

Police Aviation News

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FARNBOROUGH AIR SHOW 2010

PAR

AW169 launched

AgustaWestland new type seeks to meet Eurocopter face-on in police & EMS markets

West Midlands fire attack delivery

UAV's indoor flights

FARNBOROUGH AIR SHOW 2010

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In the wider market FARNBOROUGH 2010 marked the public debut of the Boeing 787 Dreamliner and the Airbus Military A400 and for visitors during the first few days of the event was ostensibly about the opportunity to actually see inside these all-new aircraft. 787 ZA003 arrived non-stop from Seattle as part of its test regime the day before the main event and then on the Tuesday it was gone. Because of attending the ALEA event in Tucson I arrived Wednesday and it was gone. Did I miss anything?

For PAN readers the news was elsewhere, it may be a while before any of the airborne emergency services will require an 787 or A400 to undertake their duties but there was plenty besides to attract the attention. This show has always been derided as too large for helicopters but in this instance there were some major happenings to take on board.

This report is mainly about the new AgustaWestland AW169, some moves in fixed wing and light UAV's but there is more if you read on. The number of commercial market helicopter manufacturers at the show was restricted, in the main the attendees were 'dragged' into the arena by far larger groups, so it was Textron that brought Bell, EADS Eurocopter and Finmeccanica AgustaWestland. More surprising was the presence of the smaller fixed wing exhibitor with both BN and Diamond being among those of limited means meeting a very expensive budget hit. They were not the only ones of limited means to seek to come to market at this very high cost venue; a 'Police' autogyro proposal with very limited chance of success in that market was a prominent exhibitor.



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AGUSTAWESTLAND

The high point in the sector is clearly AgustaWestland throwing down the gauntlet to Eurocopter in the 4.5 ton class – effectively the EC145/BK117 and the EC155/Dauphin class where we might expect Eurocopter to be having visions of their own some day soon – and adding to the jolt to the industry mix by painting the mock-up as a police aircraft complete with the Avon & Somerset Police badge.

The manufacturers claim that the AW169, visually a shortened AW139 with two pilots and up to 8-10 passengers, or two stretchers, in a large unobstructed main cabin accessible via two large sliding cabin doors will meet current and anticipated requirements of commercial and government operators worldwide. It is to meet FAA/EASA Part 29 certification standards, including a full crashworthy structure and seats, engine burst containment and one engine inoperative (OEI) capability in the entire envelope.

The aircraft will incorporate several new technology features to provide safety and operational benefits. A new generation, advanced aerodynamic rotor design is to deliver excellent performance in the most demanding operating environments. The design brings to market extensive use of composites, advanced airframe aerodynamics, next generation navigation avionics and state-of-the-art systems.

It is intended that the yet to appear avionic suite will introduce the very latest technology for maximum situational awareness and all-weather operations, including a full digital NVG compatible cockpit with three 8" x 10" large area displays (AMLCD) with enhanced graphics capability. A 4-axis digital automatic flight control system (DAFCS) with dual Flight Management System (FMS) designed to minimise crew workload allowing single/dual pilot VFR/IFR operations. The avionics suite will also comply with satellite-based navigation, communication and surveillance requirements and have the capability to perform satellite-based IFR LPV (localizer performance with vertical guidance) approaches to maximise round-the-clock utilisation of the helicopter. Safety enhancing avionics such as TAWS, ACAS and the innovative 'Guardian' obstacle detection device can be added to the standard avionic con-



figuration.

The AW169 is five years away – so the current problems in the UK police air support industry may no longer be wholly relevant by the time it is seriously vying for British business. Equally Eurocopter may well have replacements for the existing types on offer by then.

Speaking at the unveiling ceremony Giuseppe Orsi, CEO, AgustaWestland said “We are unveiling the AW169 here at Farnborough because of the real and exciting potential this aircraft will have for the UK in terms of the market and industrially. Our Company’s commitment to the UK industrial base I believe is widely recognised and the AW169 is another opportunity for the UK to support and participate in a major new programme.”

Graham Cole, Managing Director, AgustaWestland went on to say “I am delighted that AgustaWestland in Yeovil is to play an important role in the design, development and production of the AW169. We see a large market for the AW169 and the real prospect of a production line for a AgustaWestland commercial helicopter in Yeovil. He added “ We have already formed a UK parapublic team which will vigorously pursue with the AW169 and our other products, all UK parapublic opportunities. AW169s which are acquired within the UK will be built and supported in the UK and will be key to opening the production line early.”

