieres — first series of flight tests of its ultra-long range G650 and super mid-size G250. The certification and first deliveries of the aircraft remain on schedule: the manufacturer expects to receive certification for both aircraft in 2011.

Some deliveries are up but the records are still far away

The deliveries of 2009 were mostly ticking over and relied on the contracts concluded long before the crisis arose. Hardly new orders were placed. Both Honeywell Aerospace and Teal Group analysts believe that deliveries in 2009 would decrease by more than 30% in comparison to the previous year. These forecasts are yet to correspond with statistics: according to GAMA report in the first three quarters of 2009 the manufacturers delivered 615 business jets, a 37.8 percent decline in comparison with the same period of 2008.

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Meanwhile, JP Morgan "estimates that deliveries declined 39% in 2009", whereas the 3Q results of 2009 indicate that "the six major business jet OEMs plus Boeing and Airbus delivered 201 business jets in 3Q09, down 29% from 284 deliveries in 3Q08 and 10% below the previous quarter" resulting in 26% decrease in revenues from shipments in 3Q09 compared to the same period of 2008.

Four of the six major OEMs witnessed decreased deliveries in 3Q09, JP Morgan states. Thus, Embraer delivered 17 additional aircraft but the deliveries shifted meaningfully from high value Legacies (-5) to lower value Phenom 100s (+22), which the company began delivering at the end of last year. Dassault also delivered 11 more jets compared to 3Q08, as deliveries for all models except Falcon 2000/2000DX increased year-over-year, the report states.

JP Morgan analysts believe "new aircraft demand improvement should take time" as "demand for new aircraft tends to lag both

used market and corporate profit trends," so the market is expected to remain slow. "We are more constructive on the potential for improvement in small cabin aircraft demand, which has been decimated. Large cabin aircraft rates have remained closer to peak due to the large backlogs that continue to run off, and this is why we expect additional rate cuts. Overall, we see new deliveries falling 19% this year on top of last year's estimated 39% drop for a peak to trough decline of 50%," Joseph B. Nadol III and C. Stephen Tusa, Jr CFA write in their report.

Embraer to brisk up pace

The Brazilian aircraft manufacturer Embraer was the first to unveil the results of the 4Q09, quick to announce some successes achieved in 2009. The airframer delivered totally 244 aircraft in 2009, including 122 aircraft for commercial aviation, 115 for executive aviation and 7 for defense. Thus, the total figure surpassed the total goal of 242 aircraft that had been set for the year. The

Company's firm order backlog totaled US\$ 16.6 billion on December 31, 2009.

In 4Q09, Embraer delivered 23 E-Jets and three ERJ 145 jets to the airline market; six Legacy 600 super midsize jets, 52 Phenom 100 entry level jets, two Lineage 1000 ultra-large jets, and the first Phenom 300 light jet to the executive jets market; and one ERJ 135 jet, two Phenom 100 jets, and one EMBRAER 190 jet to the defense market, the company stated.

In the last quarter of 2009, Embraer began delivery of the Phenom 300 light executive jet, which was certified in December by the Brazilian National Civil Aviation Agency and by the Federal Aviation Administration (FAA) in the United States. In October, Embraer launched a new executive jet — the Legacy 650, in the large category — and announced the first order by Aircraft Asset Management AAM GmbH, from Germany, for two of this aircraft model. Another highlight was the growth in the number of deliveries of the Phenom 100 entry level jets — 52 aircraft in 4Q09.



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Business Aviation



Dassault Falcon sees a 10% increase

Dassault will deliver around 80 aircraft this year, a 10% increase compared to 2008, said Mr. Charles Edelstenne, Dassault Aviation Chairman and CEO, at the 62nd NBAA Convention in Orlando, Florida, USA. The advance in deliveries is due to the ramp up of Falcon 7x program. The company is targeting comparable levels of deliveries for the next year, due mainly to the existing backlog, which is "twice as big as it was five years ago". According to GAMA report, in the first three quarters of the year the airframer delivered 51 business aircraft compared to 48 delivered in the same period of 2008.

Meanwhile, Dassault continues to develop new programs, including winglets modification for its Falcon 900LX launched in 2008. The new winglets should boost the aircraft's range and improve its fuel consumption by 7% compared to the EX

version. The flight tests are scheduled for the next month, and certification and first deliveries are expected before the end of 2010. The manufacturer is also developing new features and capabilities for its EASy cockpit (named EASy II), including synthetic vision system. For Falcon 2000LX, which entered into service at the beginning of the year, Dassault is developing a change of the braking system to reduce the aircraft's landing distance and to qualify Falcon 2000 LX for operations at London City Airport, under the demanding rules of public transportation. Furthermore, the biggest part of the manufacturer's resources is taken by the SMS program.

