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Russian helicopters in a world with new centres of power

The moment has now come that Russian helicopter technology manufacturers must work within the environment of economic sanctions imposed by western countries. It ought to be stressed that Russian helicopter producers have already been working under sanctions for decades – sanctions which arise from classification certificates issued for their models. The largest and most successful series of Russian helicopters, the Mi-8/17 series, has never been, and will never made available on European or American markets. Western manufacturers have been able to receive certification categories in Russia and the Former CIS countries for almost their entire production range on a friendly basis. But in exchange for this policy of openness, foreign safety agencies have blocked sales of this Russian best-selling model.

The coaxial Ka-52 Alligator assault helicopter remains an unmatchable example of Russian technology

This one-way street is a game which characterises all aspects of cooperation with western partners. However, when the playing field is level, and European and American competitors have to play by the same rules in the rapidly-expanding markets of Asia and South America, Russia has adroitly trounced its competitors. This is especially true of helicopters for military applications – a market where the words “Made In Russia” hold a special place of honour in the minds of clients in the world's new centres of power. There’s a lot that can be said about the uniqueness of the Mi-28N, Mi-35M, Ka-52 and Ka-27. The fact is that each of these models almost completely covers the spectrum of challenges faced by land and sea combat choppers. So these four helicopters, without a doubt, make up a full set of combat helicopters that can guarantee the security of any country.

The Mi-28N 'Night Hunter', day or night and in adverse weather conditions, is designed to seek and destroy tanks, armored and unarmored vehicles, as well as enemy personnel and low-speed air targets. The Mi-35M is a multipurpose military helicopter that can undertake combat missions around the clock and in adverse weather conditions. Designed to destroy enemy armored vehicles, provide cover fire to ground troops, troop landings, evacuation of wounded, as well as transportation of goods in the cargo cabin and on the external sling. The focus of the Ka-52 'Alligator' is the destruction of tanks, armored and unarmored combat units, troops and helicopters at the forefront and tactical depth – in all weather conditions and at any time.

The 'Alligator' can provide target detection, target acquisition, provide cover fire for troop landings, make patrols, accompany military

A Polish crew in a classic 'analogue' Mi-17 cockpit

convoys and provide coordination, letting other helicopters pinpoint positions of ground-force command posts. The focus of the Ka-27/28 is Anti Sub Warfare (ASW) with landing possible on various classes of ships, including aircraft carriers. It is capable of detecting modern submarines and surface targets, transmitting data on them to ship and shore points and attacking them with airborne weapons.

One of the most highly sought after properties in combat, production and for the consumer is unification. This is where everything is subject to the laws of efficient production, maintenance and operation. Suffice to say, each of the four helicopters comes with VK-2500 turboshaft engines which were first put into development at the Klimov Factory in 1999. The design is based on the TV3-117VMA. The VC-2500 differs from the base model with a 15-20 % increase in power features, the introduction of new FADEC-type digital automatic regulation and control system, as well as extended service life. Thanks to the improved characteristics of the VK-2500 engine, the he-

Afghan commandos try out ways of cleaning an Mi-17 of the Afghan Army Air Arm


The Russian return to Afghanistan began using old Mi-8MTV-1s

The fact that the Mi-35M (since 2011) attack helicopter is supplied to Azerbaijan and Brazil showcases the success of the Mi-24 line. And it's not simply a case of these helicopters being familiar in the country of the buyer (Azerbaijan), where deliveries of Mi-35M began in 2011. According to the estimates from the Brazilian Ministry of Defence, the Mi-35M (known as the AH-2 Sabre in Brazil) is a modern attack helicopter with high firepower that can be used to escort other helicopters, isolate combat zones and offer fire support to ground forces. These are the first Russian specialized attack helicopters to be used up by the Brazilian Air Force. The initial batch of three AH-2 Sabres was adopted by Brazil's Air Force during a ceremony held April 17, 2010 at the Porto Velho Air Force Base. Later that same year, three more helicopters were delivered.
Along with the supplying of the Russian helicopter's ceiling increased by 30 %, the climb rate is increased by 50 %, lift capacity is increased by 1,000-2,000kg (depending on the helicopter model), and speed and maneuverability are improved. With these qualities, the helicopters acquire entirely new operational possibilities in high altitude areas and hot climate zones.

The uniqueness of each of the four helicopters means they can be flown in extremely harsh environments. The Russian Ka-52 'Alligator' combat helicopter proved a perfect fit for the French-based Mistral class helicopter carrier. No issues were detected when adapting the Mistral for the 'Alligator'. In terms of geometry, the chopper was a good fit for the ships hangar and winch. The Ka-52 attack-recon chopper is another strong competitor. Coaxial scheme screws, modern avionics and powerful weapons give this helicopter serious performance stats, along with unique maneuverability and high combat effectiveness.


The new Mi-171Sh in service with the Peruvian Air Force

When the playing field is level, and European and American competitors have to play by the same rules in the rapidly-expanding markets, Russia has adroitly trounced its competitors

copters abroad, Russian Helicopters' order backlog grew too. In 2011, it doubled, from 430 to 859 helicopters at a total cost – 330 billion rubles. In the same year, contracts were signed with Russia's Ministry of Defense for the supply of more than 600 helicopters by 2020. The largest contracts were for the Ka-52 and Mi-28N attack helicopters. This in itself goes to show that Russian Heli-

Mi-17-1Vs of the Pakistan Air Force return to service with updated engine units

copters deliver high-quality goods that are trusted by the Russian Armed Forces.

The Mi-35M (side numbers YI-351 to YI-354) was used in the harsh natural conditions of Iraq, delivered there in late 2013. These helicopters were manufactured under the contract to supply Iraq with six Mi-35Ms for $ 217 million ($ 256 million including the cost of weapons), signed on April 16, 2013. This contract is an addition to the famous 2012 agreement on the purchase by Iraq of 36 Mi-28NE combat helicopters. The second part of this delivery (previously 15 helicopters were delivered) arrived in Iraq in January 2014. Baghdad will receive a total of 40 Mi-28NE and Mi-35s. They will be used for border security and counter-terrorism.

"In the world today, there are almost no countries that operate without their own helicopter fleet. However, there are only a few states that can develop and produce modern helicopters. Among them, Russia is one of the leaders. That is why the armed forces of more than 90 countries on all continents have Russian military helicopter aircraft", noted the deputy head of the Department for the Export of Helicopter Technology and Services Vladislav Kuzmichev, who heads the delegation of Rosoboronexport. "Export is on the up because of deepening cooperation with traditional partners and because of expanding the geography of deliveries. Given the attractiveness of the Russian helicopters thanks to their cost-effectiveness, the presence of a trained aircrew and maintenance personnel, as well as appropriate infrastructure, the most logical solution for these countries is to choose Russian helicopters".

Andrey Vezhnovets

Conditions of the helicopter market in the Middle East make it possible for all major manufacturers to do well there

Best quality for the Middle East

VIP, super-VIP – well, in reality these are the flavour hallmarks for the airs shows held annually in the countries of the oil-producing regions of the Middle East. Most of these shows may have a very well-worn atmosphere for local purchasers, by contrast to the mere observers – but manufacturers beat a path here looking for markets. And markets for big helicopter contracts depend on top contacts among the echelons of major business partners.

The strategy never changes

It's a characteristic of Middle Eastern air shows, more than any others, that they demonstrate the strategies of international helicopter manufacturing companies. As it turns out, these strategies (European, Russian and American) have barely changed over recent years. If the first thing is based on bolstering ties with regional operators, then the next thing is to exploit established connections with well-placed people, and the third is simply to go for volume – selling a huge number of helicopters and setting up a wide network of training centres.

And there are plenty of examples to choose from. Agusta Westland; together with Finmeccanica, one of Italy's biggest mechanical engineering companies; and Abu Dhabi Aviation, the largest commercial helicopter operator in the Middle East; formed a joint company back in 2011 in the UAE for helicopter servicing. Then immediately in February 2012 another European manufacturer, Eurocopter, set-up a training and technical centre for its own Dauphin-branded helicopters. Of course, such a venture couldn't happen with input from a Middle Eastern partner. In March 2014 Airbus Helicopters flaunted its 30-year background in the field at the DIMDEX equipment trade fair.

The Americans laid out their preferences in 2014, too. To start with, Bell Helicopters ran a demonstration tour from spring through to summer, with its Huey II and 407GT helicopter models – in Jordan and Saudi Arabia. Then in October FlightSafety, a division of Boeing Commercial Airplanes which specialises in the training and qualification of airline staff, formed a training centre with Abu Dhabi Aviation for flight crews in the UAE capital of Abu-Dhabi.

Middle East air shows have become the world's showplace for the capabilities of helicopters produced by world manufacturers, as well as the order-centre for elite clients

The Dubai Helishow is a bi-annual event that quickly grabbed international attention, becoming the main helicopter event for the whole region

An Agusta 109E helicopter operated by HeliDubai

Who dares, wins

Everything mentioned is somehow or other reflected in the ratings. As could be expected, top place for helicopter export sales to the Middle East region for the 2013-2016 period – with 81.9% of the overall expected helicopter sales to the region – was taken by the USA. Second place, with just 10.8% of the overall sales, has to be listed as 'unknowns". This trio of leaders is led by Italy, with 3.7%. The following places, with sales in decreasing order of value of expected exports, went to Russia and Germany.

Turning to the import view, first place for helicopter imports in the Middle East region for the 2013-2016 period, comprising 38.9% of expected volume sales, went to Saudi Arabia. By comparison, the overall volume of helicopter imports for 2005-2008 to Saudi Arabia was worth an expected $218 million dollars, while for 2009-2012 it leapt to $997 million dollars. The second highest importer was Qatar. Thereafter come a series of nations led by the OAE, with 21.24%. Further places, in descending order of volume purchases were taken by Turkey, Iraq, Egypt, Oman, and Libya.