Following the latest in buzz words the design will embrace environmental issues, with a new generation advanced PW210 turboshaft engines from Pratt & Whitney Canada for maximum efficiency/low emissions and advanced rotor aerodynamics producing low external noise, well below regulatory limits, all designed to make the AW169 an eco-friendly helicopter according to the very latest standards.

Although launched at a UK venue and wearing a domestic colour scheme that suggests a UK police market base the AW169 is very much a world market contender. It is aiming at EMS/SAR, law enforcement, passenger and offshore transport and utility markets and will offer a wide range of equipment including weather radar, FLIR, rescue hoist, cargo hook, searchlight and medical interior. The AW169 is the first brand-new type introduced in its market segment in decades and AgustaWestland forecasts a potential market for almost 1,000 aircraft over approximately 20 years.

The AW169 is designed to fit a hole in Agusta's product line between the AW139 and the Grand. The new model has a design weight of 4.5 metric tons, measuring 13 metres in length and 2 metres wide.

The helo was unveiled with a fixed landing gear, although a retractable version is also under consideration. The landing gear provides substantial ground clearance and the large main wheels are designed to allow operations from uneven and soft surfaces.

One reason for the UK launch is an intention to build parts of the airframe in the UK. Thus giving the UK commercial market its first home built civil airframe since the Westland Whirlwind and Bristol Sycamore of the 1950's. The company hopes to have a home field advantage because the AW169's transmission and rotors are to be designed and developed by the company's Yeovil, England unit. The helicopters sold to any UK government customers would be assembled locally.

Development costs of the AW169 are being covered by AgustaWestland internal funding, but some sort of Italian and U.K. government financial support is actively sought.

As if that was not enough, on the third day of the show AW held a major briefing to a range of potential customers and the media on its future strategy in the airborne emergency services sector. In this instance the AW169 was joined by other products in the company line



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up [AW109 and AW139 in the main] but the message was much the same. AW is facing up to Eurocopter full on. Present at this presentation were some important figures for the future in the UK including Richard Watson of the Kent Police, Ollie Dismore, the now late Police Aviation Advisor, Chris Patten, politician and a number of representatives of UK police aviation units. This was after Ollie's Police Aviation Advisor post had expired.

The product message is not wholly about the airframes and the equipment they may carry, AW is offering a complete support package as an alternative to the airframe purchase. The aircraft industry has long said that it is they who know how to operate aircraft economically and efficiently, the emergency services fight crime, look after the injured and put out fires; it is a major learning curve to select the right airframe and associated equipment and training. The proposed package encompasses the airframe, maintenance [including an hourly rate for engines and airframe] and training. Coincidentally the training package includes just the sort of ground trainer element that South & East Wales ASU have been developing recently. PAN stories covered this in recent editions [July & August].



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The training and support package may not sit well with some customers. It assumes the typical British model of an airframe to take policemen and/or their sensors into the sky. The pilot, engineer and most instructors are commercial and do not fall into the category of sworn officers.

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Ed: Personally I have never understood why you need a sworn aircraft mechanic – do they turn a torque wrench in a particularly law enforcing way? I would not expect one to be available to see my kids across the road!

It is difficult to start to criticize a concept or a mock up so I will not, it is after all a public discussion document at this stage, a Green Paper if you will. Those able to get in on the act early will clearly be able to provide constructive comment on the best position of the equipment and even whether skids, fixed or retractable gear would be preferable. In the current state of disarray that sort of discounts the UK!

The paint scheme chosen was fairly provocative all on its own. A blue and yellow UK police scheme that included the badge of the Avon & Somerset Police was crowned by a nice check pattern on the tail. Apparently no-one at AW had been aware that the check not only looks pretty it actually pretty much signifies it is a McAlpine/Eurocopter UK police helicopter sale. If you go back to Farnborough 1988 the very first police AS355F G-BOOV appeared with a preferred scheme that included black and white checkers that reflected the police hatband of the time. Henceforward most Mac sales to the police included the check on the tail fin, yellow and blue in later years, you will not find the markings on any MD902 or anything not directly related to Macs Sales Department. Anyway, AW have now inadvertently broken that spell so maybe the pretty addition can at last find a wider use!

In the same vein, unconfirmed reports suggest that an inordinate number of negative incidents took place in and around the AW169 mock-up. One group of UK police air support unit personnel from an eastern counties operator, each said to be in full uniform, were allegedly escorted from the mock-up by security staff because they did not have the correct passes with them – actually the original version 'kicked-off' sounds much better fun. Again a quite understandable incident, most of the security staff were imported and probably were not aware what a UK police uniform looks like. Finally [I think, there may be more] a number of important figures associated with future planning are said to have declined to have their photographs taken with the machine. Endorsement by association was not to be on the agenda.

