

«Helicopter Industry» magazine is a publication Helicopter Industry Association of Russia (HIA)

#### Editorial/advertising

#### Editor

Vladimir Orlov  
orlov@rvs-holding.ru

#### English editor

Alan Norris

#### Maker-up

Irina Danenova

#### Advertising manager

Marina Bulat  
bulat@rvs-holding.ru

#### Translator

Moscow Translation Agency MTA,  
Inna Frolova, Translation Agency  
Translink

#### Photographer

Dmitri Kazachkov

#### Photos by

Dmitri Kazachkov, Dmitri Lifanov, Alan Norris, Sergei Alexandrov, Michael Bibichkov, by companies Eurocopter, UTair Aviation, Russian Helicopters, Vertical-T, Ulan-Ude Aviation Plant, Aviamarket

#### Publisher

#### Russian Helicopter Systems

Moscow Region, Krasnogorsk, 65-66 km Moscow Ring Road, IEC «Crocus Expo». Pavilion № 3, office 332, 143402

Tel. + 7 (495) 926-60-66

URL: [www.helisystems.ru](http://www.helisystems.ru)

© «Вертолетная индустрия», 2006-2015

© «Helicopter Industry in Russia», 2015

#### Dear friends!

You can subscribe to «Helicopter Industry in Russia» (English version)

1 year subscription (6 issues) – 100 EUR (165 \$)

6 months subscription (3 issues) – 55 EUR (82 \$)

Please send your subscription order by email to:

[podpiska@helicopter.su](mailto:podpiska@helicopter.su)

Contact us:

+ 7 (495) 926-60-66

Marina Bulat

The magazine is published with financial support of JSC Russian Helicopters



### HeliRussia-2015

Page 2

HeliRussia - the largest international A report from Crocus-Expo helicopter trade show to take place in Russia, always takes place at the same time - the end of May, at Crocus-Expo. This is the show's eighth year in succession, like an unchanging portent of the emergence of summer – a new season, with new contracts and new win-win deals.



### Le cinquantenaire de Ka-25

Page 30

L'hélicoptère Ka-25 construit à l'Usine aéronautique d'Oulan-Oude (UAO-O), l'hélicoptère Ka 25PL est devenu le premier hélicoptère assorti d'un équipement radioélectronique multifonctionnel comparable, par sa complexité, aux avions de chasse de cette époque-là. Grâce à son système électronique, Ka-25 pouvait être opérationnel dans n'importe quelles conditions climatiques. Cela est devenu une caractéristique particulière des hélicoptères de marque «Ka».

### Other articles

#### Russian Hour

Page 12

#### SITDEF 2015

Page 18

#### Reduktor-PM

Page 26



### Ansats

Page 14

This year the holding group Russian Helicopters unveiled further new helicopter technology at the LIMA-2015 Langkawi International Aerospace and Maritime Exhibition – multi-purpose helicopters for civil aviation. Amongst these helicopters was a completely new model – the Ansats light helicopter, which has now joined the ranks of fully-fledged club members in the world of civil aviation.



### Helicopter of a special purpose

Page 44

The Ka-32A11BC civilian helicopter with coaxial rotor continues to conquer international markets. Built in Russia, by Kumertau Aircraft Production Enterprise (Kumapp), which is part of Russian Helicopters Holding Company, the helicopter is unequalled in many applications.

### L'hélicoptère à grande vitesse

Page 34

### Mi-171A2: flight tests

Page 38

### Chinese prospective heavy helicopter

Page 40

Results of the eighth helicopter exhibition in Moscow

# HeliRussia-2015 — new heights

HeliRussia - the largest international helicopter trade show to take place in Russia, always takes place at the same time - the end of May, at Crocus-Expo. This is the show's eighth year in succession, like an unchanging portent of the emergence of summer – a new season, with new contracts and new win-win deals. Every year HeliRussia offers both its guests and participants things that are new, interesting, astounding... all making for a truly festive feel.

*A report from Crocus-Expo*



The atmosphere and mood of HeliRussia-2015 came as no disappointment after previous shows, and the visitors who gathered were - in the words of the Deputy Head of the Ministry of Transport, Mr Valery Okulov - "people who are nuts about aviation – designers and engineers. Because actually it's only these special people who are capable of seeing successful projects through successfully".

The fair gathered 219 different companies from eleven different countries, all offering services in the construction, maintenance and operation of helicopters, helicopter technologies, on-board and ground-based equipment. The 12,230 square metres of floorspace was used to display 16 helicopters and 5 gyrocopters, both Russian- and foreign-made. More than 500 Russian and foreign journalists were accredited for the event. Over the three days of the fair around eleven thousand visitors attended, and forty-six different events within the Business Program of the Fair took place.

### A Festival Of The Air

The officials who opened the fair at the Grand Opening Ceremony reminded visitors that the helicopter industry is a priority development segment for investors, and similarly for the Russian state. Russia is one of the world's foremost helicopter developers, and a trade fair of this kind only goes to strengthen the already-current traditions of high technology, financing, and safety – the three pillars on which the industry stands. Every year brings yet another unique development, and this is the main achievement of the helicopter industry. A welcoming address was read at the Opening Ceremony, from the Head of the Russian Presidential Administration, Mr Sergey Ivanov. "Your visit firmly supports the position of one of our foremost industries, which is continuously developing and expanding. It's an industry which involves a growing number of participants and guests. This can



only mean that foreign visitors are taking a great interest in the Russian helicopter business, and want to initiate long-term joint projects". The Deputy Minister for Transport, Mr Valery Okulov commented on the intense pace of development in the helicopter industry. "There are a growing number of helicopter parks, heli-dromes, and these need to be put to fullest use. Our hope is that our cities will be buzzing with the constant sound of helicopters overhead".

These were sentiments developed by Deputy Minister for Industry, Mr Andrei Boginsky. "This is the largest helicopter fair in Europe, packed full of innovative ideas that give Russian companies every opportunity, and not only in the field of manufacturing. We are hoping that the future will see improved technology and joint development. European visitors might want to look at the current status of our industry, and perhaps maybe adjust

their plans to consider the idea of localisation, and signing deals for strategic partnerships. The market is very large and very promising – as you can all see for yourselves".

### On its own level

Against a background of declining economic activity, and a degree of cut-back in some industrial sectors over the last year, HeliRussia-2015 showed no signs of reduction in size. Quite the opposite – the number of companies exhibiting, as well as the number of visitors to the show is up on last year's event. What can be concluded from the main developmental trends in the helicopter industry to be seen at HeliRussia-2015? The main thing, of course is the development of Russian helicopter technology, in which the world's leading players are taking a greater and greater involvement. These include helicopter manufacturers, and producers of components and fittings. The second point is the growing attention and unfeigned interest in the industry

by the Russian state. The trade fair traditionally presented a joint exhibition from Ros-technologia, and its twenty-two constituent companies - the holding "Helicopters of Russia", OAO "Rosoboronexport", JSC "Aviation Equipment", JSC "Concern Radio-electronic technology", JSC "Concern Avionics", JSC "Ramenskoye Component Design Company", OAO "Corporation" Fazotron NIIR, JSC "Aeroprivor-Sunrise", JSC "meter", JSC "Techpribor" and others. The third conclusion is that HeliRussia is becoming a venue for the demonstration of complex electronic equipment, and particularly for visualisation displays. This demonstrates the technical advancement of new technologies – with a mixed accent on the development of aircraft from the point of what is fitted inside them. Fourthly, there has been a swift expansion of corporations offering services related to the helicopter industry. These include pilot training, craft rental, and charters, through to the development of helicopters by small independent design outfits. Alongside the array of commercial helicopters on show at the show there were models from fresh, new design companies – such as

the Perm company Afalina, who attracted a lot of attention and visitors, including potential partners.

### The leading role

The exhibition this year brought the attention of visitors to a wide range of new hardware being produced by both foreign and Russian helicopter producers. There was a record number of new model launches – such a large number of new models being presented at one show had never been seen before. New models from two of the industry's international giants were on show – Agusta Westland, and Bell Helicopters. There was also the unveiling of a high-speed helicopter being manufactured in Russia by Heliweil.

Bell Helicopters unveiled their new Bell-505 for the first time in Russia – a five-seater single-engined gas-turbine of the new generation, which made its maiden flight in Canada in November 2014. Another new item on show was the VIP salon by Mecaer for the Bell-429 helicopter, and similarly the Bell-407GX.

Agusta Westland gave the Moscow launch



of its AW189 helicopter, which is currently undergoing certification in Russia. It received its EASA certificate in February 2014. The AW-189 is basically a new twin-engined helicopter, with two GE CT7-2E1 engines and an overall weight of 8.3 tonnes. It's considered a low-priced multi-purpose helicopter to fit the needs of a growing market. Airbus Helicopters presented two helicopters





– the H130 (formerly numbers the EC130 T2), in a VIP configuration; and the H125 (formerly called the AS350 B3), a bestseller for Airbus Helicopters in Russia, as well as the H160 model, which had originally been unveiled in March of 2015.

A new helicopter from Russian producers was presented by Heliweil, which was the

first to demonstrate a 2-seater superlight pursuit helicopter along the lines of the Afalina. Russian domestic production, plus a raft of technological innovation has significantly optimised the cost per flying hour - which makes this helicopter able to take on a wide range of different usage profiles. This is the result of dedicated work from a team of people fanatically devoted to aviation.

There was also a new product unveiled in the gyrocopter market – the first example of a gyrocopter produced under licence from the Italian manufacturers Claudio Pagotto, which was first presented at HeliRussia-2015 by the Russian company «Za Oblaka» (Beyond The Clouds).

This traditionally high-value show's main titular sponsor for HeliRussia - the state corporation Russian Helicopters - presented a medical-application version of its Ansat helicopter, along with the Ka-226, and a VIP version of the Mi-8.

Russian Helicopter Systems JSC VO presented a six-seater VIP cabin for the AW109SP, as well as exhibiting a project for expanding the helicopter infrastructure for the Moscow Region.

As always, a good preponderance of Robinson helicopters was on show at the exhibition, amongst which was the new R66 model with autopilot, presented by ZAO Aviamarket. In all a total of five Russian-manufactured helicopters were on view at the show: (Mi-8, Mi-2, Ka-226, the Ansat, and the Afalina); 3 helicopters from AgustaWestland (AW 109 Grand New, AW 139, AW 189); 3 craft from AirbusHelicopters (EC 130 T2, AS 350 B3, AS 350 B3E); 2 from Robinson Helicopters (R 66, R 44); two helicopters from Bell Helicopter (Bell 505, Bell 407GX) and one helicopter from Belgian producers Dynali, the H2S.

The gyrocopters in the show were from Cavalon and Calidus, GYRO GT, GY-





ROSPRINT, TANARG 912 – and a StemmeS10 glider were also present in the exhibition hall.

The undisputed world leader in the field of aero-engines and space engines for civilian and military applications - the Safran group - also took part in the show, represented the companies Turbomeca, Microturbo and Sagem. JSC "United Engine Building Corporation" was another exhibitor in the show.

**The big deals**

The HeliRussia-2015 show hosted the official hand-over by AP MAK of the documents for the Ansat and Ka-226T helicopters. The new light civilian Ansat and Ka-226T helicopters are developed by the Russian Helicopters Holding Corporation and State Corporation Rostech, and were the first such helicopters to appear in the world Russian commercial aviation. Both of these helicop-

ters received their full flightworthy documentation in the Aviation Register of the Interstate Aviation Committee (IAC) and can now be fully utilised in the civilian aviation sphere. Earlier versions of these helicopters have been put into operation use by the Russian Ministry of Defence, the Russian Ministry of Emergency Services, the Russian Ministry of Internal Affairs, the Federal Security Bureau, and other Russian state bodies. The traditional set-up of the Ansat, and the co-axial design of the Ka-226T each have their own advantages to recommend them. They are multi-purpose helicopters capable of being used for cargo or passenger transportation, as well as use within the emergency medical sphere.