This all slots perfectly into the ideology of VIP preferences and regional needs – which helicopter manufacturers aim to bear in mind. Just as the way that the major brands in other industries flaunt top-quality design

when selling in the Middle East – companies such as Hermes and Versace – the Middle East puts a premium on top design. It's hardly surprising that, for example, the UAE bought nine exclusive-design customised BA609 Agusta Westland helicopters, in a configuration suited for either offshore operations or VIP passenger use.

Formation flying and air-shows are frequent events in the United Arab Emirates

VIP forever and everywhere

Of course, many companies are placing their main expansion hopes on sales to the Middle East. Everyone involved in the helicopter business understands they have to make every possible effort to take advantage of the pace of market growth and the opportunities this offers – when everyone is making their plans for several years ahead.

The Middle East is considered the default example of modern emerging markets. And the main area of that expansion is the military

sector, which remains almost immune to whatever global economic difficulties may be plaguing other industries, including those in the machinery modernisation business. This all drives tough competition between manufacturers – each of whom is wrestling to find a niche in the market, and to have a unique offer that cannot reasonably be refused.

This significant demand remains buoyant in the market for police and medical helicopters, air-cargo craft, and VIP-transport options. In these spheres Agusta Westland and Bell Helicopters are following an identical strategy - by close observation of helicopter sales for models which can be used as both air taxis, and for VIP transport services. After the A109 the key model in this sphere has become the AW139, which is in use by Abu Dhabi Aviation for various ocean-based operations – since Agusta, just like other manufacturers, sees the dividend to be harvested in diversification. As a result, by 2011 around one hundred AW139s were in use in the Middle East for various tasks, carrying out service flights, and transporting top members of society.

Every contract has something exclusive

But back to the question of Middle East air shows. They've become the world's showplace for the capabilities of helicopters produced by world manufacturers, as well as the order-centre for elite clients. Take Dubai – where helicopter shows are now an annual event. Alongside the Helishow trade fair, which takes place in even-numbered years, there's an even grander and more substantial event, the Dubai Airshow, which happens during the odd-numbered years, and which similarly attracts the world's leading helicopter producers. Popular wisdom suggests that this where the top deals are done. For example, during the events of Dubai Helishow 2008 Emirates-CAE Flight Training and Caverton Offshore Support – the exclusive centre for pilot training on the Bell-412 - signed a three-year contract. Falcon Aviation Services and Sikorsky Aircraft Company penned an agreement for a service centre serving the S-76 helicopter – the first such service centre in the Middle East. No less significant was the founding of the Middle East Helicopter Association (MEHA). The

After the completion of Dubai World Central Airport, the total volume of helicopter passenger traffic is likely to exceed that at New York's Kennedy International

MEHA resolves issues of aviation safety, promotes the development of heliports, and generally supports the operational effectiveness and economic profitability of helicopter operations in the entire region.

A few years ago, the use of helicopters for air taxi work, and for advertising, made its appearance in the region. These services fell within the remit of companies in the UAE, who had traditionally services the oil and gas industries. The overall situation is that after the completion of Dubai World Central Airport, the total volume of helicopter passenger traffic is likely to exceed that at New York's Kennedy International. And then there is the question of helicopter-flown advertising sky-banners – against the background of a country like Dubai, where it's considered normal to spend $1 million per year on outdoor advertising for a website?

The Boeing Corporation won a contract to produce the new light AH-6i strike helicopter for Saudi Arabia

Russian involvement

The burgeoning volume of contracts is an active draw for helicopter manufacturers to the region, along with underscoring the importance of developed communications strategies – a sphere in which Russian manufacturers lead the way. The Russian state military equipment official supplier is State Sales Corporation Rosoboronexport, and it is primarily involved in supplying military hardware. However, Kazan Helicopter Plant was an exception to the usual way of things, and arranged for Rosoboronexport to give a presentation of its Ansat helicopter for Middle Eastern clients. In terms of recent air shows – such as the Dubai Airshow-2013 – the Russian Helicopters Holdings corporation demonstrated a series of different helicopters – including the Ka-32A11VC, the multi-purpose Mi-171A2, the new Ka-62, and an updated model of the Mi-262T2. Alongside Rosoboronexport, Russian Helicopters Holdings also presented a range of military helicopters. These included The Ka-52 "Alligator", the Mi-28NE "Night Hunter", the Mi-35M multipurpose military helicopter, and military transport craft, the Mi-17V-5 and Mi-171SH. The Dubai Helishow 2014 saw the presentation of the Russian Mi-171A2 and Ka-32A11BC (fire-fighting model) – whose value was noted in both their universality of application, and the ability to store the craft without specialised hangars. These characteristics make them a top choice for Middle Eastern countries, with their dry climate and rugged terrain. The increasing urbanisation of the Middle East makes the top quality construction of these helicopters a highly attractive buy.

Falling fuel prices present a great opportunity to move the goalposts in the helicopter market

Crisis To The Rescue

You won't have missed doom-preaching headlines recently - about a slump in oil production in the Gulf of Mexico, wilting energy prices, the final bow of the shale revolution – and as a result, the weakening of governments. According to the logic of how things stood in 2008, this should all mean a crippling blow to the helicopter industry, and the market for helicopter consumables. In fact not just crippling, but fatal – since western economists subscribe to the doctrine that 'the oil-biz time-bomb is twice as deadly as the junk-bond virus of 2008'. Apply that to Russia, and in theory the sanctions policy and Ukraine crisis ought to have the Russian helicopter industry scrabbling among the rocks. But look closer – and the actual situation is very different.

Who reaps the dividend?

It turns out that PR China, India and Russia are showing huge growth potential for both domestically-produced and foreign helicopters from OEM manufacturers. In fact each of these countries has its own raft of problems, along with a droop in growth in the aviation industry. One thing is clear, however – current involvement in the process is the key to success further down the line in a highly-competitive industry. It all means that whoever gets into the helicopter business in China, India and Russia today, will be reaping the dividends tomorrow.

The serious players in this process in the BRICS countries were identified some time ago. Back on 1st February 2014 Steen Jakobsen, Chief Economist at Saxo Bank, said that China will let down economists and analysts who think its government will embrace full-scale reform in the race for growth. Chinese leaders have been doing the opposite, and will keep on doing it – consolidating national control in their own hands, and thus putting the brakes on growth to the tune of around 5% yearly. German Gref, head of Russia's SberBank, made an almost identical forecast for Russia on 14th January 2015. Gref said that $45-per-barrel oil means having to put by around three trillion roubles of reserves during 2015. That implies the Russian government capitalising the banks and in-

Russia has been enjoying success in helicopter joint production deals. The current Trade & Industry Minister, Mr Denis Manturov visits a plant in 2009 – when he was still Deputy Minister – producing the AW139 helicopter

The project to produce the new Russian RACHEL commercial helicopter kicks into touch in mid-2015

Russia's military hardware manufacturers expect to hold a good share of the market in the long term

Whoever gets into the helicopter business in China, India and Russia today, will be reaping the dividends tomorrow

creasing its holding in them – while the banks will buy out industrial corporations and become financial and industrial groups. “We'll have a huge, vast state – our entire economy will be the state”, Mr Gref concluded.

If we turn our view to India, we need merely look at Enstrom – which has only managed to sell six helicopters to Indian operators over a ten-year period. The company's representatives claim the lack of private helicopter outfits in India is the reason. There's an inevitable conclusion to be drawn from all this – that the main player in the helicopter industry in developing states will be the state.

The main driving force in the camp of western players in the helicopter industry towards foreign markets is rooted in private companies – who clearly intend to become the main profit-gainers in the expansion of the helicopter segment of the aviation industry – for example, in the BRICS nations. And this can be clearly discerned how highly representatives of western helicopter manufacturers value the potential to be gleaned in China, Russia and India.

At the Sikorsky corporation that the total number of helicopters in civil aviation in China for 2014 was 560, while in India the number was 270 helicopters. If we compare these figures with the United States (where more than 14000 helicopters are flying in civil aviation applications) we instantly see the growth potential in both countries. Turning to the Russian helicopter market, it's been described by Olivier Michalon, head of the Helicopter Divi-

sion of European aviation giant Airbus Industries as having “high potential” for growth over the upcoming three to five years.

Best to tackle the tricky stuff first

With all this said, getting into the market in the BRICS countries is far from simple. Simply selling the helicopters is only the tip of the iceberg. The hidden part involves setting up service networks which support the hardware during operation, and this is far more challenging. Reaping long-term profits will involve manufacturers in investment in a so-called helicopter infrastructure, including service centres, pilot training centres and much more. One example of this kind of investment was the opening of a service centre by the Turbomeca corporation in China in 2013, servicing aero-engines including Arrius, Arriel, Makila and Ardiden 3C, set up in collaboration with the AVIC corporation. Fifty percent of the Chinese civil helicopter aviation market is based on turboshaft models. The main challenge will be maintaining this level in the upcoming years by collaboration with state companies including Avicopter and AVIC.
The development of new Russian technology isn't being ignored either – capable of picking up the challenge of openings for manufacturing, including sales in western markets. Turbomeca has spoken positively about its involvement in the Russian Ka-226 and Ka-62 aircraft. Alongside this there is considerable scope for taking up opportunities in expanding presence in existing Russian markets, as well as working with imported helicopter engines. No-one expects isolation, but we won't take everything either

Against this background, foreign companies who are already working in the Russian market will need to step up a gear. The demand for Russian-manufactured helicopters is growing, as we are reminded by Japanese publishers JB Press. Russia has escaped from dependence on Ukrainian parts, and import-replacement is on the rise – the result might very well be a significant rise in Russian helicopters equipped with imported engines, which would be in high worldwide demand.
Russian military helicopters, including the Mi-28N and the Ka-52 use the domestically-produced VK-2500 engine, manufactured on the basis of the TVZ-117 engine produced in Ukraine. New engines are installed in the Mi-8AMTSh transport-assault helicopter. The Russian Ministry of Defence in December 2014 took delivery of four Mi-8AMTSh craft as part of a State Defence purchasing contract, equipped with the Russian VK-2500 engine – but in a configuration with increased power that made these craft greatly more maneuverable, particularly when at high altitude.