It is anecdotes like these that make a project memorable, and I believe we may be hearing about the AW169 a great deal more.

AgustaWestland selected the Pratt & Whitney Canada PW210 engine to power its new AW169 helicopter in the 4.5-ton class.

“AgustaWestland is a long-time P&WC customer that has been at the forefront of helicopter design for decades,” said P&WC President John Saabas. “By selecting our PW210 engine, which offers the highest power-to-weight ratio and the lowest fuel burn in this market, AgustaWestland will be able to offer its operators improved payload and range, as well as the most environmentally friendly engine in its class.”

The PW210 changed the turboshaft landscape with its low fuel consumption, light weight and compact design. A new-generation engine



1988 the start of it all when McAlpine Helicopters brought their police aviation concept helicopter AS355F1 G-BOOV to Farnborough—complete with the original black on white check marks. (all PAN)



for singles and intermediate-to-medium twins in the 1,000shp class, the PW210's control system features Full Authority Digital Engine Control (FADEC), thus delivering a new standard in ease of operation. ProPilot has ranked Pratt & Whitney Canada number one in customer service for the helicopter market for 10 years in a row.

Pratt & Whitney Canada's relationship with AgustaWestland is in its fifth decade. Since delivery of the first Twinpac engine for the AB412 model helicopter in 1970, AgustaWestland has taken delivery of more than 3,200 Pratt & Whitney Canada engines to power the AW109 Power, AW139, AW119, Grand, Nexus and Grand New model helicopters.

EUROCOPTER

Just as AgustaWestland were a small part of Finmeccanica, arch rival [although they build the NH90 together] Eurocopter and its Eurocopter UK Ltd. subsidiary were represented on the stand of parent company EADS and only obvious because the EC135 destined for the West Midlands Police was the largest item on the stand and more than holding their corner. Currently Eurocopter helicopters hold something of an iron grip on the United Kingdom, with 450 helicopters in operation with over 130 customers. They represent 70% of the country's emergency medical service (EMS) fleet, 75% of the police and law enforcement helicopter inventory, and approximately 80% of the offshore oil and gas fleet. In Europe the numbers are similar, with only Italy showing a significant reversal in those rates in favour of AW.

In the UK they are widely used for pipeline and power line control, as well as for lighthouse maintenance and other important utility missions. Eurocopter's EC135 was the first helicopter used to establish offshore wind farm support in the country. Additionally, 100 Eurocopter helicopters provide significant transport and training capability to the UK military forces..... although it needs to be remembered that a significant number of them are so old that they were originally built in the Westland factory!

The logistic services offered by Eurocopter remain centred on Oxford where completions of new helicopters and rebuilt RAF Puma's are currently the main activity. With the downturn in new-build commercial and emergency services work brought about by the ongoing recession it is going to be a difficult few months as the site scales back from what had been a plentiful series of law enforcement completions to reliance upon the Puma work and day-to-day maintenance.



On-site and off-site support and maintenance to the military and civil customers is a money spinner but it was part of a wider package that was not originally designed to support the whole entity at Oxford.

The Eurocopter message at Farnborough was based on its renowned design and customization capability accumulated over more than 30 years of experience, with what is now Eurocopter UK having become a Eurocopter Design/Completion & Retrofit Centre – creating solutions for all kinds of missions ranging from VIP, police, fire fighting, EMS and utility to military applications. The customer base list looks very good - 23 countries including in the Americas, the Middle East, Japan, China, South Africa, Norway, Italy, Spain and Poland but that is in the past and surviving the immediate future is the problem.

Compared to the other players Eurocopter has been lucky, at least it can look back on having sold a significant number of EC135 and EC145 helicopters in the past two years. Others have not had that success and that is why AgustaWestland is on the offensive now.

A new purpose-built building for Oxford may be on hold but up in Aberdeen a new venture has a 20,000-sq.-ft. logistics and technical support centre is in being providing Scotland providing service support for offshore helicopter operators in close proximity to their operations.

Shigeru Murayama, President of Kawasaki Heavy Industries Aerospace Company (KHI) and Lutz Bertling, President and CEO of Eurocopter, signed a new cooperation agreement for the EC145, a new evolution from the BK117/KB117 helicopter family. After more than 30 years of successful cooperation in the BK117/EC145 programme, the signature will extend the partnership of the two companies by another 15 years, until 2025.

The German-Japanese cooperation started in 1977 with the mutual development of the BK117 helicopter, which had its maiden flight in June 1979. Several upgrades of the BK117 were carried out over the years until, in 1999, the latest development, the EC145 (designated BK117 C-2 in Japan) took off for its maiden flight.