At the HeliRussia-2015 exhibition, the Bell Helicopters corporation and Jet Transfer signed a contract for the delivery of the new Bell-429 helicopter to Russia.

This helicopter will be available to purchasers by the end of 2015. It will mark a jubilee twentieth helicopter of the Bell-429 to be delivered to the region.

The signing of this contract was attended by the President of the Textron Corporation, Mr Scott Donnelly, along with Bell Helicopters VP Patrick Moulay, the Head of Bell Helicopters for Europe Mr Jakub Joba, and the CEO of Jet Transfer, Mr Alexander Evdokimov.

“The helicopter is going to be supplied in a corporate-ready format. The client has requested that the cabin of the helicopter will be fitted with a number of additional facilities that increase passenger comfort and improve sound isolation” said Mr Evdokimov when outlining the features of the helicopter. A contract was signed for the delivery of eight light helicopters from Airbus Helicopters, and an Agreement was made for a servicing and dealership centre for Airbus Helicopters at the Istra Heliport.

Two new centres will join the network of Heliports Russia, at Krasnodar and Tyumen. The agreement for these centres was signed on the opening day of the HeliRussia-2015 show by the Deputy Chairman of the Board, Nina Abulova, with the heads of the two new centres. In Krasnodar the network will be



represented by the HeliCentre facility already operating in the area. This centre will continue to be headed by the current general director, Mr Vasily Grekhov.

The American helicopter manufacturer Bell Helicopters has, for the first time in its history, agreed to the assembly of its helicopters at a Russian-located facility. During the Exhibition the company signed the relevant licensing agreement with Urals Civilian Aviation Plant (UZGA) from Ekaterinburg. The latest modification of the Bell-407GXP model has been selected for production within Russia. "It's a new milestone in the development of the Russian aviation industry" said Mr Artur Shtankov, the Chairman of the Board at UZGA. Mr Shtankov emphasised that all of the helicopters produced will have Russian certification. The first three are already scheduled to be assembled in Ekaterinburg this year, and will be used for the relevant certification as soon as they are manufactured. UZGA are hoping that these three will be bought by the Federal Air Transport agency for use by flying schools. The licence agreement puts no limit on the number of helicopters which can be produced. UZGA is already an experienced player in localised





production of foreign aircraft. Their production facilities have already been used to manufacture drone aircraft for Israel, and flight trainers for the Austrian firm Diamond Aircraft.

The HeliRussia-2015 exhibition provided the venue for an extension of the four-way agreement between Airbus Helicopters, Airbus Helicopters Vostok, Flight Staff Training Centre NP and UTAir airlines, for training both pilots and engineering and maintenance personnel. In addition to this, the parties to the Agreement approved the operation in

Russia by UTAir and Airbus Helicopters Vostok of a network of authorised servicing centres and distributors for MRO services and spare parts.

**Fit it out**

Visitors to the exhibition were able to find out more about the latest in navigational equipment, ground services, radio-localised control, and the fitting out of helicopter stations. During the exhibition Transas Aviation (TAV) demonstrated solutions for the helicopter industry including an on-board set-up of equip-

ment for the Ka-62 helicopter, and a vision system and the latest Avrora-3 visualisation systems.

The Avrora-3 visualisation system was given an official presentation on the first day of the show, which put the system through its paces as a simulator for showing all kinds of spaces outside the simulator cabin. One specific feature of the latest system is a combination of realistic images with very detailed scenes plus a simulation of real light. This is achieved by using models from physically actual lighting models. Currently the database of this system includes around 30 world airports, including airports in Russia and abroad.

KRET once again exhibited at the HeliRussia exhibition as a single unified structure. The company used its display stands at the exhibition to demonstrate the full range of its technical solution achievements across the entire spectrum of the helicopter industry. 15 different companies of the KRET group were exhibiting this years, showing visitors their cutting-edge developments in the field of avionics for helicopters.

The Technodynamics corporation used the Exhibition to give demonstrations by its specialist staff for the creation of a series of synchronous frequency instability generators. The Technodynamics stand featured a model of the GSP-90/120 synchronous gen-



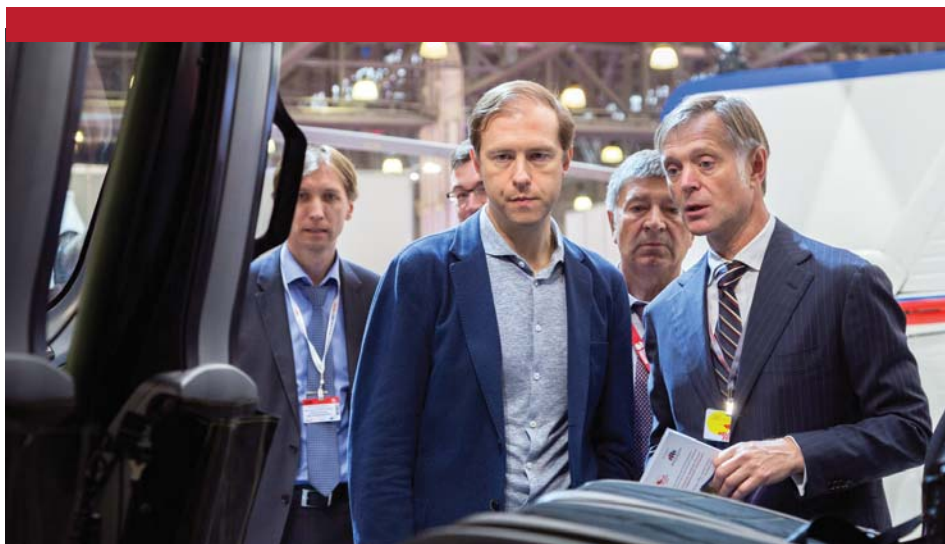


erator. Although it was originally planned that this equipment would be fitted to the projected MS-21 aircraft, the staff at Technodynamics remain confident that a 60 kW generator has the potential to be utilised in Russian helicopters, including the projected Russo-Chinese collaboration on the ANL "Heavy Lifter". The principle application of the equipment from Technodynamics is the idea of not needing a constant-speed hydraulic drive. A rectifier device can instead replace it, as a small electronic unit.

The Italian corporation AeroSekur specialise in life-saving equipment for the aviation industry. At the Exhibition they demonstrated a new means of escape from a helicopter during a forced water landing. In principle this system is based on a system of ballonets, which can keep the damaged helicopter afloat, and a liferaft which is incorporated into the helicopter's fuselage. In addition to this the company displayed protective fuel tanks which can help to equalise things during the carrying of extreme loads. The company also displayed a program for the servicing of its own equipment, including a plan for training technical personnel. Currently AeroSekur's equipment only comes fitted on foreign-manufactured helicopters, Their largest clients are Agusta Westland and Airbus Helicopters. Among the mass-produced helicopters fitted with this equipment are the AW 109, AW 139, AW189 and H175. No Russian helicopters are currently fitted with AeroSekur equipment. Due to its participation in the Exhibition, AeroSekur gained interest from Russian manufacturers and operators in the products it manufactures. A number of contracts were signed for the delivery of equipment to Russian customers.

### The Business Program

The Business Program of the HeliRussia-2015 event attracted more than 600 representatives from more than 130 different Russian and foreign companies. Under the umbrella of the exhibition there were also conferences, round tables and seminars on such topics as «Design For Aviation»; «Air Ambulance Aviation in Russia & Medical Evacuations»; "The Helicopter Mar-





ket – as it is now, and in the future», «Future Transport – yesterday, today, and tomorrow»; «Meteorological flights and landing facilities»; «Safety for helicopter services in the Energy sector»; «The possibilities for TCO for helicopter technology and the facilities offered by repair and maintenance facilities of Russian Helicopters»; «A new version of Section 8 of the Air Code – Legal regulation of air operations»; «The Patent Company and Aviation – or how to protect your invention»; «Hitting high efficiency targets by using LA to optimise servicing operations, use of storage facilities and parts turnover»; «Modernisation of air technology – meeting standard needs, or optimising resources?»; «Computer modeling for vibro-acoustics in aircraft and helicopter building. The optimisation of building the body of a helicopter on the basis of vibro-acoustic analysis», as well as other events.

This year was the first time that a new topic was discussed - "Design for Aviation". This was an international forum held with the support of Russian Helicopters and the Union of Russian Designers, which brought together professionals from the spheres of aviation, transport and industrial design, engineering companies, design bureaux and representatives of both Russian and foreign manufacturers.

Over the three days the participants and guests of the international forum discussed many issues and came to joint conclusions on topics such as methodology and the structure of processes for design in Light Aviation.

During the «Design For Aviation» Forum there was a round table discussion dedicated to issues of design (creating shapes, style, and parts) of cabins and elements of the fuselage of different craft; and a conference entitled «Modernisation of air technology – meeting standard needs, or optimising resources?»; a master-class on the design and colour options of helicopter fuselages. Over 21st and 22nd May there was an interdisciplinary practical scientific conference held, entitled «Air Ambulance Aviation in Russia & Medical Evacuations». The organisers of this conference were the Association of the Helicopter Industry, and JSC Mobile Medicine, with the active participation of the State Organisation 'The Russia-Wide Centre for Medical Disaster Protection of the Russian Health Ministry', the NII Pirogov State Centre for Children's Surgery" of the Russian Health Ministry, with the support of the Ministry of Trade & Industry of Russia, and the Ministry of Health of the Russian Federation. A round table discussion entitled "Modern Technologies of Medical Air Evacuation – Staff Training" was attended by leaders and

professional from the Russian Ministry of Health, the MDV, health protection bodies from the Russian Regions, health centres, emergency healthcare bodies, and scientists from university medical departments. It goes without saying that a great deal of attention was devoted to the round table discussion "Heliports for the City of Moscow and the Ways they should be used". This discussion was dedicated to the implementation of the state program for the City of Moscow, «Development of the Moscow Transport System for 2012-2016», as well as the stipulations in the sub-program «Development of New Means Of Transport» as far as it refers to helicopter transport. On part of this successful program was the experience gained by State Corporation Russian Helicopter Systems in resolving the administrative and operational needs of the city, and implementation of the aviation side of using the Moscow-City quayside, and the helicopter deck at the Moscow House of Music.

### Everyone wants to fly

It's worth repeating that helicopter technology today is in great demand - and this demand is only going to rise. If a helicopter club fifteen years ago might have seemed the dream, or at best the exotic hobby of a bunch of playboys, today the numbers of such clubs all over Russia are counted in hundreds, and continue to rise. Experts believe that the no drop in activity in so-called light aviation is apparent. Quite the reverse – interest is rising, along with demand for training, for helicopter tours, for leasing, and for helicopter rental.

Today it's become popular to quote popular wisdom about the two-sided nature of the crisis, as reflected in Chinese hieroglyphs – one side means danger, while the opposite side means new opportunities. It certainly seems that the domestic market for helicopters in Russia (and for industry generally), the latter part of this Ancient Chinese Wisdom seems truer than ever.