Production is slated to begin in the nearest future of the multi-purpose Mi-38 helicopter, with an eye to both foreign and Russian markets – and to be fitted with either the Russian-made VK-3000 engine, or an American model produced by PW. This frees Russia from dependence on Ukrainian-manufactured engines, to become more flexible in this area when it comes to supplying foreign markets. There are plans for extensive expansion of VK-3000 engine production over the period to 2020, which would make Russia entirely self-sufficient for its complete helicopter output. Since military and civil helicopters use practically identical engines, these means such engines could be seen fitted in Russian helicopters aimed at the civil aviation market too.
Serious analysis confirms the hypothesis that Russia is still primarily interested in only developing conventional helicopters, and that despite the existence of other projects, these exist on paper only. The Moscow MILYA helicopter plant is currently working flat-out on developing the flying prototype of the Russian Projected High-Speed Helicopter (PHS), and completing work on what they are calling a

After passing the necessary certification with flying colours in 2014, Russia's Ansat helicopter is now available on the market

Helicopters such as the Ka-226 and Ka-226T have become the must-purchase hardware for the Emergency Services Ministry and the Police

The Mi-8/17 is going to remain the segment leader for the next 15-20 years, due to its continuous evolvement. But that's not enough to increase production – we need to diversify and release another product line

'flying laboratory' – a prototype helicopter whose design could form the basis for a whole new generation of helicopters which exploit all possible applications of this new rotor-powered craft. The project even now has a name – RACHEL.

Also gaining impetus is the Helicopter Service Company (HSC), a division of Russian Helicopters Holdings Corporation. The company launched a specialised internet portal on 1st July 2014 for the sale of parts and consumables for Russian-produced civil aviation helicopters. The project is part of Russian Helicopters overall strategy in creating a integrated systems of logistics support for the helicopter industry. This is something entirely new for the Russian market – although foreign manufacturers have long been using websites not only for the sale of replacement parts, but also for the preliminary stages of fault diagnosis, and for calculating expected expenditures on maintenance and repair. Enabling these self-service facilities for real-time customers offers substantial time-saving benefits for both sides in the process, helps in optimising flight-time for helicopters, and creates genuine competitive advantage in the market.

Yet none of what has been said above implies the isolation of the Russian helicopter industry or its exit from international collaboration. In fact, collaborations are not only continuing, but growing too. “We're working with corporations like Agusta Westland, Turbomeca and other leading world brands in the industry” said Alexander Mikheev, CEO of the Russian Helicopters Holding Group. “Let me give you an example. With our French partners Turbomeca we are working on joint

development of engines for the Ka-226T craft. And with other European partners we're developing a mid-range multipurpose helicopter, the Ka-62. It's planned that this craft will be fitted with the Ardiden 3G engine produced by Turbomeca, and a transmission system designed and supplied by the Austrian manufacturer Zoerkler. Then with Agusta Westland we've already set up assembly production of the AW139 helicopter in Russia at our joint-venture company HeliVert. Assembly is based at the National Helicopter Construction Centre in Tomilino, outside Moscow. And then with Agusta Westland we are also working on a project for a completely new helicopter too".

What does the habit of living with the ups and downs mean?

If it's true – as a whole tribe of economists claim – that growth in the chopper business springs out of the development of new mechanisms for them, then it's more or less clear, and in fact mostly more, that helicopter operators have to get used to working with that situation.

In 2014 a bunch of Canadian helicopter operators came up with the phrase "too many choppers, and not enough work". Helicopter guys will tell you that helicopters are not sitting around on the tarmac because of a shortage of resources, but because of a shortage of markets. Costs in Canada in 2014 for exploration and evaluation came close to the levels of the 2009 financial crisis, totally $1.9 billion – instead of the $4.2 billion they'd cost in 2011. Or to put it more simply, cheap prices for commodities produce a slump in the exploration and development of new deposits – an industry which has always been a financial mainstay for the Canadian helicopter market. For more banal reasons, a period of extended rainy weather put paid to another main source of usage for Canadian helicopters – fighting forest fires. A juicy opportunity for helicopter operators in the French-speaking province of Quebec had been in the construction of large-scale hydroelectric plants and dams, but these faltered due to slowdowns in the economic development program. The result was, very literally, an exit by helicopter operators from the region, in search of contracts elsewhere.

Even so Canada – the world's second-largest helicopter usage market – is a country where the market has long been stratified amongst a number of manufacturers. For example, Agusta Westland has windows into the private sector, along with work with the emergency and medical services. Airbus Helicopters is well established in the communications and corporate sectors, as well as having strong contracts with law enforcement agencies. Helicopter operators also have to seek out commercial openings where the operational characteristics of more-or-less unknown models of helicopters could be deployed – a process which creates a continuously evolving market. Canadian helicopter operators are long inured to this, especially since the economics and resource-base of the country is almost locked into ten-yearly boom-bust cycles.

We got some valuable insider insight on the strategy of Russian helicopter manufacturers during the crisis from Vadim Ligai, the CEO of the Kazan Helicopter Plant (KHP) in November 2014. Mr Ligai firmly believes in focusing several years ahead – and in an industry like helicopters, ten years ahead – so as not to lose sight of tactical aims, and keeping on the main path. "In ten years time Russian Helicopters will be producing a broad range of helicopters at the Kazan Helicopter Plant, and meeting their principle strategic goal of winning markets, and increasing market share for the company, and the plant, on world markets on the basis of competitive cutting-edge technology. There's no doubt that the Mi-8/17 is going to remain the segment leader for the next 15-20 years, due to its continuous evolvement. But that's not enough to increase production – we need to diversify and release another product line. KHP is now working on the 'Ansat' helicopter, and its modification, the Ansat-U. We are also planning to introduce production-line manufacture of the Mi-38 helicopter too. The main customers for what we produce will large remain the same as they are now. There's rapidly increasing demand in the markets of India, China, South and Central America, the Far East, and Africa."

This all largely corresponds with the experiences of western helicopter manufacturers too. The principle ways of handling a helicopter manufacturing business during a financial crisis apply to manufacturers everywhere. As far as helicopter operators, much depends on their creativity in creating market opportunities for their services, and their ability to live within a boom-and-bust economic cycle.

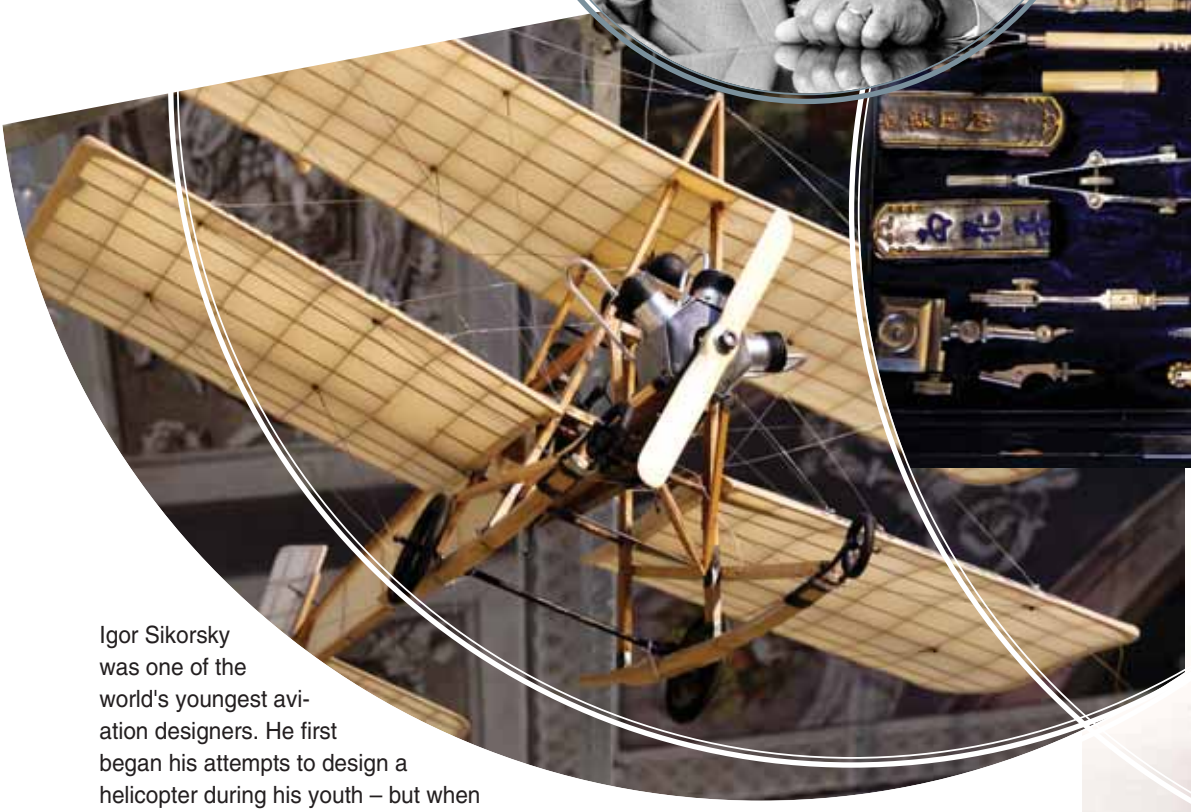
German Siprin.