"We are currently validating the main technical choices, while re-assessing the aircraft's main characteristics. Somehow, I consider that we are lucky that this crisis came during the very early phase of the program, when we can still take into account some of its possible impacts

on the market's long term trend", said Charles Edelstenne.

Cessna Aircraft expects stabilization despite cancellations

The Wichita-based manufacturer's financial reports remain gloomy. Judging by the first three quarters of the year, Cessna's deliveries shifted to the entry-level business jet Citation Mustang, which can be fairly named the best-seller of the company. The deliveries of Citation Mustang in the first three quarters of the year skyrocketed by 46.9 percent above the same period of 2008 and reached the peak of 94 aircraft. But the total year results not that bright: according to GAMA report, the manufacturer delivered 221 business jets compared to 336 in 2008. Cessna backlog at the end of the third quarter was \$6.9 billion, a decline of \$1.3 billion from the second quarter. But in the fourth quarter the manufacturer faced a \$1.1 billion order cancellations.



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Cessna has been holding discussions with a large customer concerning the cancellation of \$1.1 billion of jets on order, according to Textron. At the same time, the manufacturer still sees stabilization in the business jet market as the number of used aircraft is declining and customer utilization of the existing fleet has stabilized.

The company expects that cancellations in the fourth quarter will reduce backlog by a total of approximately \$1.7 billion, but these cancellations are not expected to have a material impact on planned deliveries through 2012.

The news came after Hawker Beechcraft announced that aircraft fractional jet ownership company NetJets, one of the biggest buyers of corporate jets, had canceled \$2.6 billion in orders.

Hawker Beechcraft faced NetJet's cancellations

Hawker Beechcraft Acquisition Company, LLC ("HBAC") is expecting a \$1.1 billion revenue for the fourth quarter of 2009, which will bring estimated full-year 2009 revenue to approximately \$3.2 billion. The Company also announced that it has received cancellation notices from NetJets, Inc. for a significant number of aircraft previously contracted to be delivered over several years beginning in 2011. The impact of the cancellations will be to reduce the Company's current backlog by approximately \$2.6 billion. However, according to HBAC, NetJets was not expected to provide the company any substantial revenue during 2009 or 2010 and has historically not represented more than 10 percent of the Company's annual revenue. The cancellations

represent approximately 90 percent of the Company's previously contracted backlog with NetJets. After removing the cancelled NetJets orders from backlog and considering the anticipated sales and order activity for the fourth quarter, backlog is expected to be approximately \$3.5 billion at December 31, 2009.

According to GAMA report, for the first three quarters of 2009 Hawker Beechcraft delivered 64 business jets (compared to 114 in the same period of 2008), whereas in the monetary terms the deliveries did not fall drastically — around 22,7% year-over-year.

21 Global Express delivered by Bombardier in 3Q09

For the third quarter Bombardier Aerospace delivered 61 aircraft, compared to 80 for the same period the



previous year. The 61 deliveries consisted of 33 business, 27 commercial, and one amphibious aircraft (57 business, 22 commercial and one amphibious aircraft for the corresponding period last fiscal year), the company stated in its press release. Thus, the number of business jets delivered in the third quarter decreased by 18 aircraft compared to the second quarter ended July 31, 2009. But the third quarter shipments included 21 Global Express aircraft, which can be seen as a genuine progress in the current downturn.

Besides, during the third quarter the manufacturer received seven net orders, which comprised two business, one commercial and four amphibious aircraft. Bombardier Aerospace's firm order backlog reached \$18.1 billion as at October 31, 2009, compared to \$23.5 billion as at January 31, 2009. The

decrease reflects the significantly higher business aircraft order cancellations, as well as an overall level of new orders lower than revenues in business aircraft and regional jets, partially offset by orders received for the CSeries family of aircraft in the first quarter of the current fiscal year, the company stated. Bombardier's order backlog was affected by the cancellation of 110 Learjet 60XR by the fractional share operator Jet Republic, which had to declare insolvency in autumn of 2009.

Crisis to intrude in forecasts

The economic downturn made analysts amend their forecasts. For example, Honeywell Aerospace expects production of around 11,000 business aircraft in the nearest ten years. A total of 12,768 business aircraft valued at \$195.7 billion (in 2009 dollars) will be produced within

the next ten years, predict Teal Group analysts in their annual world business aircraft production forecast. The modest forecast includes 9,300 business jets, 575 corporate versions of jetliners and regional jets and 2,893 business turboprops.

Whereas, last year Teal Group forecast 18,400 business aircraft worth \$270.6 billion to be produced over the 2008-2017 decade.

Teal Group analysts believe "Gulfstream and Bombardier will be the market leaders (24.8% and 23.2% respectively, by value of deliveries), followed by Cessna (19.2%) and Dassault (16.8%) at the second tier. Hawker Beechcraft will have 8.8% and Embraer 6.4%, excluding turboprops, jetliners and corporate regional jets for sale."

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