*Text compiled and written by  
Maria Scherbakova  
Translated by  
Neil McGowan*

# iHelicopter for iPad

New model  
range,  
desirable  
specifications

Available on the  
App Store



European companies are seeking opportunities to explore new partnership channels with Russian counterparts



## «Russian Hour» at the Paris Air Show: «International collaboration of Russian aircraft manufacturers. Suppliers and finalists»

### OEM & Suppliers – Russian capabilities for global benefits

---

**16th July, 3:15 to 6 pm  
(Hall 2 and Cocktail Space No 2)**

The Russian Helicopter Industry Association along with the Russian Exhibition Systems corporation have established the fine tradition of holding a conference titled «Russian Hour» at the annual American Heli-Expo exhibition. It's an event at which current issues of international collaboration in the Russian aviation industry are discussed, and has been held since 2009.

This year our Russian Hour makes its debut at the Paris Air Show.

The international aviation industry is developing higher and higher requirements for production, development companies and manufacturers, which increases the complexity of the supply chain, and raises the level of technological, financial and project risks.

When we bear global trends in mind, it's vital for market players to find new opportunities for collaboration.

Today Russia is making firm strides in the sphere of international collaboration. Key production for the civil aviation market are being developed in close cooperation with international partners. Russian industry is represented at all tiers of supply and

throughout the value chain. Corporations are actively building European standards into their designs, into the standards of their manufacturing processes and into their quality control systems.

The model for the Russian aviation industry means that local manufacturing suppliers are oriented towards global markets, integrated into international chains of suppliers, take part in risk-sharing programs, and have introduced best international practice in their design and manufacturing processes. The Government, in its turn should direct its efforts into multi-directional support for initiatives on the international market.

#### The Organisers:

Russian Exhibition Systems, Russian Machines with the support of the Trade & Industry Ministry of the Russian Federation. General sponsor – State Corporation Russian Helicopters.

#### Event Concept

Russian aviation industry companies have consolidated to present proposals to international OEM companies who are interested in working with Russian companies, under the umbrella of the Le Bourget Air Show

#### The Aims of the Event

1. To incept the cooperation of Russian aviation industry companies in accordance with the principles of developing supplies, with the proposals of the Strategy Partners Group.
2. To enable contracting for Russian aviation industry companies.

#### The Sphere of Activity of the Event

The possibilities of localising production, introduction into the supply chain, the localisation of foreign suppliers within Russian markets, localisation within outsourcing programs, and cooperation in innovation.

## The Event Program

**15:15 –15:35** Welcome address from the Deputy Ministry for Trade & Industry of the Russian Federation, Mr A Boginsky

**15:35 –15:40** Welcome address from the President of the Paris Air Show, Monsieur Emeric d'Arcimoles

**15:40 –15:55** The Development of Suppliers to the Aviation Industry – international collaboration. Mr A Boginsky (Russian Ministry of Trade & Industry), Mr M Grigoriev, Mr K Tikhomirov (Strategy Partners Group)

**15:55 –16:17** The business of successful international collaboration, with the participation of the Skolkovo Foundation, and prospects for its expansion into companies in the aviation manufacturing industry (The Skolkovo Foundation)

**16:17 –16:25** Possibilities for State Corporation Russian Helicopters to participate in OEM production chains (Russian Helicopters)

**16:25 –16:32** Presentation of promising projects for international collaboration with OAK (OAK)

**16:32 –16:40** Presentation of promising projects for international collaboration with Russian Machines (Mr D Rodin, Aviation Development Director, Russian Machines)

**16:40 –16:47** State Corporation Russian Helicopters within the system of international collaboration involving the development and modernisation of helicopter equipment. (Mr D Al-abuzhev, Program Development Director, State Corporation Russian Helicopters)

**16:47 –17:00** Inter-Cluster Collaboration in the spheres of Innovation and Retraining Staff Mr A Kobenko, Deputy Chair of Government, Minister for Economic Development, Investment & Trade for Samara Region.

**17:00 –17:10** Experience in aviation industry joint production ventures in Russia (Agusta-Westland, t.b.c)

**17:10 –17:30** Presentation of promising projects for collaboration with Russian companies – by three companies who are members of GIFAS

**17:30 –18:00** Buffet

**The working language for the event will be English. There is no facility for simultaneous translation in the venue.**

A helicopter which has extraordinary commercial potential

# Ansats.

## Ahead of its time, and ready to go



This year the holding group Russian Helicopters unveiled further new helicopter technology at the LIMA-2015 Langkawi International Aerospace and Maritime Exhibition – multi-purpose helicopters for civil aviation. Amongst these helicopters was a completely new model – the Ansat light helicopter, which has now joined the ranks of fully-fledged club members in the world of civil aviation. It's a helicopter which has the most spacious goods/passenger capacity in its class – and can be configured both as a passenger helicopter (including a VIP set-up) or for freight traffic, or additionally for search-and-rescue or medical evacuation applications.

**One step forwards is a step into the future**

The name 'Ansat' means «simple» in Tatar - the regional language where the Ansat is produced. Its development can be traced back to 1993, when a regional aviation design bureau was set up at the instigation of Deputy Director, Mr V.B.Kartashov. The bureau's work took shape in 1994, when it began developing twin-engine domestic light helicopters with a 1300kg payload capacity that conformed to FAR-29 international aviation standards. Development of the new helicopter involved the Kazan Aviation Institute, NPP Avikon, and Aeromechanica JSC. By 1997 KVZ Kazan Helicopter Factory had received certification for the development and production of a light version, leading to the appearance of a prototype of the helicopter which was pre-viewed before the general public at the MAKS-97 Air Show.

The initial version produced by KVZ was an Ansat equipped with a cutting-edge fly-by-wire control system (the KSU-A). It was a control system that proved to be vastly ahead of its time, and no other helicopter with a similar control system has ever been produced since.

However, in order to receive certification as a civil aviation helicopter for passenger use, the new model needed to pass a rigorous test-flight certificate program for its class of use. Yet it turned out that no previous helicopter of this class and specification had ever received such certification. The International Aviation Committee of inspection simply had no criteria for running test flights for a helicopter of this specification.

As a work-around for this unexpected situation, the designers were compelled to rethink the helicopter with a more conventional hydro-mechanical control system. It was, perhaps, the first example in Russian history when developers were forced into making modifications to their designs that replaced the latest innovations in their standard model with outdated technology. However, it wasn't purely a Russian problem – there was no

precedent for certifying such an advanced helicopter anywhere in the world, nor any international certification body anywhere which had the right or ability to do it.

Even so, the installation of the hydro-mechanical control system didn't affect the unladen weight of the helicopter, nor did it cause any changes to its performance specifications.

Expert opinion agrees that the modernised Ansat possesses a wide raft of technical advantages over other similar helicopters in its class – it's reliable and simple to operate; can be used safely in a wide range of climatic conditions and temperature ranges; and does not require hangar storage. Potential customers – not only from Russia, but from a wide number of countries in Asia and Latin America – are happy to purchase the model as equipped with hydro-mechanical steering.

As far as an Ansat equipped with a fly-by-wire navigational and control system is concerned, it's a version which has been taken up enthusiastically for military applications, where the civil aviation certification isn't a re-

**The Ansat helicopter now finally available for use over a wide range of different applications, as well as being fitted and certified to be used for both regular and charter passenger flights**

quirement. The Russian Ministry of Defence has been actively purchasing Ansats for helicopter training and military flight training centres, and they cannot heap sufficient praise on this model. In addition to this the Kazan Helicopter Factory is working on a further modification of the Ansat which will feature KSU-A fly-by-wire control systems alongside extended flight operation specifications.





With a full 3300 kg takeoff weight, the cargo configuration of the Ansat is capable of carrying a 1300kg payload for a distance of up to 520 km, at a speed of up to 240km/h – a task it would complete in just 3 hours and 20 minutes

Whitney turboshaft engines with 630hp, with an electronic digital engine control system (FADEC). This system ensures take-off continuation even if one of the engines fails during the process.

With a full 3300 kg takeoff weight, the cargo configuration of the Ansat is capable of carrying a 1300kg payload for a distance of up to 520 kilometres, at a speed of up to 240km/h – a task it would complete in just 3 hours and 20 minutes. Range and flight duration depend on altitude, weather conditions, air speed and the weight of the cargo. The craft has a service ceiling of 5500-6000 metres, dependent on take-off weight, with a hover ceiling of 1800-2700m. The radius of operations for the search-and-rescue configuration, in which flight would proceed at the fastest possible speeds, extends to 190-210 kilometres. The repositioning range for the empty helicopter would be 620 kilometres. The helicopter could deliver a payload of 1650kg over a distance of 100 kilometres. Usage of additional exterior fuel tanks would significantly extend the range and flight-duration specifications of the craft.

**Available, and in demand**

The work done by developers in getting a civilian version of the Ansat into production didn't keep buyers waiting long. By late-2014 Kazan Helicopter Factory received certification for the passenger model of the Ansat.

**Simplicity is no worse than thievery**

In fact, this so-called «simple» helicopter is a long way from simple in reality. Just consider that for the first time in the history of helicopter manufacture, a craft in this class is certified to carry up to ten passengers. One of these passenger seats is next to the pilot, on the left – with a further nine passenger seats in the main payload cabin. Passenger access is via four different doors – two in the pilot's cabin, and four in the payload cabin. There's also a hatch in the rear section of the fuselage where luggage, or a stretcher, can be loaded.

The Ansat's main rotor hub is hingeless and 'maintenance-free'. Hinges have instead been replaced with a flexible fibreglass torsion beam. A four-way sleeve incorporates two intersecting beams, with two blades connecting to each of them. The hingeless suspension system provides for both extended controllability and handling, and for reducing the cost and weight of the unit too – which makes for significantly lower operating costs.

Replacement of sleeve parts can be carried out without needing to go to a service centre, based on gathering objective information of the system. The hingeless torsion sleeve design was first developed in Russia, and offers huge prospect for further development. The fly-by-wire control system was also first developed in Russia specifically for the Ansat. The reliability of this control system is ensured quadruple reserve digital and analogue calculators with double-reserve independent power supplies. There are dual hydraulic boosters for operative systems, which are fixed to the casing of the central gearbox, and immediately alter the position of the swash plate.

Aside all this, the Ansat is fitted with a brand-new flight navigation system which provides for flight in either automatic or manual-control mode, in light or heavy weather conditions – and also for total independence during flight preparation, and during servicing of the helicopter.

The Ansat is fitted with two PW 207K Pratt &



*Our job is to get you to cloud nine*



By December 2014 a further category certificate confirmed that the standard design of the helicopter met civil aviation regulations, including the changes made by the alterations in the steering mechanism. In practice the passenger model of the helicopter deploys an advanced control system (SUU) and features a 3600kg take-off weight, equipped with the full configuration for passenger flights. These improvements enable improved flight handling capabilities for the helicopter, making it an even more desirable buy on the competitive international markets. To sum up – Russia now has two different craft within the multi-purpose light helicopter category, the Ansat, and the Ka-226, which are effectively in competition with each other. Without hurting each other's chances, these two models are capable of fulfilling Russia's entire niche demand for light multi-purpose helicopters. The Ka-226 offers excellent altitude performance – they have no rival in mountain areas. To put it simply, it's a helicopter with all the advantages of a coaxial design. The Ansat can carry larger passenger numbers, and the single-rotor design is perfect for transport use.

Comparing them with western-made competitors, the Ansat goes head-to-head with the Bell-429, the EC-135 and EC-145, and the AW-109. Price is going to be a winning factor, alongside the fact that Russian-made helicopters are optimised for Russian operational conditions and usage standards. No-one will deny that the western-made helicopters are good – but they need complex and exacting servicing. The Ansat positions itself as an inexpensive way into the air – without pretensions, simple, and with low running costs.