Falling fuel prices represent a real threat to helicopter operators serving off-shore oil-rigs

Russian companies who assemble American helicopters represent shared American and Russian interests

Sikorsky – Wings of the Future

The world's oldest scientific and technical museum is the Polytechnical Museum in Moscow. Visitors can now see a new exhibition called 'Sikorsky – Wings Of The Future', dedicated to the 125th Birthday Anniversary of the legendary aviation designer, inventor, engineer and visionary thinker Igor Sikorsky.



Igor Sikorsky was one of the world's youngest aviation designers. He first began his attempts to design a helicopter during his youth – but when none of his early models took off, he instead decided to direct his interests more at aircraft-building than helicopters. His first successful aircraft design was the BiS-2, built in 1910 when he was already 21. The following year, in 1911, he got his own pilot's licence, and by the age of 23 he had been appointed Chief Engineer of the Aviation Section of the Russo-Baltic Factory Plant.

Before the Russian Revolution of 1917, the Russian Empire was counted to be a leader in the field of technology, and particularly in aviation. It was here in Russia that Sikorsky developed and produced the world's first single-engined aircraft, the *Russky Vityaz' ** (1913), and then the *Ilya Muromets*** (1914) which were famed for their extensive flying

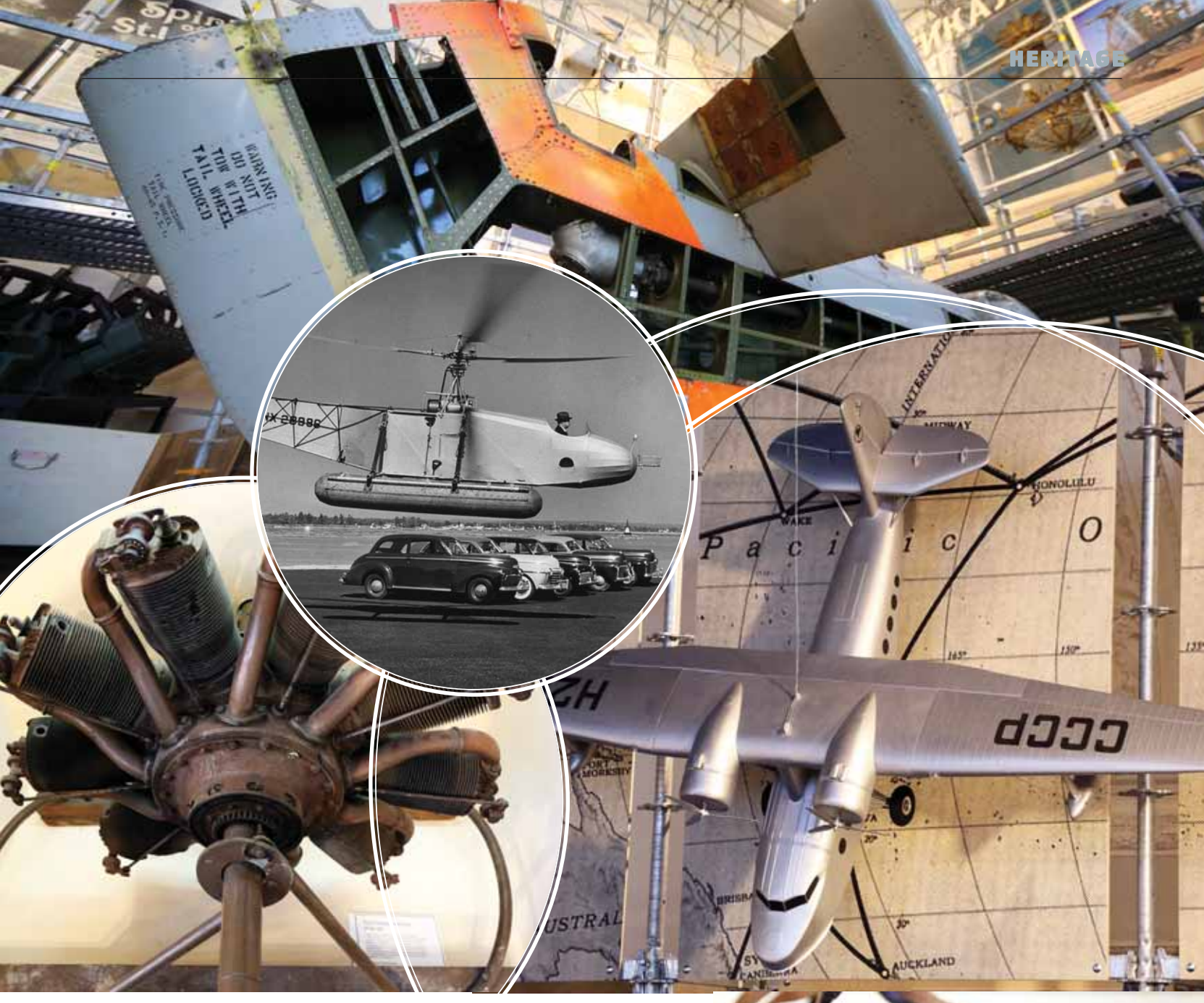
range, and laid the foundations for generations of heavyweight aircraft around the world. At the helm of the Ilya Muromets Sikorsky himself first broke the altitude record of 2000 metres (with ten passengers on board), and subsequently completed a flight on the route “St Petersburg – Kiev – St Petersburg”. Igor Sikorsky in the HNS-1 №39040 Helicopter (in a configuration for coastguard use) 1944.

The work of the Russo-Baltic Plant was effectively closed down after the Russian Revolution in 1917, and none of Sikorsky's new designs was built. Sikorsky was forced to emigrate – initially to France, and then in 1919 to the USA, where he took a job to support himself by teaching math at a night-school for immigrants. One of the biggest supporters of Sikorsky's abilities was the composer Sergey Rachmaninov, who had also fled to the United States following the Russian Revolution. In 1923 Sikorsky founded his own company, the Sikorsky Aero-Engineering Corporation, and Rachmaninov invested $5000 of his own money in the business – and saved its founder from ruin. Sikorsky created fifteen different models of aircraft, which saw service in both civil and military aviation. In 1939 he began working on single-rotor helicopters powered by gas-turbine engines, as well as sea-going helicopters with a retractable undercarriage, and on 'flying cranes'. A number of these designs have been specially modeled for the exhibition at the Polytechnical Museum.

The 'Sikorsky – Wings Of The Future' exhibition represents a continuation of a long-time collaboration between the museum and the Igor Sikorsky Archive. In 1999 the Sikorsky Archive donated twenty-five exhibits to the museum, including a model of earliest 1909 helicopter, and a Sunbeam aero-engine – both are on show in the new exhibition. Other exhibits include a 1:1 model of the front section of the Ilya Muromets air-

** Vityaz was an ancient Russian deity, whose name is cognate with an axe-wielding Viking hero*

*** Ilya Muromets was a epic Russian knight, reputed to have gone around the country doing heroic deeds.*



craft, a model of the Russky Vityaz' aircraft (made available by the Russian representatives of United Technologies Corp), the Anzani aero-engine (from the Russian Armed Forces Museum at Monino), the propeller of a C-16 aircraft (on loan from the Central House of Aviation and Cosmonautics) as well a more than ten aircraft models and hundreds of photographs, documents and archive materials.

There will be master-classes about aircraft modeling during the Exhibition, after which participants will be able to make their own models of different kinds of flying craft.

It's almost impossible to over-estimate the contribution of Igor Sikorsky to aviation history – his name is on the earliest pages of helicopter design, where his visionary work opened the way for the development of the industry for decades to follow.

Sikorsky's work changed the world forever. Helicopter technology allowed mankind to look anew at the planet where we live, and gave us new ways of travelling around our world, making new areas and regions of it accessible for the first time.

Maria Scherbakovskaya


ВЕРТОЛЕТНАЯ
ИНДУСТРИЯ


Mi-8 MTSh

Russian-manufactured copters are making a triumphant return to the markets of former USSR-era commercial partners

Experience of returning

September 2011 witnessed an event which turned out to be highly significant for the Russian helicopter industry. A fresh wave of collaboration opened between Russian helicopter manufacturers and helicopter operators from countries in South America.

The springboard for the new level of interest was the successful delivery of Mil Mi-171 military helicopter gunship/transports (nicknamed 'hip' in NATO parlance) to the Peruvian Ministry of Defence. The consignment of six craft was contracted through OAO Rosoboronexport – of which the final three to be delivered were decorated in the military livery of the Peruvian National Guard when they arrived at their new permanent base.

In fact Russian combat helicopters have become based throughout the entire continent of South America – not to mention China and India too - during the 2000s, marking a return of Russian helicopter technology to world arms markets.

A recap of the backstory

Looking back, the Republic of Peru was historically one of the very first of the USSR's South American partners in the sphere of arms procurement. Russia has a long history of providing helicopters to Peru. The first Military Trade Agreement (MTA) between the USSR and Peru was signed as early as 1973, with the first consignments of Russian-made military equipment being delivered there three years later. These consignments included SU-20, SU26 and AN-26 aircraft, and Mi-6 and Mi-8 helicopters.

Collaboration went ahead apace, with helicopters forming the backbone of Soviet-era military exports to Peru. By the early 1990s the Peruvian Army, Air Force, Fleet and government agencies were making use of more than sixty helicopters in the Mi-8 and Mi-17 ranges, in addition to twelve Mi-35 assault helicopters (nicknamed “Hind” by NATO), plus three heavy Mi-26 (NATO name “Halo”) and fifteen multipurpose Mi-6 (“Hook”) craft. Regrettably, the implosion of the USSR left the bilateral military cooperation with Peru in tatters. The figures speak for themselves – in 1992 Peru's bilateral trade turnover with Russia only ran to a total of $14.4 million dollars, of which Russian exports didn't even breach the $4-million mark.

