

blade elastomeric main rotor, updated 1,270kW transmission, installing the Cobra's chin-mounted M197 20mm cannon, a 300-round magazine, improved communications and a strapdown GPS satellite navigation system. Italy's CBT will also carry the Raytheon Stinger AAM, putting it several years ahead of either the Apache or the Comanche.

CBT forms the basis for the more ambitious A129 International, now competing for orders in Australia, Spain, Sweden and Latin America. The 5.1t features new 950kW LHTEC CTS800-2s or 15% more powerful -15 turboshafts in place of the Rolls-Royce Gem, and a new gearbox. Agusta is also proposing to replace the Saab HeliTOW sight with a choice of either the TSS or the Taman H-MOSP system, enabling the helicopter to carry eight Hellfire or Rafael NT-D anti-tank missiles. "Our philosophy from the start has been to use only proven systems used by other nations," says Alessandro Faccenda, Agusta A129 engineering sales.

Upgrades

The A129's single monochrome glass display will be upgraded to two 150mm x 200mm (6in x 8in) colour displays with digital moving map, inertial/GPS navigation, and fixed data loader all integrated through a 1553B databus. In place of the Italian army's current IDHASS Apache helmet, Agusta plans to offer a binocular HMD based on Thales' Tiger system, to which the FLIR and turret will be slaved. The A129 International for now retains the BAE ALQ-144 IR jammer. Agusta is also looking at adding a datalink, such as Link 16.

Russia's attack helicopter programmes have been hit by moribund national finances. Kamov has been more proactive, offering its Ka-50/50-2/52 family in a number of competitions while Mil has concentrated on upgrades for national and international Mi-24/25/35 Hind users. Mil's attack helicopter development programme, the Mi-28N Havoc, has been slowed to almost a standstill, although the company predicts it will fly a second prototype early next year.

The twin-seat Ka-50-2 has essentially the same fuselage as the original single-seat Ka-50, but it is equipped with a more sophisticated Israel Aircraft Industries supplied weapons system, that allows the machine to be armed with Israeli weapons as well as the Russian supersonic, laser-guided KBM Vikhr (AT-16/9M120M) missile.

The twin-seat design was originally side-by-side but has been reconfigured as a tandem layout. Unlike in Western attack helicopters, the pilot occupies the front seat with the gunner in the rear, so it has become necessary to substitute the sight's

direct optics with electronic imaging.

Kamov, however, says the link with IAI is not exclusive and that it will work with other avionics integrators. For South Korea, Kamov will work with another integrator, probably Russia's RPKB. In recent years, he adds, Russian manufacturers have developed new-generation avionics, including multifunction displays, data management and night vision systems.

NIIR-Phazotron has developed the Arbalet all-weather multimode radar for the Ka-52 and Mi-28N. It has a 360° mast-mounted antenna and a second on the nose. A radar-guided version of the Vikhr is being developed for use with the Arbalet.

The Russian army specification Ka-52 Alligator also carries electro-optic and low-light TV sensors. As well as the Vikhr, the Ka-52 can also employ Zvezda-Strel'ya Kh-25 (AS-9/10 Karen) and Kh-29 (AS-14 Kedge) air-to-surface missiles and the KBM Igl'a (SA-16 Gimlet/SA-18 Grouse) air-to-air weapon. The Ka-52 has completed Kamov flight tests and should complete military trials by the end of this year.

While pre-production machines are being built, the single prototype - which made its first flight in 1997 - has operated in Chechnya alongside Ka-50s, which appears to have convinced the Russian defence ministry to resume Ka-52 funding.

Kamov believes the lower operational and acquisition costs of the single-seater will pave the way for the night-attack Ka-50N. Intended as a second stage Ka-50 development, several Ka-50N experimental machines with different avionics have been used to test a number of FLIRs and weapons management systems from foreign and local suppliers.

Although the Russian army selected the Ka-50 over the Mi-28N, Mil is hopeful of foreign sales of the night attack helicopter although the design bureau's financial difficulties mean it is difficult to fund development work.

Mil has invested significant effort in upgrading the Mi-8/17 Hip and the Mi-24/25/35. In March 1999, Mil flew the Mi-24VM, an upgrade of the Mi-24VP that can be armed with 16 KBM Shturm (AT-9 Spiral) anti-tank weapons or its Ataka (AT-12 Swinger) supersonic anti-tank missiles, which can also be employed against airborne targets. The electro-optics system is the FLIR, TV and laser-range finder developed for the Mi-28N. Mil is aiming to upgrade 300 Hinds operated by non-CIS

helicopters at a cost of around \$1-1.5 million each. Other Hind modifications can include fitting the Mi-28's composite rotor blades, mast and tail rotor as well as more recent variants of the Klimov TV3 engine and fitting the twin-barrel 23mm GSh-23 gun in-place of the 12.7mm YakB-12.7 four-barrel cannon. A non-retractable undercarriage reduces weight by 300kg and improves performance.

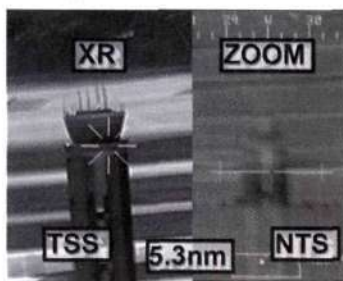
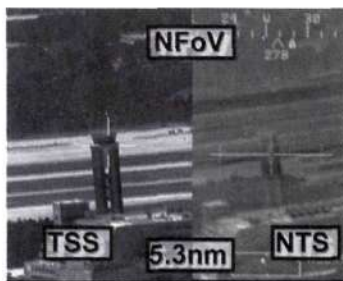
In March this year the Russian defence ministry displayed the Mi-24VK-1, upgraded by Mil and Aerospace Equipment along with the Kursk and Ryazan instrument plants. The modification includes new colour 130m x 130mm multifunction displays, one in the forward cockpit and two in the back. Also fitted is a new central processor and new TV, thermal imager and laser designator, mounted in a Urals Optics Mechanical Plant gyro-stabilised turret.

Eurocopter flew the first production Tiger and completed development of the HAP escort/support version at the end of last year. Anti-tank Tigers are due to enter service this year in Germany (UHT) and in France (HAC) in 2003. The UHT and HAC are equipped with the Eurocopter Osiris mast-mounted sight and are not fitted with a gun. The HAP has the roof-mounted Stryx sight and a GIAT 30mm gun. HAPs will be produced in France at Marignane while the anti-tank machines will be assembled in Donauwörth, Germany.

Despite not having delivered a Tiger, Eurocopter is considering its options for export machines. Eurocopter's bid

into the Australian Air 87 campaign is based on the HAP version. As part of its bid, Manuel Torres, Eurocopter Tiger managing director, says the MTR390's rating can be boosted 7% - from 1,160kW (865hp) - by improving the full authority digital engine control software. A second step could increase the power by 17% over today's engine, but, says Torres, that would require major engine modifications.

The Australia Tiger proposal is 95-98% common with the French army's HAP version, but the roof-mounted sight (RMS) will be modified. The laser rangefinder will be replaced by a laser designator for the Lockheed Martin AGM-114 Hellfire missile as the helicopter's main armament. Torres says he has ordered an upgraded RMS from supplier Sogerma because an analysis indicated that the market would require Tiger to be offered with Hellfire instead of European weapons. ■



New generation systems such as the TSS (on left) provide superior images compared with earlier systems