We can sign-out by mentioning that mass production and the beginning of commercial deliveries of the Ansat are scheduled for this year. Potential purchasers of the civilian version are already involved in negotiations. The commercial prospects for the Ansat seem excellent not only for the Russian domestic market, but for the aerospace industry all over the world.

*Dmitry Gnatenko*



[www.helisystems.ru](http://www.helisystems.ru)  
[auc.rvs@helisystems.ru](mailto:auc.rvs@helisystems.ru)  
tel.: +7 495 669 21 12,  
+7 926 872 55 03  
Moscow Region, Krasnogorsk,  
65-66 km Moscow Ring Road,  
J&C "Crocus Expo", 143402

**Aviation Training Center**

**Russian Helicopter Systems**



# Russian Helicopters a montré une production prometteuse au Pérou

*La holding a présenté de nouveaux modèles et des modèles de série à l'exposition militaire SITDEF 2015*

Russian Helicopters a participé au Ve Salon international des Technologies pour la Défense et la Sécurité des civils et pour la Prévention des Catastrophes Naturels SITDEF 2015 qui a eu lieu du 14 au 17 mai à Lima, au Pérou.

La holding a présenté aux opérateurs d'Amérique Latine l'hélicoptère polyvalent

Ka-32A11BC et une des nouveautés les plus attendues : le futur hélicoptère polyvalent Mi-171A2. Conjointement avec Rosoboronexport, la holding a fait la démonstration des modèles de l'hélicoptère de reconnaissance et d'attaque Ka-52 «Alligator» et du plus grand hélicoptère au monde : le Mi-26.

«L'Amérique Latine est un des marchés les

plus prometteurs pour les hélicoptères de fabrication russe. En tout, il y est exploité plus de 400 appareils. En 2013, il a été conclu des contrats pour la livraison de plus de 40 hélicoptères dans cette région. Ces contrats devraient permettre d'en livrer jusqu'en 2016», a indiqué le directeur général de Russian Helicopters, Alexandre Mikheev.

Le directeur de la holding a noté que la société livre principalement dans les pays d'Amérique Latine des segments moyens et lourds qui sont les plus rentables économiquement.

Les hélicoptères Ka-32A11BC sont très connus des opérateurs latino-américains. Au Pérou, en Colombie, au Brésil et au Chili, ils sont utilisés avec succès dans la lutte contre les incendies, lors de travaux de construction et de montage et lors du transport de chargements sur point d'accroche externe. Le Ka-32A11BC possède la meilleure capacité de charge de sa classe et une excellente manœuvrabilité. Les spécialistes de la hold-

ing ont fait une présentation de cet hélicoptère lors de l'exposition et ils ont expliqué ses capacités lors de la réalisation d'opérations de sauvetage et du transport de chargements spéciaux.

Les visiteurs de l'exposition ont pu également découvrir plus en détail le futur Mi-171A2 polyvalent combinant l'expérience unique d'utilisation des hélicoptères de type Mi-8/17 dans toutes les régions du monde et dans les résolutions d'ingénierie et de construction modernes. Les technologies et les matériaux à la pointe ont été utilisés lors de sa construction. Russian Helicopters a commencé les essais en vol de cette nouveauté en novembre 2014.

Ensemble avec Rosoboronexport la holding a présenté l'hélicoptère de reconnaissance et d'attaque Ka-52 «Alligator». Cet hélicoptère est prévu pour détruire les chars, les véhicules blindés et non blindés, des cibles aériennes et les troupes au sol, pour réaliser des missions de reconnaissance, etc. Le Ka-52 «Alligator» satisfait à toutes les exigences et les particularités de l'Amérique Latine. Il convient parfaitement pour les régions montagneuses où il peut être très utile dans des opérations contre des unités irrégulières.

Au stand de Rosoboronexport, fut présenté une maquette du Mi-26 et de sa version modernisée Mi-26T2 : le plus grand hélicop-



Les forces armées du Pérou ont acquis huit hélicoptères russes (six Mi-171Sh et deux Mi-35P)



L'Amérique Latine est un des marchés les plus prometteurs pour les hélicoptères de fabrication russe, il y est exploité en tout plus de 400 appareils

rière jamais construit en série au monde. Il est utilisé pour réaliser des opérations de transport et de sauvetage complexes et à grande échelle.

De plus, il a été prévu de réaliser des négociations avec les représentants des forces armées des pays de la région pour promouvoir les hélicoptères militaires Mi-35M et Mi-171Sh. Il a déjà été réalisé un contrat de livraison d'un nouveau lot d'hélicoptères militaires de transport Mi-171Sh au Ministère de la Défense du Pérou. Selon les clauses du contrat conclu en décembre 2013, il sera livré au Pérou avant fin 2015 plus de 24 hélicoptères. Ce contrat a été le plus important dans l'histoire moderne de la coopération militaire et technique entre la Russie et le Pérou, ainsi que sur le marché mondial des hélicoptères militaires de transport.

Durant l'exposition les spécialistes de la holding ont organisé des rencontres avec des partenaires étrangers et ont discuté des questions de maintenance globale du matériel russe.

Le premier Salon international des Technologies pour la Défense et la Sécurité des civiles et pour la Prévention des Catastrophes Naturelles SITDEF a eu lieu en 2007 dans la capitale Lima sur le site de l'Etat-major de l'armée

de terre avec le soutien du président, du gouvernement et du Ministère de la Défense du Pérou. L'exposition attire chaque année environ 40000 visiteurs de tout le continent. Les délégués de plus de 30 pays y participent.



Dans l'immédiat sur le marché local il y aura une nouvelle génération des hélicoptères russes



Interview de Victor Kladov,  
chef du département de la coopération  
internationale de la société Rostec

## Un hélicoptère sur cinq en Amérique latine est de fabrication russe

L'application de sanctions a obligé les sociétés russes à renforcer leur collaboration avec les pays d'Amérique latine : le Venezuela, le Brésil, le Chili, le Pérou. Victor Kladov, chef du département de la coopération internationale de la société Rostec, a raconté, dans une interview au journal *Kommersant*, ce que cette entreprise nationale peut offrir à cette région.

### La recrudescence d'activité avec l'Amérique latine est-elle liée à l'aggravation des relations avec l'Europe de l'ouest ?

Je tiens à dire tout de suite que nous n'avons pas découvert l'Amérique du sud, nous y sommes depuis longtemps installés: Rostec possède des représentations qui travaillent efficacement dans sept pays de cette partie du monde. Par exemple, près de 20 % du marché des hélicoptères des pays au sud du Rio Grande (Mexique) sont de production russe. Malheureusement nous ne détenons pour l'instant que 2 % des hélicoptères civils. Mais nous tentons de corriger cette tendance, nous menons une large campagne de marketing. L'un des résultats déjà obtenu est la livraison d'hélicoptères Kamov Ka-32 au Brésil. Pour le moment, ils ne sont que deux, mais leur quantité va augmenter dans l'avenir. En outre, nous effectuons actuellement la promotion des hélicoptères à usage multiple Kamov Ka-226T et Kazan Ansat ainsi que de la plateforme universelle à double usage Ka-62.



### Cette collaboration ne concerne que l'aviation ?

Non, l'aviation n'est qu'un des secteurs. En plus des avions et hélicoptères, nous promovons activement l'automobile, nous développons nos relations dans le domaine énergétique et dans bien d'autres branches encore. Par exemple, notre présence sur le marché dans cette région, au niveau des automobiles Kamaz, est évaluée à 700 engins

pour les années à venir. L'équipe russe a gagné le rallye Paris-Dakar trois années de suite au volant de cette marque. Cela permet à nos partenaires potentiels d'apprécier pleinement la qualité et la fiabilité de nos camions, sans autre publicité. Nous avons avec la société brésilienne Marcopolo une entreprise mixte qui produit des autobus de taille moyenne. De plus, la société VSMPO-AVISMA fournit à la société brésilienne Embraer la totalité de ses besoins en titane.



La démonstration de l'équipement de l'hélicoptère Mi-171Sh

Nous effectuons actuellement au Brésil la promotion des hélicoptères à usage multiple Kamov Ka-226T et Kazan Ansat ainsi que de la plateforme universelle à double usage Ka-62.

### Quels sont les projets les plus prometteurs ?

La construction de ports marins mobiles, la construction de centrales électriques marémotrices, caractéristiques de la longue zone côtière du Chili et du Brésil. Je souligne aussi l'intérêt porté par le Pérou à l'égard de notre production. Depuis 1973, ce pays nous a acheté beaucoup de matériel militaire : des avions Soukhoï Su-17, Soukhoï Su-25 et Mikoyan-Gourevitch MiG-29, des avions de transport militaires, plus de 100 hélicoptères de type Mi, des chars T-54 et

T-55, des moyens de lutte antiaérienne, des systèmes d'artillerie, etc. Une partie importante de cette production est jusqu'à maintenant en service et a besoin d'être réparée ou modernisée. Les nouveaux achats aussi sont prometteurs : les Péruviens savent que nos hélicoptères sont fiables, simples à piloter et faciles d'entretien, ils les connaissent bien. Alors pourquoi changer de fournisseur ?

### Les sociétés russes n'ont-elles pas peur de transmettre leur technologie ?

Les clients tentent actuellement de passer des achats simples au transfert d'une partie des processus de production sur leur territoire. Si vous voulez, c'est la marche du temps. Si vous me demandez ce qu'est Ros-tec à ce niveau, je vous dirais que c'est un

partenariat industriel et technologique. Par exemple, lors de l'exposition en Indonésie, aussi bien le président que les membres du gouvernement ont dit avoir l'intention de fabriquer eux-mêmes cette production. Nous y sommes prêts depuis longtemps, nous avons prévu plusieurs modèles de collaboration et proposons à nos partenaires plus qu'une production finie mais aussi des solutions complexes proposant une localisation de la production.

### Jusqu'où êtes-vous prêts à coopérer ?

Autant que possible. Nous nous basons sur les besoins de nos partenaires. Le gouvernement de chaque pays fixe toujours des critères « offset » différents. On peut construire un centre de service technique, comme cela a été le cas au Brésil avec les

hélicoptères d'attaque à capacité de transport Mi-35M, on peut transmettre la technologie. Le Brésil lui-même avec l'acquisition de nos complexes de missiles et de canons anti-aériens Pantsir S-1 peut demander d'installer ce système sur ses châssis, ou peut vouloir fabriquer lui-même certains éléments du complexe... Nous sommes prêts à étudier toutes ces possibilités.

### **Vous ne craignez pas une fuite de vos technologies?**

Il faut garder la tête froide et comprendre ce qu'on peut transmettre ou pas. Si ce transfert ne porte pas atteinte à l'économie et la sécurité de la Russie, alors c'est possible. Si un tel risque existe, alors personne ne donnera une telle autorisation.

### **Nos partenaires latino-américains n'ont pas de problèmes financiers?**

La garantie financière est toujours une question de négociation et pas seulement pour cette partie du monde. Je ne pense pas que l'Amérique latine souffre de la crise économique, au contraire, ces pays en



ressentent peu les effets. Le Venezuela connaît pourtant quelques problèmes.

### **Alors on ne va pas leur accorder de crédits à l'achat?**

L'accord ou le refus de crédit est une décision présidentielle qui prend en compte divers aspects géopolitiques, économiques et technologiques. Le style «Allez, hop, on leur fait crédit !» ne convient pas ici. La Russie n'a jamais distribué les crédits à la

manière de l'Union soviétique, ils sont maintenant assez rares. Mais, le Venezuela a effectivement obtenu un crédit de commerce extérieur d'un montant de 4 milliards de dollars.