However, this state of affairs was clearly not in the interests of either party – and after a series of protracted and byzantine negotiations, the MTA was reinstated between Peru and the newly-constituted nation of Russia. The first fruit of the new MTA was a 1998 contract for the delivery of a consignment of Russian aviation and military hardware. This took the joint trade turnover figure soaring to $90.9 million dollars, of which $82.3m was accounted for by Russian exports. Despite this promising start, however, it was still too early to talk about any breakthrough into local markets at that time.

The Mi-171 helicopter – the harbinger of change

In fact, the much-heralded breakthrough in economic and military procurement relations between Russia and Peru finally took place in 2008. The backdrop was Dmitry

Mi-35 helicopters seen at the Porto Velho base of the Brazilian Air Force

Medvedev's Presidential (as he was at that time)Visit to Peru, which provided the occasion for a slew of valuable agreements to bolster bilateral cooperation in a wide sphere of fields. One of the most significant was a protocol for building a new Helicopter Service Centre in Peru, to meet all technical requirements for both maintenance and capital renovation of Mi-8, Mi-17 and Mi-26T Russian helicopters. Two years later, a continuation of this somewhat 'dry' contract was signed - that ushered in the delivery of the actual helicopters themselves. The Mi-171 (known as the 'Mi-171Sh' for export) became the 'dove' that ushered in the new era of development in military spending agreements between Moscow and Lima.

What motivated the Peruvian top brass to choose this particular helicopter? The reason is very probably that the multi-function helicopters delivered under this contract represent a new generation of systems

functionality, heightened battle-capability effectiveness, comprehensive protective technology which guards both the crew and the backbone systems of the craft, plus the last word in avionics and instrumentation – enabling operation in even the foulest of weather conditions, at any time of day or night. This configuration is also fitted with two sliding doors and a hydraulic ramp that enables a complete team of twenty-six parachute troops to jump from the craft within a space of just 7-8 seconds.

Performance is no less important when determining which helicopter to order. The Mi-171 is a hard-working and durable craft, operates easily in demanding weather conditions, and is powerfully armed. Maintenance turnaround times are enviably fast, and the fu-

ture-proof design has upgrading built in. For Peru, it's the ideal helicopter for the fight against terrorism, and against narcotics bandits along the Apurimac and Ene river valleys. During one such operation a Russian helicopter came under rebel attack – but made it back to base in one piece, despite extensive damage.

South America has made its choice

The development of this valuable military equipment collaboration between Moscow and Lima has caught the eyes of many other South American countries, who now view Russian helicopters as a very desirable acquisition. The number of such countries who make the move to purchasing and operating the Mi-171 and Mi-171Sh grows with every passing year. In 2010 the Brazilian state oil and gas corporation Petrobras offered a tender for helicopters to operate in the Amazon – which was won by the Mi-171A1. In collaboration with the Brazilian helicopter operators Atlas Taxi Aereo and Helipark Taxi Aereo, the Russian partners set up two Helicopter Service Centres dedicated to servicing Mi-171A1 and the Ka-32A11BC craft.

Meanwhile in neighbouring Argentina, the Air Force took delivery of two Mi-171E helicop-

Russian helicopters currently account for more than 30% of military helicopter usage in South America, in addition to six percent of the civil aviation helicopter market

The Mi-171Sh helicopter in action over the Peruvian capital

ters. They are in service with the Argentine Armed Forces for search and rescue operations, and for the delivery of essential equipment and supplies to Argentina's scientific bases in the Antarctic.
Mexico's Helicopter Service Centre dedicated to servicing Mi-family helicopters has been the basis for an analogous centre in Venezuela. Bolivia has been the location for setting up a training centre for parachute commando teams.

Experts calculate that Russian helicopters currently account for more than 30% of military helicopter usage in South America, in addition to six percent of the civil aviation helicopter market – and Russian take-up in these segments is on a continuous increase. Russian helicopters see service for passenger flights, transportation, corporate use, and search-and-rescue – in addition to use in construction projects, and in sky-based police special operations.

Bolstering military transport operations

In November and December of 2014, Russian Helicopters Holdings delivered a shipment of eight new Mi-171Sh assault-transport helicopters – which have received the highest testimonials from Peruvian government sources. The contract for a total of 24 helicopters was signed with Peru in December of 2013 by the Russian government's military exports corporation, Rosoboronexport. The total number of 24 helicopters will be delivered in three tranches – the first two tranches, of four helicopters each, during 2014, and the remained during 2015.

The red-carpet ceremony to mark the delivery of the first of these Mi-171Sh helicopters to Peru was attended by the nation's president, His Excellency Ollanta

Humala Tasso, along with the Minister of Defence, Seňor Pedro Cateriano, along with many more of the nation's most senior government figures. During his speech at the Air Force base in Callao Province, President Tasso noted that this new wave of helicopter power placed Peru at third place in the overall deployment of military helicopter fleets within South America.

In turn, the Defence Minister went on to state that the procurement of Russian helicopters for the nation's air fleet would give its armed forces the full capabilities they require, in addition to facilitating the delivery of equipment and supplies to far-flung military outposts, and bolstering abilities to safeguard the nation's border posts. Seňor Omar Gonzales, Commander-in-Chief of the Peruvian Armed Forces, emphasised that the greater enginepower of the Mi-171Sh was one of its most important features to Peru - since it enables the craft to operate reliably in even the extreme altitudes of the mountainous And Province.

Of course, no inauguration ceremony would be complete without a demonstration flight by the new helicopters. The Peruvian President himself boarded one of the helicopters for a half-hour flight, during which he had chance to observe and comment favourably on its extreme maneuverability and advanced flying capabilities. The staff of the Peruvian High Command had the highest praise for the excellent standard of manufacture of the helicopters, including the wide range of supplementary equipment which came bundled with them.

The Mi-171Sh is an ideal helicopter for use in Peruvian conditions. It enables assistance to be made to the far-flung provinces of the Amazon River and the And Mountains; it comes configured for use to combat drugstrafficking along the Apurimac, Ene and Mantaro rivers; in the fight against terrorist groups; and preventing the illegal mining of valuable commodities by criminal gangs. Peruvian crews have already passed successful flight training programs during 2014 at the factory's own training centre. The new training centre will give the crews of the Mi-171 the chance to expand their flight abilities, and acquire special skills needed in specialised conditions. Meantime the helicopter maintenance crews will receive further training in servicing the new helicopters to the highest level.

Mi-171Sh helicopters come configured for use to combat drugstrafficking; in the fight against terrorist groups; and preventing the illegal mining of valuable commodities by criminal gangs

A technical servicing centre for Russian helicopters is also being built in Peru. The delivery of the first Mi-171 helicopters was made to Peru almost a month ahead of the agreed schedule. The helicopter deliveries come alongside all of the maintenance and aerotechnical equipment needed to ensure safe and reliable usage.

Dmitry Gnatenko

The Ka-52 is the most remarkable of the combat helicopter range

The breath-taking take-off of the Ka-52 'Alligator' helicopter from the piazza in front of the Crocus-Expo Exhibition Centre, immediately after the end of the HeliRussia-2014 Exhibition almost brought car traffic on the Moscow Circulatory Highway to a standstill. Yet a 'flying alligator' no longer surprises Muscovites. The Ka-52 has been over-flying Moscow for several years now, in combat formation to the main helicopter exhibition for Russia and the CIS countries, as sudden and powerful as usual, and taking advantage of the Saturday sloth of Muscovites.

The prototype of the Ka-52 first took off seventeen years ago – its appearance was intended to fix some drawbacks in the single-seater Ka-50 'Black Shark'. Both of these helicopter models came down to us as peculiar legacies of a long-forgotten doctrines. The Kamov concept in the early 80s for organising group activity of combat helicopters was intended to counter putative group activity of Tiger helicopters within the European theatre of military operations. However, instead of the Ka-50 or Ka-52, the Ka-60 was the centrepiece of these plans - which should have been fitted with complete coordination and targeting for military units – in other words, Ka-50 helicopters. However, the cards got reshuffled in troubled times, and the 'Black Shark's' role was shifted to the non-existent Ka-60.

A Coaxial Flying Fortress

Russia's Ministry of Defence has ordered 240 Ka-52 helicopters, of which 50 are already in service

Now, however, everything's back in the right place – with Cold War looming once again on the horizon, and now a fully-equipped 'Alligator' is being produced, which sets a new standard in contemporary helicopter production.

The Ka-52 'Alligator' is designed to hunt-down both armoured and non-armoured targets on the ground, low-speed airborne targets and enemy combatants, in addition for reconnaissance work and commanding groups of assault helicopters. We shouldn't forget that the Ka-52 'Alligator' reconnaissance and combat helicopter is fitted with coaxial rotors (the hallmark of the Kamov Design Bureau) – giving it unique maneuverability and unmatched climb ability.

The Ka-52 retains all the combat characteristics of its single-seat predecessaor, the Ka-50. It has guided anti-tank rockets, and a high-precision air cannon, along with non-guided rocket weaponry too. Full dual control is accessible to either of its crew. The Ka-52 is fitted with a catapult escape system, and linked chassis set-up between its seats and rotor-blade systems, but with separate trajectory delineations for the crew if they have to bail out.

Ka-52 'Alligator' reconnaissance and combat helicopter is fitted with coaxial rotors – giving it unique maneuverability and unmatched climb ability

Compared with its Ka-50 predecessor, the helicopter has enhanced night-flying combat capabilities and poor-weather ability, and for the coordination of helicopters flying in groups by means of ground-stationed command stations.