### **L'Argentine est-elle aussi intéressée par notre production?**

Ils utilisent avec succès plusieurs hélicoptères Mi-171E. S'ils en demandent d'autres, nous leur les fourniront avec joie.



www.neboservice.ru



www.avionix.com

# SANDEL

**SANDEL HeliTAVS - система предупреждения столкновений с землей со склада в Москве от официального дилера**

125424, Москва, Волоколамское ш, д.88, стр1, оф.206

Наши телефоны: +7 (495) 490-6105, 491-3610

[contact@neboservice.ru](mailto:contact@neboservice.ru)





**ВЕРТОЛЕТНАЯ  
ИНДУСТРИЯ**





**Ka-32A11BC**

Reduktor-PM became a key element of modernization



## **Ansats transmission units to be tested in Perm**



Over a year before the creation of the Russian Competency Centre for the building and testing of helicopter gearboxes and transmission units, two mechanical energy-saving sealed units test units, for testing the equipment produced by the Centre have been developed in Perm - to test the transmission units of Ansat helicopters.

The Russian Helicopters Holding is continuing its modernisation program. The result is the creation of three Competency Centres – for producing magnesium castings, based at AAK Progress JSC VO; for the mechanical production of parts, based at KVZ JSC VO; and for the development and production of systems and transmission units, and test units based Reduktor-PM JSC VO. The latter is the largest Russian centre for the manufacture of helicopter gearbox systems, including testing units. This centre will be able to produce the number of gearboxes the helicopter manufacturing plant will need to meet its strategic development targets for the expansion of the helicopter industry as planned by the Oboronprom military production corporation.

## Russian Helicopters has embarked on a program of Import Replacement for helicopter parts and systems used in Russian manufacturing

### Lessons learned

Having learned from the setbacks which the Russian helicopter business encountered during the procedures in getting certification for the Ka-62, this comprehensive approach will make significant improvements in efficiently replacing imported units in the Russian production-line. This is especially



Alexander Kuklin, NC machine operator, participant of the WorldSkills Hi-Tech championship

valuable since the customers for the new helicopters might not only be foreign corporations, but similarly organisations within the Russian State network. Deputy Production CEO for the Russian Helicopters Holding, Mr Andrei Shibitov draws the connection with certification delays firstly with the previously poor quality management

program for the Ka-62 until recently, and secondly «with a major innovation program» in which the development of the helicopter deployed advanced technologies ahead of both domestic and international standards in helicopter manufacture. «Regrettably, it might be that we didn't completely factor in the risk element when



Ivan Kalmykov, serviceman of NC machine, participant of the WorldSkills Hi-Tech championship

evaluating the innovation technologies in this craft» Mr Shibitov admitted. «Our designers, we could say, caught up with international experience with this design in a single leap – which placed the bar very high. This, of course, brought a level of risk into the program, and that put us behind schedule by a year-and-a-half. But I

emphasise that this was all connected to the innovative technology built into the craft – which inevitably needs a bit of time to accommodate it. And we are not alone in this. OKB Kamov have had similar experience with both production and, to a great extent, with the supply of equipment from suppliers.

## Russian Helicopters Holding is also building an assembly-testing complex in Perm, including both test units and assembly areas

Production of the Ka-62 is scheduled to take place in close collaboration with European partners. In particular, the engines and fuel system come from France (from Turbomeca and Zodiac Aerospace), while the gear system and transmission are Austrian (from the Zoerkler Gears GmbH & Co KG corporation). Nevertheless, given the current sanctions policies implemented by western nations against Russia, Russian Helicopters has embarked on a program of Import Replacement for helicopter parts and systems used in Russian manufacturing. One part of this strategy is the creation of the Centre at Reduktor-PM JSC VO's facilities. Here they have already built two sealed mechanical energy-saving test units for testing the transmission units to be built for Ansat helicopters.

### No-exception priorities

One of these two units is designed to test the tail transmission units for the Ansat, while the other tests the main VR-23 gear system and its SV-23 connecting shaft. The equipment was launched in the presence of the President of the Russian Helicopters Holding, Mr Mikhail Rybakov, along with the Directors of Reduktor-PM, experts from the Kazan Helicopter Plant, and representatives of KAM-Engineering, which is the main contractor for the project. The first series of tests on these new test units was successfully completed on 15th May.

«Alongside rolling-out the latest helicopter models, our Holding is actively modernising

the power of our production facilities» explained Mr Alexander Mikheev, the CEO of Russian Helicopters, when commenting on the launch of the new equipment at the Perm plant.

The Holding's CEO said that the modernisations going on with the Ansat helicopter would also be seen in its models for the civil aviation market. Russian Helicopters are confident that the all-purpose version of this craft will be taken up enthusiastically, both in Russia and abroad – since the demand for a helicopter of this kind is extremely high.

«A very effective sealed movie-camera unit is installed in the test units for the Ansat transmission, there are modern measuring and control devices, and a special automated control system. The investment costs in this project have run to 134 million roubles» commented Mr Nikolai Semikopenko, the Managing Director of Reduktor-PM. «We've set up a modern testing facility – it's one of the top priority developments in our business».

«It's possible to assert today that Reduktor-PM has fully acquired the competencies required for the design and manufacture of

sealed test units», the company's Director stressed. «This fact enables us to predict that a fully-fledged testing facility base will be set up here in Perm in the near future, for both production-line and prototype helicopter transmission systems. Currently there is no such facility at any helicopter manufacturing company in Russia» said Mr Semikopenko.

In addition to the test units for Ansat helicopter transmissions, the Reduktor-PM plant has also set up mechanically sealed test units for the transmission units of the 8M Mi-8/17 helicopters, and for the tail section transmission and beveled gearings of the Mi-28H «Night Hunter» helicopters.

The Russian Helicopters Holding is also building an assembly-testing complex in Perm, including both test units and assembly areas. The building of this modern manufacturing facility began in September 2014, and covers a ground area of around 20,000 square metres. Construction is due to be completed in December 2016. The overall investment in this project runs to 2 billion roubles, including the costs involved in creating

the testing units themselves.

The upshot of all of the above is that Russia has now completed the main needs for the development and construction of completely Russian-manufactured helicopter engines and control systems. One example is the creation near St Petersburg of a new design-and-production complex at which the entire production cycle for helicopter engines is carried out – from design through to production-line manufacture and in-operation servicing and support. Their plans for 2015 include building 120 helicopter engines, rising in the next years to an overall output expectancy of 500 engines per year. Similar figures are forecast for helicopter control systems and engines.

The two mechanically sealed energy-saving test units built for testing Ansat helicopters, which have been set-up and launched at the Perm plant of Reduktor-PM are the next logical step for the Russian helicopter business in completing its operations and bringing its production up to the needs of a world market.

**Andrey Vezhnovets**



[www.neboservice.ru](http://www.neboservice.ru)



[www.avionix.com](http://www.avionix.com)



## Оборудование со склада в Москве от официального дилера



125424, Москва, Волоколамское ш, д.88, стр1, оф.206

Наши телефоны: +7 (495) 490-6105, 491-3610

[contact@neboservice.ru](mailto:contact@neboservice.ru)



En 10 ans on produisait 250 hélicoptères Ka-25 des diverses modifications

# Il y a 50 ans que le premier hélicoptère de série Ka-25 s'est envolé dans le ciel



L'hélicoptère Ka-25 construit à l'Usine aéronautique d'Oulan-Oude (UAO-O), l'hélicoptère Ka-25PL est devenu le premier hélicoptère assorti d'un équipement radioélectronique multifonctionnel comparable, par sa complexité, aux avions de chasse de cette époque-là. Grâce à son système électronique, Ka-25 pouvait être opérationnel dans n'importe quelles conditions climatiques. Cela est devenu une caractéristique particulière des hélicoptères de marque «Ka».

### Vol autonome Jusqu'à Paris

Ses hautes qualités de vol ont permis à la version passagers de l'hélicoptère Ka-25K piloté par E. Laryushin, le 12 mai 1967 s'est envolé pour Paris où il s'est illustré au 27ème Salon international de l'aéronautique et de l'espace de Paris - Le Bourget.

Ka-25 a été conçu pour le transport des passagers et des chargements, pour l'utilisation en qualité de grue, pour le transport sanitaire et le secourisme. La vitesse de croisière de cet hélicoptère était égale à 220 km/h et la distance franchissable était de 650 kilomètres avec une charge utile de 7300 kilogrammes. Dans la soute, on y pouvait installer jusqu'à 12 passagers.

Au Bourget, tout le monde a aimé la «grue volante»: les spectateurs aussi bien que les spécialistes. Les revues d'aviation soulignaient surtout que «le Bureau d'études Kamov a réussi à résoudre le problème des doublets d'hélices, puisqu'on a construit un tel hélicoptère lourd». En effet, Ka-25 pouvait transporter, à l'aide d'un ancrage externe, des charges jusqu'à 2 tonnes de poids en les posant précisément au bon endroit.

### Du petit au grand

Ka-25 excellait dans plusieurs domaines. Il a été le premier hélicoptère vraiment anti-sous-marin, le premier hélicoptère qui avait été initialement élaboré pour le combat et pas tout simplement y adapté. Ka-25, c'est le premier véhicule volant de combat embarquable en URSS, et son apparition a permis de créer de nouveaux types de navires et de commencer à résoudre un nombre de problèmes navals. En même temps, Ka-25 est un véhicule à élaboration par étape de l'industrie soviétique

d'hélicoptères. Le fait est que c'est le point finale de l'expérimentation pour le lancement de l'exploitation des hélicoptères rotors coaxiaux. C'est pourquoi leur développement se déroulait non seulement du simple au compliqué mais aussi du petit au grand, dont un exemple est l'histoire des hélicoptères Kamov. L'arrangement de l'hélicoptère naval sur la base de Ka-25, a été intégré dans les modèles ultérieurs d'hélicoptères pour les applications maritimes. C'est en 1956 que les constructeurs du Bureau d'études expérimental N. I. Kamov ont commencé la création d'un hélicoptère naval de nouvelle génération capable de résoudre les problèmes de lutte anti-sous-marine, de reconnaissance et la réperage de cible. La décision de développement de l'hélicoptère Ka-25 a été prise le 20 février 1958. A ce moment, on a élaboré certaines exigences pour les hélicoptères navals en tenant compte de la spécificité des résolutions des problèmes de lutte anti-sous-marine: configuration coaxiale d'hélices, deux moteurs,

L'hélicoptère Ka-25PL anti-sous-marin sur le pont du croiseur «Kiev»

Ka-25, c'est le premier véhicule volant de combat embarquable en URSS, et son apparition a permis de créer de nouveaux types de navires et de commencer à résoudre un nombre de problèmes navals.

dispositifs de maintenance à flot dans le cas d'un amerrissage de sauvetage. L'hélicoptère est réalisé d'après le schéma de deux hélices tripales contrarotatifs. Pour la disposition du navire dans l'hangar et sa transport sur les élévateurs, on pouvait replier les ailes à l'aide d'un mécanisme à distance.

Le 26 avril 1961 l'exemplaire prototype de Ka-25 s'est élevé dans les airs (il figurait dans les documents comme l'objet «D»).

### **Ka-25 - innovation dans la production**

Comme il n'y avait pas d'alternative, la décision sur la production en série de l'hélicoptère a été prise au stade initial des études. Cette mission a été assignée à l'équipe de l'Usine aéronautique d'Oulan-Oude qui aujourd'hui fait partie du groupe « Russian Helicopters ».