Experience with the Ka-29 carrier-based combat helicopter, comparative analysis of different set-ups for pilot seating, and crew activity algorithms have led the designers towards inventive solutions – the crew of the Ka-52 are seated in a single cabin, side-to-side.

This set-up greatly simplifies the installation of complex equipment in the area of the display-panel for a crew of two, along with reserve systems for the dual control of the craft, the power supply system, equipment and weaponry – which enhances their relia-

The cockpit of the 'Alligator' is fully armoured, and the fuel system is protected from explosion or fire

In June 2013 the K-52 Alligator was first demonstrated to the world aviation community at the Anniversary Paris Air Show at Le Bourget, where it was highly-rated by experts

bility. Furthermore, this layout enables the crew's attention to be distributed into areas of responsibility during target location, whilst leaving the visual appearance of the craft virtually identical with that of the Ka-50, which is of vital importance in battle. The glazing of the cabin has been achieved on the same pattern as aircraft such as the SU-24 and F-111, thus offering excellent visibility and physical conditions for the crew.

The dorsal section of the cabin has been narrowed, so as not to prevent access to the accelerated airflow stream to the air intakes of the twin TV3-117VK 2200 hp Klimov engines. The fore-section of the fuselage has also been tapered on its lower-right side to permit the free action of the side-mounted 2A42 cannon, with a high-velocity 30mm projectile calibre.

In June 2013 the K-52 Alligator was first demonstrated to the world aviation community at the Anniversary Paris Air Show at Le Bourget, where it was highly-rated by experts.
In France the helicopter was presented with entirely new onboard equipment, manufactured in Russia.

All the crucial elements in the avionics systems (OEE) have been designed and manufactured by Radioelectronic Technology Concern corporation (KRET). Thanks to this new integrated avionics system, the helicopter is able to fulfill combat operations in all weather conditions, and at any time of day or night.

One division of KRET is the Fazotron-NIIR company, whose 'RLK Arbalet' ('crossbow') radar system permits the Ka-52 to fly combat missions at any time of day, in all weather conditions, and even in the presence of natural or mechanically-operated radar-jamming systems. The RLK system gives the Ka-52 crew a full radar map of the area, so that they can detect and avoid hazardous weather conditions or turbulence zones, as well as swiftly locating targets to be destroyed.

A further division of KRET is GRPZ, Ryazan State Instrumentation Plant – which supplies laser-guided systems for guided weaponry (SLS), along with a SOVI image processing system from the 'Ohotnik' ('hunter') class, which is used for guided rockets. Using these systems, the helicopter is capable of swift location and tracking of two different targets at the same time, and providing guidance instructions to rockets in the 'Ataka' ('attack') and 'Vikhr' ('whirlwind') categories. In its current configuration the Ka-52 helicopter is fitted with more than 60 pieces of GRPZ equipment.

The SAU-800 automated control system has been designed and built by a Saratov-based division of KRET, the Design Bureau for Industrial Automation (KBPA). This system allows the Ka-52 to be piloted manually, or in automated or automatic regime. The SAU-800 system is integrated with the aerometric data from the SIVPV-52 system, which was developed by a further division of KRET – the Moscow-based Aeropribor-Voskhod corporation.

The SUO-806P weapons control systems fitted aboard the Ka-52 is another product from a KRET subsidiary company, the Kursk-based company Aviaavtomatika, part of the Kurskoe Pribor State Limited Corporation.
All the crucial sensor equipment aboard the Ka-52, including the pressure sensors, alarms, external temperature thermometer, pressure signal gauge and so forth were designed and built in the city of Engels by the Glukharev Signal Design Bureau, which is another division of the KRET corporation. The integreated on-board equipment systems which have been designed and produced by KRET make the Ka-52 a powerful, reliable and modern warcraft, which is highly competitive on the international market, with huge export potential.

As a result of the Ka-52's performance at Le Bourget, the OAO Kamov state corporation and Sagem signed a joint-venture agreement to build a further-upgraded version of the Ka-52 Alligator helicopter. The modernised export model of the Ka-52 will serve the most demanding needs of a wide range of potential purchasers in many countries. The design and integration of a new optical electric sighting system, along with inertia-based navigation systems will be made using the model of the Strix optical electronic system, which is manufactured to be fitted to the Franco-German Tiger assault helicopter.

During almost a half-century of helicopter confrontation between Russia and the NATO alliance, a line was drawn. The developers have now come close to unification in the sphere of joint development of equipment for combat helicopters. Even so, everyone might yet retreat back to their own drawing-boards.

Andrei Vezhnovets

All the crucial elements in the avionics systems (OEE) have been designed and manufactured by Radioelectronic Technology Concern corporation (KRET)

A helicopter which has extraordinary commercial potential

Ansat: the light, accessible and safe all-rounder

The close of 2014 was marked with a major event for the Russian Helicopters Group, and for the helicopter market generally. The new light multi-functional Ansat helicopter – with a hydro-mechanical control system - was granted a supplementary Category Certificate from the International Aviation Committee Aviation Register (AR MAK), which permits it to carry passengers on the commercial market. Deliveries of this helicopter are scheduled to begin shipping during 2015. The supplementary Category Certificate confirms that the standard model of the Ansat helicopter meets all of the aviation industry norms, and certifies the alterations which have been made to the basic model of this aircraft. Particularly, the passenger version of the Ansat helicopter is fitted with an upgraded CTR stabiliser, an upgraded payload capacity weight of up to 3600 kilograms, and fitted-out with equipment for transporting passengers. These alterations make for upgraded technical flying characteristics for this helicopter, which make it an attractive and competitive buy on the international helicopters market.

The Ansat is in reality the first Russian light-class helicopter to be fitted with the full range of competitive features. Helicopter operators and private pilots have long awaited its appearance on the market. It's 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.

As mentioned earlier, the main certification in the International Aviation Committee Aviation Register, which gave the go-ahead for the use of the Ansat helicopter, had not originally included the transportation of passengers when the certificate was issued in August 2013.

“We wanted to offer our clients a convenient and reliable light-class helicopter fitted with a mainstream hydro-mechanical control system: said Mr Vadim Ligai, the Deputy Director of Russian Helicopters Holdings, and General Director of the Kazan Helicopter Plant. “Getting the additional certification classification for a passenger version of the Ansat, with GMSU opens new horizons for the promotion and commercial exploitation of this helicopter on world markets”.

The Kazan Helicopter Plant (KHP), a division of the Russian Helicopters holding, has developed and built the Ansat helicopter. The corporation began obtaining the certification for the civil aviation hydro-mechanical (GMSU) light helicopters back in 2011. Earlier KHP had developed an Ansat version with an electro-distance control system (KSU-A) which was extensively ahead of its time. No civil aviation helicopter anywhere in the world with such a control system has ever been granted aviation certification, and there are not yet any established requirements for this innovative control system in existence.

In order to get the Ansat helicopter into production sooner, it was decided to reconsider the control system, and install a more typically mainstream hydro-mechanical system which is in more demand. The installation of the hydro-mechanical system hasn't affected the payload the helicopter is capable of carrying, or altered any of its technical specifications.

Experts consider that the modernised Ansat has a whole raft of competitive sales advantages over similar rivals in its class. It's a helicopter with robust and simple operating requirements, can be used in many different climates in extremes of both heat and cold, and does not need to be stored in a hangar. The new Ansat has already been launched by Russian Helicopters on major markets – including the former CIS countries, and countries of SE Asia, Africa and South America.

can be flown in both manual and automatic control modes, and in a wide range of meteorological conditions.

Specifications and Capabilities

The Ansat helicopter represents an excellent balance between traditional technologies and innovative features.
The Ansat comes fitted with twin Canadian-built Pratt & Whitney turboshaft PW 207K engines with 630 h.p. There is an electronic display control system (FADEC) which can sustain flight even in the event of one engine failing.

The flight and navigation systems and fitted equipment of the Ansat include an on-board information system with multifunctional indicators and fault-warning systems.
The Ansat has an all-metal fuselage construction, composite materials in the non-stress sections, and fiberglass rotor blades.

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

Ansat helicopters are suitable for transporting both passengers and freight; can be used for observation and search-and-rescue operations; and can be used for both fire-fighting and for medical evacuations. The helicopter

The hingeless rotor mechanism permits a very nuanced level of craft handling alongside significant savings in running costs.
There is a Pilot Training version of the Ansat fitted with KSU-A, which features a four-fold reserve system of digitally-enabled electro-distance control system.

By deploying quick-change equipment modules, the Ansat can be swiftly repurposed to suit a wide range of different flight tasks.
The Ansat helicopter is suitable for both passenger and freight use; can be used for observation and search-and-rescue applications; and for fire-fighting and medical evacuation.

Ansat's extra-large cabin sets it apart from other helicopters in its class, alongside its quick-change modules for converting its usage set-up. The wide sliding door and spacious cabin-room (8 square metres) makes carrying up to eight passengers possible in excellent comfort, or alternatively for fitting a variety of special-application cabin set-ups.
Ansat helicopters are fitted to be used in both automatic and manual control modes, and in both good or poor weather conditions.
Ansat helicopters are distinguished by the complete autonomy they offer when preparing the craft for flights, and in their servicing needs.

Helicopters On Water

Floating helicopter platforms may become parts of the transport infrastructure of both modern cities and remote areas alike.

In the overall scheme of developing the scope of helicopters, basing them on floating stations has attracted interest from the very earliest days of helicopter use. The laurels here must go to the military – especially in the development of expeditionary work, operating a long distance away from traditional bases.

As usual, the military get it right first

The first helicopter-carrier was the French cruiser, the Jeanne d'Arc, which went into service in 1964. In the USSR the first such projects were also helicopter-carriers, such as the naval vessels Mosvka and Leningrad. The most attention-grabbing ship of this kind in recent times has been the French project Mistral.

Among a series of other notable vessels of this kind was the the American helicopter

unit known as Group 118, which later became part of the 82nd Airborne Division. The unit was based on barges in the Persian Gulf towards the end of the 1980s, with the idea of keeping down Iranian naval operations.

Tourism – a force for progress

Civil aviation's use of floating platforms as helicopter bases has primarily been limited to the use of ships operating in the northern waters. The development of the exploitation of shelf oil reserves played a valuable role in the evolution of floating heli-pads.

Even so, this was only a part of what we can call 'civilian' applications of floating locations for helicopters, and such non-military uses fit a wide variety of other classifications, which we can divide into spheres such as governmental service, rescue services, and several others.

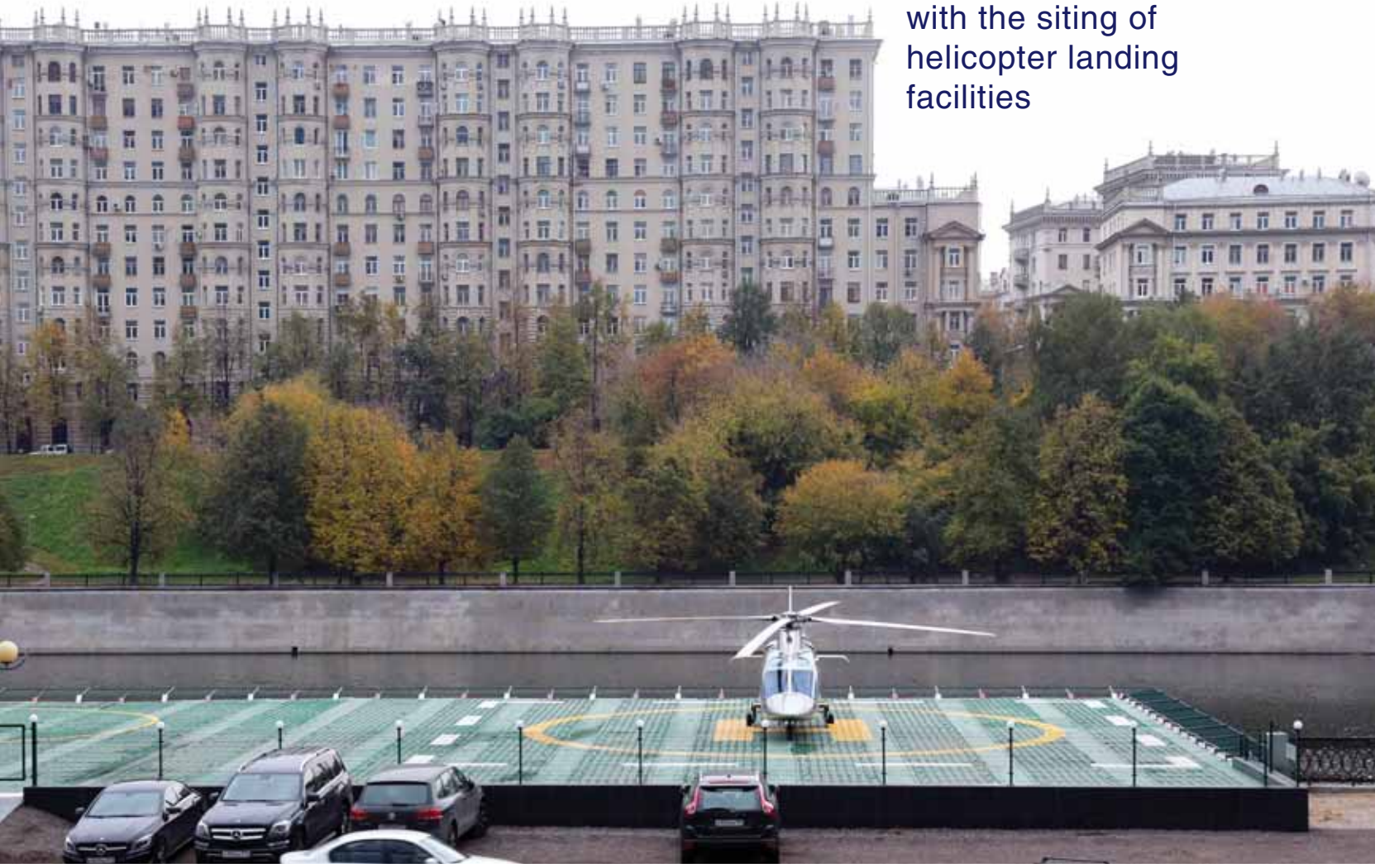
In the true sense of civil aviation, floating bases for the use of helicopters of different kinds were developed only when commercial organisations began to take an interest – utilising ships, landing craft and barges. The principle market for this type of operation lay in transporting tourists.

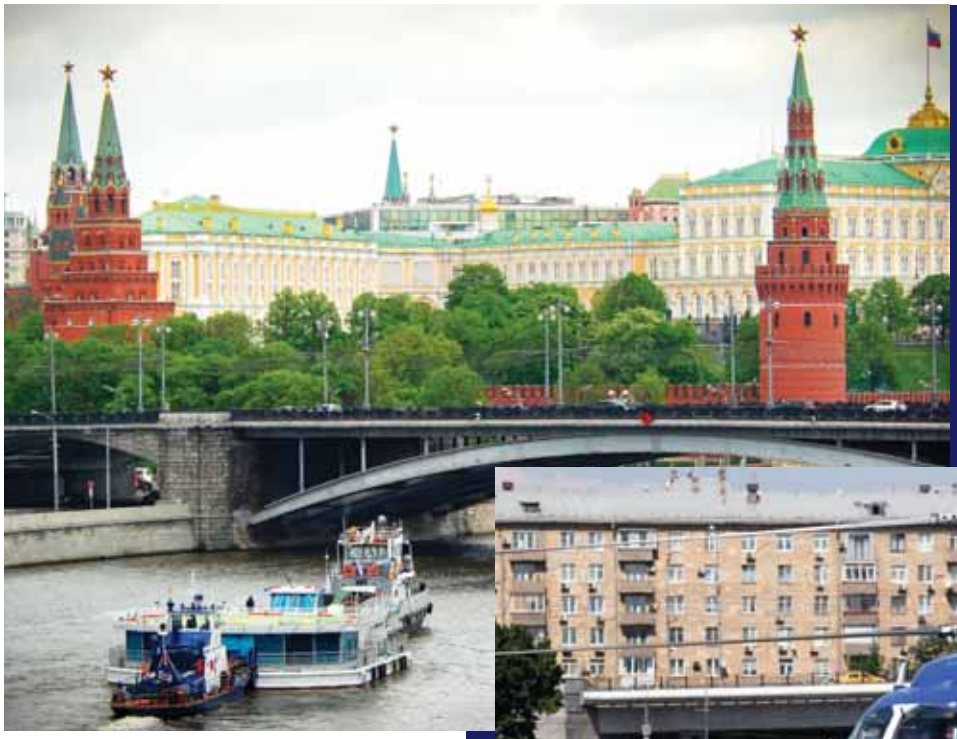
Access to land, as a problem in cities

As helicopters gained more and more popularity – particularly in the lightweight category – the business of charter flights in, around, or between major cities began to grow significantly. However, a number of problems connected with such operations appeared almost immediately. The two most pressing issues have been the inadquate provision of suitable landing spaces, and the the noise which helicopters produce – and both these problems have hampered the development of such operations in city areas.

The answers to these problems have turned out to be available only by utilising so-called water-based helicopters, using bases within the area of reservoirs and similar stretches of water within cities. Here they are deployed on heli-pad pontoons, barges, landing craft, and specially-constructed platforms. It's a

Floating platforms solve a great many current problems connected with the siting of helicopter landing facilities





Moscow has attracted the National Association of Shipbuilders, whose directorate claim that money needs to be allocated from the city government budget for such schemes. The systematic nature of this process received a boost from the concept of accommodating air transport bases in Moscow in 2013, supported by the Helicopter Industry Association (HIA). The basis of this concept is part of the State Program For The Development of Moscow (2012-2025), within the category of "Development of City Infrastructure Projects On and At Water & River Sites".

A project for a floating helipad, designed by a St Petersburg shipping company, turned out to be ideal for use in Moscow

logical solution, primarily because it sidesteps the crippling expense of leasing land in major cities. Additionally it helps to lessen the problem of noise in city areas – since the major air arteries for helicopter traffic follow rivers and canals.

Helicopter bases on the Moskva River

This pattern of development for helicopter bases began to catch on in Russia from the early 2000s – when Russian shipbuilding companies saw the niche in the market, and resolved to exploit it. One example was the patent №2369518 taken out in March 2008, for a floating helicopter take-off-and-landing surface with a linked quayside area. The patent specified that the development came under ship-building legislation, since such a floating complex could only be set up in the western region of a specific water area. Structurally this heli-base was composed of a pontoon structure topped with an upper deck, and the heli-pad on the uppermost area. The resulting helicopter base also offered docking facilities for passenger or cargo ships.

Other kinds of floating helipads have gone into operation – some using permanently moored ships. One project of this kind was intended to be moored in the waters of the Moskva River, near the Dorogomilovsky Bridge. A technical survey of the area was carried out, on the basis of which engineering and project documentation was drawn up. However, the financial crisis of 2008 prevented the project from going ahead. A further similar example involved a planned pontoon structure to be used as a heli-pad in Chelyabinsk, in 2011. In this case the failure of the water-based project resulted from missed deadlines in registration for the usage and operation of the land-based section. The first floating hangar storage area, with space for up to five flying cargo helicopters appeared in 2013 at the Khimki Water Reservoir, in the suburbs of Moscow. Interest in building floating helicopter bases in

This proposes the installation of up to seven air-landing stages for both air taxis and rescue service helicopters. The plans envisage floating landing stages suitable for 1-2 helicopters. If required, these floating landing stages could be moved from one location to another.