Ce qui est particulier, c'est que l'organisation de la collaboration entre les constructeurs et les producteurs était révolutionnaire pour beaucoup. Ainsi, on a organisé à UAO-O une mission représentative du constructeur général du Bureau d'études expérimental. Pendant les deux premières années, à partir de 1961, il y avait à UAO-O d'une manière permanente 20

à 30 constructeurs de diverses spécialisations. L'expérience de la collaboration avec les collègues de la construction en série n'a pas été inutile: les savoirs acquis ont posé les fondements pour le développement ultérieur de la technologie de la production des modules, des systèmes et des hélicoptères en général, pour amélioration qualitative de la documentation de conception.

La production de Ka-25 est devenue une continuation logique de la production d'hélicoptères à UAO-O: auparavant, l'usine avait produit Ka-15 et Ka-18 destinés à l'aviation de la Marine Militaire. Une mécanique de la colonne des hélices compliquée, des assemblages collés dans les ailes, de la protection anticorrosive de tous les ensembles, de l'application des plastiques à renfort de verre, d'un grand nombre des dispositions radioélectroniques, exigeaient une technologie nouvelle et de qualité et un travail préparatoire bien sérieux. On a créé de nouveaux laboratoires, un complexe radiotechnique, un département des études de construction en série. En même temps, on s'est famil-

iarisé avec la production des ailes d'hélice entièrement métalliques d'après une technologie originale qui est utilisée dans la production jusqu'ici.

### **Autonomie en toutes intempéries**

On a produit Ka-25 jusqu'au milieu des années 1970. L'appareil a été modernisé plus d'une fois au cours de son exploitation. De 1965 à 1974, l'usine a produit et envoyé aux troupes de l'aviation de la Marine Militaire 250 hélicoptères Ka-25PL, Ka-25Ts, Ka-25PS, Ka-25BT. Un grand nombre de modifications a contribué à l'augmentation de l'efficacité des fonctions de combat et de défense des dispositifs de forces maritimes. Dans les années 1965-1973 ont été fabriqués dans la ville d'Oulan-Oude 460 hélicoptères avec 18 modifications différentes. Ils ont été modifiés pas une fois au cours de leur exploitation. Ka-25 a été exporté en Bulgarie, au Vietnam, en Inde, en Syrie, en Ex-Yougoslavie.

Les appareils à voilure tournante munies d'un matériel spécialisée ont été utilisés en 1967-1968 pendant les recherches des appareils spatiaux échoués dans l'océan Indien (programme «Ellipse»). A la fin des années 1960 et 1970,

L'exemple le plus connu de l'application de Ka-25 le nettoyage du canal de Suez des mines après les guerres arabo-israéliennes est devenu





on a réalisé un programme analogique sous le nom de «Selenga». Les bonnes propriétés de Ka-25 comme dragueurs de mines ont été démontrées en 1974 lors du déminage du canal de Suez. Pendant la navigation en hiver 1978-1979, pour la première fois dans l'histoire de la conquête de l'Arctique l'hélicoptère Ka-25 muni d'un radar de vision et d'un horizon artificiel a pris part dans la conduite des navires le long de la Route maritime du Nord dans les conditions de nuit arctique. Un groupe de 12 personnes assurait une navigation 24 heures sur 24 ans les mers de l'Océan glacial faisant des investigations des glaces maritimes à l'aide de Ka-25. L'hélicoptère était basé sur le bateau brise-glace atomique «Sibérie». Dans les conditions extrêmes de la nuit arctique, quand l'intensité du vent se montait à 35 mètres par seconde, et la température de l'air descendait jusqu'à 50 degrés du froid d'après l'échelle Celsius, l'hélicoptère volait 5-6 heures par jour en altitude de 15-20 mètres. D'après l'Héros de l'Union soviétique, l'aviateur d'essai de l'URSS, Nikolay Bezdetniy, après plus de 200 heures de vol, l'hélicoptère a montré «une autonomie complète en toutes intempéries» (une capacité

de trouver dans n'importe quelles conditions climatiques et par ses propres moyens un endroit convenable et d'atterrir sans aide quelconque).

Les pilotes aimaient Ka-25 pour son facilité de pilotage, sa capacité de manœuvre, sa commodité ainsi que son abondant instruments de bord. Les pilotes remarquaient surtout que les manettes et les boutons de mise en marche de plusieurs systèmes se trouvaient sur les manches de commande et qu'on pouvait mener tout le vol sans détacher les mains. La configuration coaxiale a assuré à l'hélicoptère une belle capacité de manœuvre.

Ka-25 est un hélicoptère avec des hélices d'une configuration coaxiale. Les hélices sont tripales, contrarotatifs, avec un système électro-hydraulique de repliage au repos. Le fuselage est entièrement métallique (D16T), de type poutre-limon. Pour assurer la stabilité en profondeur et dans la direction, on a installé une queue empennée avec les dérives hautes et basses et deux flasques munies des gouvernails tournants. Les flasques sont installées sous un angle de 15°

par rapport à l'axe de poulie de l'hélicoptère. Le châssis d'atterrissage est tetrasupport, fixe. Pour l'amerrissage de secours, on installait des ballonnets pneumatiques sur les jambes d'atterrissage (ils ont été démontés au milieu des années soixante-dix). Le propulseur est composé de 2 turbomoteurs à turbine libre TURBOMOTEUR-3 et un réducteur à satellites à quatre étages RW-3F (à partir de 1974 – TURBOMOTEUR-3 et RW-3F), situés dans la gondole commune du moteur dans la partie haute du fuselage. Pour la première fois dans l'histoire nationale de la construction des hélicoptères, le propulseur a été muni d'un système automatique capable de maintenir la fréquence constante des hélices et l'indice des modes du moteur. Le carburant en réserve se trouvait en 8 réservoirs souples. On a prévu aussi la possibilité d'installer 2 réservoirs à essence de réserve en dehors sur les bords. Dans l'avant du fuselage, il y a la cabine de pilotage équipée deux sièges. Dans le compartiment général un spécialiste du matériel anti-sous-marin pouvait s'installer ou 12 passagers sur les sièges à rabattement.

*Nikolai Korobov*



www.neboservice.ru



www.avionix.com

**BendixKing**  
by Honeywell

**Метеолокаторы, КВ Радиостанции**  
**Навигационное оборудование**  
**BendixKing со склада в Москве**  
**от официального дилера**

125424, Москва, Волоколамское ш, д.88, стр1, оф.206

Наши телефоны: +7 (495) 490-6105, 491-3610

[contact@neboservice.ru](mailto:contact@neboservice.ru)



Le holding Russian Helicopters revient au sujet des hélicoptères rapides

# Laboratoire volant pour l'hélicoptère à grande vitesse en développement

Le premier vol pourrait avoir lieu au début de 2016

Le premier laboratoire volant dans le cadre du programme de développement de l'hélicoptère à grande vitesse (DHGV) sera créé avant la fin de cette année, le premier vol pourrait avoir lieu en 2016. Cela a été déclaré par le vice directeur général de la holding Russian Helicopters, Andrey

Shibitov, le 12 mai lors de la conférence de presse consacrée à l'exposition HeliRussia 2015.

«Nous avons commencé la construction du laboratoire volant. Ce projet est en cours de réalisation et je crois que vers la fin de l'an-

née nous obtiendrons un laboratoire volant qui doit faire nécessairement une vérification au sol. Si tout se passe bien, nous envisageons le premier vol de ce laboratoire au premier trimestre de l'an 2016" a annoncé Andrey Shibitov.



Le laboratoire volant permettra d'essayer les moteurs, les instruments de bord et d'autres éléments de l'hélicoptère dans les conditions de vol réel.

Le vice directeur général de Russian Helicopters a expliqué aussi qu'après trois années de travaux dans le cadre du programme de développement de l'hélicoptère à grande vitesse on a compris qu'il faut diviser ce travail en deux parties : une partie consacrée à la recherche pour atteindre les grandes vitesses (360-400 kilomètres par heure à la première étape, 400-450 km par heure et plus à la deuxième étape) et une autre commerciale qui utilisera les informations déjà acquises et en même temps répondra aux exigences du marché.

D'après les mots d'Andrey Shubitov, l'analyse des exigences des exploitants a montré que c'est le coût d'exploitations qui est prioritaire pour eux et non la vitesse. Il a remarqué que déjà à l'étape de théorisation, le coût de l'appareil atteignant une vitesse maximale de 360 kilomètres par heure est élevé.

«C'est pourquoi nous avons fait ce découpage: on réalise un programme de création d'un hélicoptère moyen commercial de classe 10+ (d'après le poids au décollage) qui va comprendre tout ce que nous avons déjà fait en ce qui concerne l'appareil à grande vitesse; et on continue les travaux dévoués à l'obtention des vitesses de la première étape, 360 kilomètres par heure, dans les cadres du large programme «Vitesse», a expliqué Andrey Shubitov.

Il a été déclaré auparavant que la Russie était prête à octroyer plus de 7 milliards roubles pour la création d'un nouvel hélicoptère à grande vitesse. Au mois de janvier 2014 le directeur exécutif de Klimov, Alexandre Vatagin, a informé qu'on planifiait de créer le premier prototype d'un moteur de dernière génération pour le DHGV en 2015.

Le développement de l'hélicoptère à grande vitesse est une sorte de tendance dans l'industrie mondiale de la construction d'hélicoptères. Un Laboratoire volant permet de

tester, lors de vols réels, les moteurs, les instruments de bord et d'autres composantes de l'hélicoptère.

### Une rentabilité élevée, c'est le plus important

Retour en 2012, au salon aéronautique de Farnborough, Dmitry Petrov, Directeur Général de la holding « Russian Helicopters », a parlé de la fin de la phase d'études préliminaires sur le programme de développement de l'hélicoptère à grande vitesse (DHGV). Ainsi, le critère le plus important sur lequel on a mis l'accent lors du développement de ce nouvel hélicoptère de pointe, a été le rendement élevé de l'exploitation de l'hélicoptère. «Nous sommes convaincus que le principal avantage concurrentiel de toute technologie dans le monde moderne est son rendement économique», a-t-il déclaré.

## la Russie était prête à octroyer plus de 7 milliards roubles pour la création d'un nouvel hélicoptère à grande vitesse

Un modèle futur d'hélicoptère moyen (PSV), dernière nouveauté de la holding, a été montré publiquement pour la première fois au salon aéronautique en 2012. Appelé RACHEL (de l'anglais Russian Advanced Commercial Helicopter: « Hélicoptère commercial Russe Perfectionné »). Les exigences scientifiques et techniques, qui font suite aux travaux de recherche sur la création et la mise en service en 2020 de l'hélicoptère, ont les caractéristiques suivantes: une masse maximale au décollage de 10600 kg ; une modification à la base - multifonctionnelle et convertible (passagers et fret); la capacité en passagers est de 21 per-



L'intervention d'Andrey Chibitov à la conférence de presse dans l'agence d'information Interfax

sonnes; l'équipage est composé de deux pilotes et du personnel navigant ( en cas de transport de passagers); la charge maximale interne est de 3500 kg; la charge maximale de levage est de 4000 kg; la charge moyenne de levage est de 2500 kg; la distance franchissable avec une charge moyenne de levage est de 900 km. La vitesse de croisière maximale est de 340 à 360 km / h ( de 25 à 30% plus élevée que ses homologues modernes); le coût d'exploitation est de 20 à 25% inférieure par rapport à leurs pairs.

Les paramètres du moteur sont les suivantes: un turbomoteur à turbine libre à construction modulaire avec une puissance dépendante de la modification, avant et après, avec les conditions  $H = 0, V = 0$ : le régime moteur est de 2,5 tour/minutes soit 3000 ch ; au décollage, il est 2800 ch ; en continu il atteint la valeur maximale de 2200 ch. Le régime de croisière est de 2000 ch. La consommation de carburant quand il atteint sa vitesse de croisière est de 230 g / ch.h. La masse conformément aux normes



## Chibitov a remarqué que déjà à l'étape de théorisation, le coût de l'appareil atteignant une vitesse maximale de 360 kilomètres par heure est élevé

GOST 17106-90 n'excède pas les 240 kg et l'aspiration de l'air par le moteur est de 0,2 kg / s.

### Deux objectifs à atteindre

Pendant la phase initiale ces bureaux d'études du programme DHGV de « Russian Helicopters » ont remporté le concours sur les travaux l'hélicoptère à Grande Vitesse: SA MIL dénommé M.L. Mil a proposé le projet du Mi-X1 à Grande Vitesse et SA Kamov celui du véhicule à rotor contrarotatif rigides Ka-92.

Les travaux des deux bureaux d'études ont été appréciés par la holding. Par conséquent, il a été décidé de poursuivre la recherche sur deux fronts, en tenant compte des caractéristiques de chacune des ver-

sions proposées. MIL s'est concentrée sur la conception des rotors simples, classiques B-37, mais Kamov s'attellera à la fabrication d'un laboratoire volant pour tester les paramètres techniques de l'hélicoptère à Grande Vitesse avec rotor contrarotatif. L'hélicoptère polyvalent commercial B-37, RACHEL, sera conçu avec une masse de décollage de 10-12 tonnes, proche du Mi-8 (Mi-17) très populaire sur le marché. La version passagers de l'hélicoptère sera équipé d'un salon confortable pour 21-24 personnes. On projète de créer des versions spécialisées: recherche et sauvetage, de patrouillage et médicale. Ainsi le futur Mi-37 est conçu pour remplacer les hélicoptères Mi-8 (Mi-17) et conjointement avec le lourd Mi-38, il renforcera à moyen terme la position de la holding « Russian Helicopters » sur les marchés traditionnels.

### Un poste de pilotage à planche de bord tout écran

La dernière série des instruments de bord (EIS) l'hélicoptère de pointe développée par Oulianovsk Instrument Design Bureau (OIDB) faisant partie du konzern Technologie radioélectronique (KRET). En 2013 Oulianovsk Instrument Design Bureau a mis en œuvre une partie du travail de recherche «Travail préliminaire de la conception du DHGV. Expérimentation d'un laboratoire volant (DHGV)».

Pour la première fois, le konzern, a présenter sa dernière série des instruments de bord l'année dernière à l'Exposition Internationale des Industrie des hélicoptères HeliRussia-2014. Il a été conçu dans le cadre de l'amélioration de l'avionique. Cela permettra d'améliorer la sécurité, réduire le coût de fabrication de l'avion, ainsi que de renforcer la capacité d'intégrer toutes les unités de la modification complexe des hélicoptères et pas seulement au DHGV.

Le concepte est construit sur le principe de la planche de bord tout écran. Il utilise l'indicateur multifonctions LCD grand format haute résolution. Ainsi, elle facilite le travail des pilotes et le processus de familiarisation avec le vol, le pilotage, les instruments météorologiques et autres informations nécessaires. Les instruments du konzern Technologie radioélectronique ( KRET ) fournit un pilotage dans toutes les conditions de visibilité.

Le complexe est équipé d'une technologie de pilotage unique avec la technologie Synthetic Vision - l'écranisation des informations de navigation en image de synthèse sur une même surface. Le système informe l'équipage quant aux contraintes opérationnelles, les menaces externes, les dangers près du sol et les obstacles proches comme éloignés.

*Herman Spirin*



A L W A Y S O N T O P



**MAKS**

**2015**

**INTERNATIONAL  
AVIATION AND SPACE  
SALON**



[www.aviasalon.com](http://www.aviasalon.com)

**MOSCOW ● ZHUKOVSKY ● 25 - 30 AUGUST**

In the midst of tests of the new helicopter



# Successfully conclude flight tests on the Mi-171A2

The Mi-171A2 flying laboratory has concluded the second phase of preliminary flight tests. A total of 67 ground runs and 72 flights were carried out at the flight test centre at Mil Moscow Helicopter Plant, a Russian Helicopters enterprise (part of State Corporation Rostec).

During phase one, 43 flights were conducted on the helicopter, which was kitted out with its rotor system comprising modified components – the new main polymer composite main rotor blades and X-shaped tail rotor. The second phase of tests saw the installation of VK-2500PS-03 engines and BARK-6V7S digital regulation and control systems, a modified stabiliser and antitorque. The tests were designed to review the VK-2500PS-03 engines, stabiliser, antitorque, and main rotor with a view to carrying out additional certification testing on the Mi-171A2.

The report compiled based on the results of the preliminary flight tests was in line with the positive reviews provided by test pilots. The tests confirmed the helicopter's aircraft performance characteristics met those specified in the design documentation.

Currently the flying laboratory is being re-equipped for tethered ground testing – the helicopter will be installed on-site after the Mi-38 concludes relay testing. This phase of tests will focus on the rotor transmission and control mechanisms, establishing whether they meet flight regulation AP-29.

The first prototype of the Mi-171A2 will simultaneously undergo preliminary tests, with 42 out of 178 flights already concluded. The second prototype of the Mi-171A2 is currently undergoing final preparations and will

soon be incorporated into this flight test programme.

Unlike the flying laboratory, the first and second Mi-171A2 prototypes are equipped with an integrated digital KBO-17 avionics suite developed by Ulyanovsk Instrument Design Bureau (part of Radioelectronic Technologies). This system is built to a 'glass cockpit' design and makes it possible to cut crew numbers to two people. The KBO-17 suite makes it possible to carry out flights day and night in regular and difficult weather conditions – delivering a qualitatively new level of crew performance. This equipment meets the latest requirements relating to communications, navigation, and control. Thanks to the on-board controls monitoring the condition of the helicopter's various systems and components, the helicopter can be operated in line with its technical condition.



KBO-17 has four liquid crystal displays measuring 6x8 inches that display flight and navigational information

#### Incorporating the best features

The new helicopter have a wide variety of technological innovations intended to significantly expand its scope of use and, of course, enhance its safety. Nearly all of the major assemblies will be affected—first and foremost, the engine.

The Mi-171A2, like its subsequent modifications will be equipped with two VK-2500 PS-03 turboshaft engines with anti-surge protection, which are clearly better than the TV3-117VM engines installed on the Mi-8/17. This modification of the VK-2500 engine is also highly autonomous, allowing for engine startup at altitudes of up to 6000 m. Significant changes were made to the design and manufacture of the propulsion system. Its modernization increased the thrust of the main rotor and the cruising speed while extending the useful life of the rotor blades. Technologies relating to the manufacture of the blades of the propulsion system that have already been proven on the Mi-38 have been introduced. An X-shaped tail rotor will also be installed on the helicopter.

All these innovations will extend the life of the individual elements by a factor of 2-3 and

provide a 10% directional control margin. KBO-17 onboard equipment from Ulyanovsk Instrument Design, a company owned by Aviapriborostroyeniye, was installed on the Mi-171A2. The KBO-17 has four liquid crystal displays measuring 6x8 inches that display flight and navigational information and data from the on-board systems. The central 15-inch display shows data from the 24-hour surveillance system, which covers the front and lower hemispheres of the helicopter. The new complex also has a PCV-171A four-channel digital autopilot, modern means of communication and GLONASS/GPS navigation. We plan to equip the Mi-171A2 with laser radar that detects wires with a diameter of 5 mm at a distance of 1,000 meters, which will significantly enhance flight safety at low altitudes. Another important detail is that the new electronics make the cabin more comfortable. When it's -50° C outside, the climate control system maintains a temperature of +15° inside. And when it's +40° outside, the temperature is 22° inside.

Finally, the new 24-hour on-board equipment will eventually be able to allow the creation of search and rescue and military versions of the Mi-171A2.

One of the most important tasks when creating or modifying a new helicopter is reducing operating costs and extending the useful lives of the airframe, assemblies, systems and components. Our engineers did outstanding work in this regard. As for reducing the cost of operation, we intend to achieve this through several major innovations. This will involve re-considering the required amount and frequency of maintenance work, modifying the design and optimizing repair and maintenance procedures. By taking this approach, we can reduce the number of man-hours needed for maintenance to 8-10 compared with 20 today, i.e., by more than half.

The era of the legendary Mi-8/17 series of helicopters not only is not fading, but is, on the contrary, reopening with new vigor. With the upcoming launch of the Mi-171A2, Russia's helicopter industry will gain even more clout on the world market. And that launch is just around the corner. The first deliveries of Mi-171A2 helicopters are planned for early 2017. The military modification of the Mi-171A2 may be built in late 2017 or early 2018.

*Dmitry Gnatenko*

The Chinese manufacturers of helicopters are aimed exchange of experience

# Russian Helicopters and the Chinese corporation AVIC have signed an agreement

## The partners have agreed to develop together an prospective heavy helicopter





**The holding Russian Helicopters and the Aviation Industry Corporation of China (AVIC) have signed a framework agreement for the joint development of a prospective heavy helicopter. The two sides will cooperate in the development and preparation for the mass-production of the Advanced Heavy Lift (AHL) aircraft.**

The document was signed in the Kremlin during a meeting between Russian President Vladimir Putin and Chinese President Xi Jinping. Alexander Mikheev, CEO of Russian Helicopters, and Lin Tszomin, Chairman of the Board of Directors of AVIC, signed the agreement.

Manufacturing a jointly developed heavy helicopter in China is one of the major tasks for Russian-Chinese cooperation in the aviation sector. The signing of the agreement signals the start of practical work on the project.

According to experts, the demand in China for helicopters through 2040 exceeds 200. According to plans, the takeoff weight of AHL will be about 38 tons, with a maximum payload inside the cabin of 10 tons and an external load of 15 tons. The helicopter will be equipped for around the clock operation in hot climates, in the highlands, and in all weather conditions. It will be able to perform a variety of tasks, including those related to transport, evacuation, firefighting, and many others.

The helicopter market in China is one of the fastest growing in the world, and we are interested in establishing a long-term and comprehensive strategic relationship with China

Notably, the idea of developing a prospective heavy helicopter has been supported by the governments of the two states.

«The helicopter market in China is one of the fastest growing in the world, and we are interested in establishing a long-term and comprehensive strategic relationship with China for the development of mutually beneficial cooperation in the field of helicopter manu-

facturing,» said Alexander Mikheev, CEO of Russian Helicopters.

**This helicopter will be specially developed for the Chinese market, to carry out the range of missions which has been determined by a number of governmental ministries in China**

Lin Tszomin, Chairman of the Board of Directors of AVIC Corporation, recalled that the legendary Mi-26 has provided crucial services in many emergency situations. The Mi-26TS played an important role in responding to the fallout of serious earthquakes in Sichuan Province in 2008 and 2013.

«I am confident that our cooperation with Russian Helicopters in creating this prospective heavy helicopter will be productive and will have a positive impact on the development of the Chinese helicopter industry,» said the representative of the Chinese corporation.

As of now, Russian Helicopters and AVIC have finalized all technical requirements and are continuing to work on an agreement for the appearance of the prospective heavy helicopter. Agreements with general contractors for the project should be signed this year.