Floating landing stages would be a solution to a number of current problems connected with the location of heli-bases – concerning both heavily-populated areas, and also in remotely-located regions. The experience of their use demonstrates the effectiveness and flexibility of such an approach, that factors in not only the economic angle, but also the questions of social responsibility for transport

Nikolai Korobov

ALWAYS ON TOP

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Helicopters at the Sochi Olympics

It's impossible to imagine the success of large-scale international sporting events today without the effective use of helicopters. Their use involves the fulfillment of a wide range of tasks, including search-and-rescue, medical support and transportation, and successful operation depends not only on the training of the crews, but also on the efforts of a wide range of professional staff. These include include those who design the flying hardware and its equipment, specialists in flight guidance and operation... a huge team who control the quality of this national industry.

The Olympic Games ceremonies and events which took place in Sochi over 7th to 23rd February 2014 were an unprecedented success. The competitors, guests and spectators gave the organisation, scale and standard of the events a strong thumbs-up. It was the first time that Russia had hosted the Winter Olympics - and set up a winter sports cluster practically from scratch, at a winter sports resort on the Black Sea. Once the Winter Olympics were over, the Sochi Paralympic Games 2014 began. Sports fans from all over the world well recall the trashy propaganda attacks made on the Sochi Olympics by a complete range of Western-European and American 'journalists'. Even so, their bilious bluster was thwarted by the triumph of the event's organisers, who succeeded in producing the competition on such a high level – and by the competitors, whose heartfelt for sport and for the event itself would not be so easily cowed.

No less successful was the helicopter mission flown by both civilian and military Russian crews, which guaranteed the safety and transport needs of the Olympic Games in Sochi.

This is the only pilotless helicopter drone in the world – undergoing testing for use as a ship-based drone craft.

The resident helicopter team provided the support for the lifesaving and rescue services. The Sochi Winter Olympics were attended by six helicopters from the Russian Emergency Services. Helicopter models Ka-32, ES145 and Mi-8 were all operational in Sochi over the Games. Two of these were configured with medical support modules – equipment blocks for providing life-saving paramedical assistance to both competitors and tourists, while still on board the helicopter. Two of the six helicopters working at Sochi were readied so as to be able to take off within ten minutes of being summoned. The key 'air ambulance' was the Ka-226T, fitted with an Arrius 2G1 engine built by Turbomeca. This helicopter has a modular design, enabling it to be used for search-and-rescue work, patrol duties and as a parachute vehicle. The excellent maneuverability and contemporary navigational

First drone vehicles to be commissioned from the Austrian manufacturer Schiebel, the Horizon Air S-100, at a cost of 300 million roubles each

equipment in the Ka-226T facilitate easy handling in even heavily built-up areas or mountainous regions, while the absence of a rear rotor, allied with the craft's compact dimensions make landing on small landing sites a breeze.

It's no surprise, then, that it was helicopters supplied by the Russian national corporation Russian Helicopters which were in active use during the XXIIth Winter Olympic Games in Sochi.
SAR helicopters were based at heli-bases at Sochi and Krasnaya Polyana. The Police High Command for the Southern Federal Territory of Russia deployed police helicopters for law enforcement, patrol and observation operations using Mi-8/17 helicopters, and Ka-226 craft fitted with Rolls-Royce 250-C20R engines.

The outermost boundary of the security zone covered by the Olympic Games in Sochi adjoins the State border of Russia with Abkhazia, as well as the Federal border with the Kabardino-Balkaria Region of Russia. Enforcement forces from the Special Forces of the Ministry of Defence blocked access to area from the South of the Krasnodar Province, and the area of the Karachaevo-Cherkesskaya Republic, against the possibility of bandit attack from problem areas. Mr Vladimir Kolokoltsev, the Police Chief, said that the operation to keep the Olympic Games safe and secure was planned on the basis of experience gained in Turin, Vancouver and London. The Sochi police team was bolstered by two groups of High Security police from the Southern military region. Great attention was paid to the interaction of the police services with aviation – especially

A ski competitor from Monaco, Alexandra Coletti had to be helicoptered to hospital after a fall on the slopes

Helicopter models Ka-32, EC145 and Mi-8 were all operational in Sochi over the Games. Two of these were configured with medical support modules – equipment blocks for providing life-saving paramedical assistance

since the ability to deploy or evacuate military personnel from mountainous regions, or firefighters, depends critically on air support. The Air Operations Group provided helicopter back-up from the Korenovsk Aerodrome in Kuban, and Budenovsk in Stavropol. These air bases represent some of the most modern military air facilities in the whole of Russia. For example, the Budenovsk aerodrome is home to a fleet of upgraded SU-25CM assault craft, while the latest Mi-28N, Mi-35M and Mi-8AMTSh helicopters are based at Korenovsk. Before the Olympic Games began, additional helicopters were added to the fleet at Korenovsk, dispatched from the Central Military Aviation Reserve base at Torzhok, in Tver Region – also a major helicopter pilot training centre.

Drone craft also provided public safety at the Sochi Olympics, operated by the Russ-

ian Navy and the Border Guard Service. Towards late-2013 a meeting of drone operators was convened in Rostov-on-Don, bringing together staff from the Border Guard Service of the Russian Federal Security Bureau. The meeting focussed on the first drone vehicles to be commissioned from the Austrian manufacturer Schiebel, the Horizon Air S-100, at a cost of 300 million roubles each. The team for the 2014 Olympics event was bolstered by additional staff drafted in from Kamchatka and Primorye.

The Horizon Air S-100 is a helicopter drone designed for reconnaissance work, border control, and lifesaving operations. It is operated from ships, and has already been used successfully from the 'Rubin' cruiser operated by the Border Guard Service. Horizon Air S-100s can remain airborne for up to five hours, and operate in a temperature range from -40C to +50C. Night reconnaissance operations are fully supported. The drone can also carry a payload of up to 50 kilograms.

Despite all this, spectators and journalists at the Sochi Winter Olympics were understandably more fascinated by the small 'spider' drones which patrolled the Sochi event, equipped with high-resolution cameras. Using these drones, amazing video footage of sports events such as snowboarding, slalom and downhill skiing was obtained. Their extreme maneuverability offered the broadcasting facilities of the Olympic events some astounding aerial shots, shot from the air, face-on with competitors and from a bird's-eye view.

The Russian organisers of the Games put a lot of thought into how helicopter support could best be used for the events. The experience of previous Olympic events, such as those in London, showed that the attempt to minimise the use of helicopters in such events only raises the risks to which competitors and spectators are exposed. On the very eve of the London Olympics,

Their extreme maneuverability offered the broadcasting facilities of the Olympic events some astounding aerial shots, shot from the air, face-on with competitors and from a bird's-eye view

Russian Prime-Minister Dmitry Medvedev made an aerial inspection by helicopter of the building work going on for the Sochi Winter Olympics

there was an official announcement placing a prohibition on all but the most essential helicopter use. And this, in London – one of the most helicopter-friendly cities in the world?

This decision was motivated by British organisers appealing to the experience in China. The Beijing Olympic Games had no helicopters at all, although new roads and a new VIP-airport were built. This example demonstrated that such Games could be run entirely without helicopters – especially since the Beijing event was much-flaunted as being 'green', whereas helicopters are reputedly noisy and dirty, and thus were rejected as unnecessary. Yet even so, special helicopters did play a part in the Beijing Olympics. One example was that the aerial policing of both the Beijing Olympics and the Beijing Paralympics was achieved by the Chinese law enforcement agencies deploying Italian police AW139 helicopters. Meanwhile the Chinese State Television Networks made use of Nucomm equipment fitted in ENG-system helicopters to obtain aerial footage of all the events which took place in the Opening Ceremony of the Beijing Olympics. Helicopters clocked up hundreds of hours of flying time during the Olympic events at both Athens and Beijing, enabling television viewers to get an unparalleled view of the stadium, televising events such as bike racing and athletics. Aerial filming of sports events is now high-priority issue for Games organisers, since viewers now have the highest expectations – and there are now literally billions of such viewers worldwide for Olympic events. It's worth noting that the Vancouver Games, whose opinion was consulted by Russian police ahead of Sochi, were some of the most heavily militarised in recent years. The Vancouver Olympics were patrolled by helicopters from the Canadian

National Guard. The primary detachment of helicopters used deployed the CH-146 Griffon and the CH-124 Sea King – Canadian configurations of the Bell-142 and the Sikorsky SH-3 Sea King respectively.
In conclusion, we ought to mention the role played by independent helicopter operators in the preparations for the Sochi Olympics, including operators such as PANH, Aero-Kamov, and UTair. For example, UTair were involved in the construction operations for the Olympic facilities, especially in delivering construction materials and equipment to the facilities at Krasnaya Polyana. Materials were winched to the construction sites from under Mi-8AMT and Ka-32 helicopters, and these craft were also involved transporting materials and staff to construction locations for the cable-car facilities, various infrastructure facilities in the ski resorts, as well as the installation of special cannons for firing at avalanche sites.

The heavy-transport Mi-26T helicopter from operator PANH was deployed during heavy construction work being undertaken in remote and difficult terrain. It was used for transporting heavy loads and equipment to high altitudes, for shifting large consignments of up to 20 tonnes – and especially for the transportation of the transformers and generators needed to ensure continuous uninterrupted power supply for the infrastructure services at the Olympic facilities.

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