**Negotiations for the Heavy Lifter have gone on for seven years**

Russian Helicopters and Avicopter have been involved in negotiations about the project for the Avicopter Advanced Heavy Lifter since 2008. Similarly, a preliminary agreement for the joint development of this heli-

copter was reached in July of 2014. Back then, the discussions were for a craft with a payload of up to 15 tonnes.

It was thought that the new helicopter would be a major modernisation of the existing Mi-26, which was launched back in the 1980s. However, according to the CEO of Russian Helicopters Mr Alexander Mikheev, «This is going to be an entirely new craft. This helicopter will be specially developed for the Chinese market, to carry out the range of missions which has been determined by a number of governmental ministries in China. The foremost ministry amongst these is the Emergency Services ministry», said Mr Mikheev.



The operational ceiling, it seems, is one of the deciding factors for the new helicopter. And it certainly seems that in domestically-produced Chinese helicopters, the maximum operable altitude is heavily prioritised. At the end of December 2014 there were a technical demonstrations of a modification of an AVIC multi-function civilian helicopter, the AC-313 Avicopter (originally launched under the Z-8F-18A model number) which saw its maiden flight for the CAIG corporation in 2010; and of the military Z-18 helicopter (whose prototype is badged Z-18A). The technical specs of the Z-18 remain under wraps, but its AC-313 base model is fitted

The Mi-26TC helicopter is above The Three Pagodas of Chongsheng Temple, Yunnan province, China



with three PT6B-67A Pratt & Whitney engines, producing a maximum speed of 335 kilometres per hour, with a maximum range of 900 kilometres, and a cabin payload of either 4 tonnes, or 27 people.

The weight for an external payload can be up to 5,000 kilograms. It's been previously reported in the Chinese media that the AC-313 has successfully completed flights at altitudes of 8000 metres. The Russian side has amassed extensive experience in this side of things, which clearly augurs well for the successful joint development of a heavyweight helicopter. If we consider the experience clocked-up during the creation of the Mi-26, which is allegedly the archetype for the ANL's design, then even before its mass deployment in the Russian Armed Forces, Aeroflot notched up a string of world records using them. For example, on 4th February 1982, a crew captained by Flight Trainer G.V. Alferov led a flight which succeeded in carrying a 25-tonne payload to an altitude of 4060 metres, along with the helicopter's own take-off weight of 56768.8 kilograms – thus setting a new world record.

In addition to this the upgraded version of the Mi-26T, the Mi-26T2, differs from the standard model in that it requires a lower crewing norm, with just two crew instead of the previous five. This kind of approach ticks yet another of China's preference boxes when developing a new heavyweight helicopter.

An interesting nuance concerning the power source of the new heavyweight helicopter was dropped by Russian Deputy Prime Minister Dmitry Rogozin. According to the Deputy Prime Minister, «the engine will be made in the Russian Federation». The prototype for such an engine could be that used for the Irkut MC-21 aircraft (aka Yak-242). The Ros-tech United Aero-Engines Corporation let it be known, in the light of this, that an analysis was carried out on behalf of Russian Helicopters in late 2014 concerning the viability of developing a helicopter version of the PD-12V engine, which powers the MC-21.

*Herman Spirin*

The Professional Expo in China Aviation Industry with the Longest History.

# AVIATION EXPO CHINA 2015 (16<sup>th</sup> EVENT)

Sept 16-19 2015  
CNCC Beijing



**An Ideal Platform for Launching Latest Technology and Products  
in Chinese Aviation Market.**

**Concurrently held with**

China International Aviation Science & Technology Conference 2015(2nd Event)  
China International Aviation Safety Conference 2015



Organizer  华进有限公司  
China Promotion Ltd

Strategic Associated Media

 中国航空报社  
China Aviation News

WWW.BEIJINGAVIATION.COM

Email: richard@cpbjlf.com ; pauline@cpbjlf.com

## PRODUCT LINE

The Ka-32A11BC civilian helicopter with coaxial rotor continues to conquer international markets



Helicopter of a special purpose



The Paris Air Show at Le Bourget has been a key air show for the global aerospace industry for many years. It's one of the top venues for the world's leading aircraft manufacturing corporations and their customers to meet. The Russian aviation industry has been amazing the sophisticated crowds at Le Bourget for decades.

The 51th Paris Air Show will be held this year, and one of the themes will be firefighting aircraft. This is the field in which Russian pilots have a wealth of experience. Furthermore, Russia makes unique aviation equipment for fighting fires.

One of the participants, and the symbol of the program, was the Ka-32A11BC helicopter. The Ka-32A11BC has already earned a solid reputation from its use in more than 30 countries. A total of 188 helicopters of this type are in operation worldwide. The Ka-32A11BC meets the AP-29 requirements. It was certified by the European Aviation Safety Agency (EASA) in 2009, and was certified for use in Australia in December 2012. This gives the green light for Russian Helicopters to enter the Australian market, which is in urgent need of such equipment. Australia is the driest continent and suffers devastating fires on a regular basis. For example, fires ravaged the states of Victoria and New South Wales in early 2013, destroying dozens of houses and damaging the famous Siding Spring Observatory, which houses Australia's largest telescope. The fires even drew near to a military base containing a

large ammunition depot south of Sydney. The multipurpose Ka-32A11BC civilian helicopter with coaxial rotor continues to conquer international markets. Built in the Republic of Bashkortostan, Russia, by Kumertau Aircraft Production Enterprise (Kumapp), which is part of Russian Helicopters Holding Company, the helicopter is unequalled in many applications. In addition to transportation and patrolling, it can be used for search and rescue missions, as a flying crane for very complex erection work, and is one of the best fire helicopters in the world.

**The Ka-32A11BC is highly configurable with more than 40 different options available, including Bambi-Bucket and Simplex fire-fighting systems of various capacities**





The crew of the Ka-32 helicopter carries out mission for suppression of forest fire

## A contract for 20 helicopters for Sino-Russian Helicopter Technology Company was signed in 2011, and now the first two helicopters are operating successfully in China

The Ka-32A11BC has demonstrated unsurpassed capabilities in firefighting, especially in mountainous areas and densely-built urban environments at the level of the top floors of high-rise buildings. The Ka-32A11BC is highly configurable with more than 40 different options available, including Bambi-Bucket and Simplex fire-fighting systems of various capacities, water cannons for horizontal fire-fighting, turret water cannons and stowable lifting cabins for transportation

and rescue operations. In the early 2000s, Kumapp in Kumertau developed a horizontal telescoping water cannon for the Ka-32 series that can shoot a stream of water about 40 meters. The first production Ka-32 helicopter with a water cannon of this type was delivered to South Korea in November 2005.

With every new mission, pilots learn more about the unique capabilities of the Ka-32A11BC helicopter. For example, it can put out fires in dense urban areas that are out of the reach of fire trucks, as was demonstrated at the Moscow City Complex where, in April 2012, one was used to put out a fire that had engulfed over 300 square meters of a skyscraper at a height of 67 floors (270 meters). It's no exaggeration when the company's engineers claim that the Russian-built 32A11BC fire helicopter with horizontal water cannon can extinguish a fire even higher up, such as in the upper floors of the Burj Khalifa in Dubai, which is 828 meters tall and has 163 floors.

Today, more than 140 Ka-32A11BC helicopters are being used in more than 30 countries. The Ka-32A11BC meets the Russian

standard AP-29, Western standards such as FAR 29, and is EASA certified. Compliance with Western standards means that it is marketable anywhere.

International certification is also conducive to design improvements. Many significant design changes have been made since the helicopter was certified in the West. It now has an innovative bicameral PC-60F booster, an improved control and hydraulics system and improved propulsion systems (including the fuel system, fire protection, APU and gearbox). The instrument panel, autopilot and alarm system have been refined. The composition of airborne equipment has been changed, a number of additional bench and flight tests have been performed, and the documentation has been completely revamped.

As a result, the helicopter was certified for use in Canada in 1998. The certificate was amended to allow the conveyance of public officials in 2006. Certification for use in Mexico was obtained in 2005, followed by Chile and South Korea in 2007, and Japan, China and Indonesia in 2008. The European

EASA.IM.R.133 certificate was obtained in 2009. Since 2011, the helicopter has been certified for use in Brazil and India.

The first production Ka-32 helicopter was built in 1980, and the current model, greatly improved after all these years, is operated on many continents, in all climates and in a variety of capacities. Ken Hopu, President of Vancouver Island Helicopters Logging (VIHL), whose company once acquired two of them and has substantial experience using them, says frankly, «We use both the Ka-32 and S-61 models and have found the Ka-32 to be more productive. It can carry more than the S-61, is more stable, can turn around faster when bringing down a load, and is powerful enough to lift its rated load on a hook vertically.»

His assessment is in line with the ever growing popularity of the Ka-32A11BC. The number of orders for the helicopter is on the rise. In March 2011, one Ka-32A11BC was delivered to Brazil with an option to buy two more machines. In Brazil, the Ka-32A11BC is currently one of the few helicopters that is maneuverable enough to drop water along winding edges of fires and transport heavy



Ka-32A11BC of the Japanese company Akagi Helicopter

equipment in disaster mitigation situations. The Ka-32A11BC is used in Spain in fire-fighting and search-and-rescue missions. In the last some years in commercial history of the Ka-32A11BC helicopter there were at once some important events. Russian Helicopters announced that the Kamov Ka-32A11BC firefighting helicopter was officially awarded its certificate of airworthiness by the Australian Civil Aviation Safety

Authority (CASA) at a ceremony during the Avalon Airshow 2013. The Ka-32A11BC completed certification procedures in Australia at the end of 2012. The certificate means that Australian helicopter operators can now deploy the Ka-32A11BC as a search-and-rescue and fire-fighting helicopter, as well as using it to carry loads on an external sling and for construction work. The Korea Forest Service has formally



www.neboservice.ru



www.avionix.com



## Оборудование GARMIN со склада в Москве от официального дилера

125424, Москва, Волоколамское ш, д.88, стр1, оф.206

Наши телефоны: +7 (495) 490-6105, 491-3610

[contact@neboservice.ru](mailto:contact@neboservice.ru)



opened a new service and maintenance centre for Ka-32 Corporation Rostec at the beginning of 2014. Representatives of Russian Helicopters took part in the opening ceremony for the centre, which will promote the use of Ka-32 helicopters in the Republic of Korea and other countries in the Asia-Pacific region and reduce waiting times for maintenance and repair of these helicopters.

The Ka-32 service and maintenance centre is located in a new multi-purpose complex that also houses the headquarters of the Korea Forest Service. The centre can service all types of Ka-32 helicopters in use in the region. Previously these functions were outsourced to Korean company LGI, one of Russian Helicopters' key partners in the region. The LGI service centre will continue to operate.

Russian Helicopters has delivered two multi-role commercial Ka-32A11BC helicopters to Sino-Russian Helicopter Technology Company, based in Qingdao, China.

The helicopters will be operated for commercial purposes by Citic General Aviation. A contract for 20 helicopters for Sino-Russian Helicopter Technology Company was signed in 2011, and the first two helicopters have already been delivered in 2014 and are now operating successfully in China. Another four helicopters were delivered at the beginning of 2015 under the contract.

The fleet of Ka-32A11BCs in China is expanding rapidly as demand increases. Earlier this year a Ka-32A11BC belonging to the Chinese State Oceanic Administration was at the center of global media attention as it played a key role in rescuing passengers from the Academician Shokalsky research vessel after the ship became trapped in Antarctic sea ice.

Beyond a doubt, the Ka-32A11BC is an excellent Russian-made multi-purpose helicopter and a significant export product that is popular worldwide.

*Dmitry Gnatenko*