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More than 800 BK117/KB117/EC145 helicopters have been delivered worldwide by the two partner companies who share development and manufacturing, with three final assembly lines: one in Donauwörth in Germany, one in Gifu, Japan and one in Columbus, Mississippi, USA.

UNMANNED

For many years both Paris and Farnborough have advertised UAV flying at the show and Paris actually managed it by flying the Schiebel so far across the airfield that the result was almost pointless. The craft are too small and the crowd line rules too strict for the system to work well.

Farnborough went a little closer to achieving its aim by creating an indoor flying area and hyping it up as a new attraction for 2010. This was an indoor arena for mini-UAV's probably the first prepared indoor flying area of its kind in the UK.

All well and good but I expect it will actually be viewed as very tame in French eyes. Any recent visitors to such as Milipol Paris and GPEC Germany will be aware that the mini-UAV's there are given free rein and fly over the crowd in the hall to exhibit their safety. Unfortunately 'Health & Safety' rules in the UK are just plain daft and a special area complete with outside tennis net defences was decreed.

The event area was under the auspices of the Association for Unmanned Vehicle Systems International [AUVSI] and helping to promote their forthcoming 400 exhibit event in Denver, USA. [Unmanned Systems North America 2010, 24-27 August in Colorado Convention Center www.symposium.auvsi.org].

On the positive side the Unmanned Aerial Systems (UAS) Indoor Flying Display Area in Hall 3 brought some interesting craft to the fore and one particular new one that is exhibiting some very policeman proof features. The new craft looks robust enough to put up with being thrown in the back of a patrol car, being unloved and yet still capable of undertaking the mission weeks later.

Aurora Flight Sciences, Air 2 Air and Bonningtons Surveyors were all participating in the flying displays which took place throughout the industry days from 19-23 July.

PAN was able to see two of the flyers at close hand and they serve to illustrate two ends of the light spectrum.

Air 2 Air was exhibiting the latest version of the DraganFly a craft that is already in use by police in its home territory, Canada, and elsewhere. Lightweight and safe – it is never likely to cause injury to any adult it hits – it is in the same class as such as the MD-4 ISIS and Air Robot quad-rotors and the EMT Fancopter from Germany and a number of other designs. To date the main criticism of this style of craft has been relatively low endurance – typically 30 minutes – but if it is not too windy they offer a cheap [around £30,000] means to search, survey and record a small area from the air.





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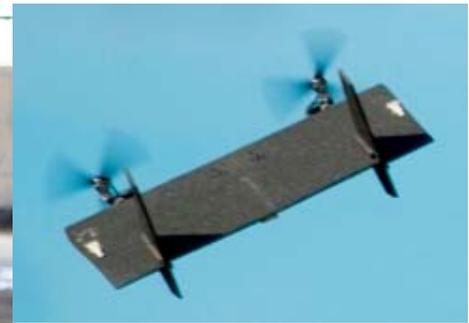
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The Air 2 Air flies well and provides a very stable camera/sensor platform that is easy to handle and maintain. Like many of its ilk it offers a quiet electric powered platform that can stay in the air for around 30 minutes before the power supply is exhausted. All are fairly flimsy platforms and some take some building to get them from the carry case to flight condition. They are not very damage or 'missing part' tolerant.

The next stage up from this type of craft is the foamex aeroplane. Simple and robust there are many designs out there of which the most popular in the UK market are probably the AV Inc Wasp and Raven. This class can usually offer an additional time on station because the flight profile includes hand launched winged flight. Whilst still light an adult being hit by one of these might complain loudly.



©Aurora FS

Which brings us to the new craft in this class and so far it is unique in what it offers. The US manufactured and developed Aurora Flight Sciences Skate UAS is new and still under the final elements of

testing. To place Aurora in perspective, this is the company that is developing the Diamond DA-42 Centaur optionally piloted UAV [a UAV DA42 also in the static park at Farnborough] and have a number of major UAV projects already in service across the world..

Skate is a small UAS product with both military and civilian applications. George Kiwada, the programme manager brought Skate to Farnborough to demonstrate the system to potential launch customers in the international market. Although it has good outside flight properties clearly flight at Farnborough allowed them to show Skate's indoor capabilities as well as its compact size, easy stowage and ruggedness. Made of ruggedized foam, the Skate airframe can be deployed from a standard military pack in seconds, and requires no dedicated large hardshell cases. The design allows replacement of the inexpensive wing panels if damaged, while the more critical sensors and autopilot are reused.

At the centre of the operating concept is simplicity and endurance related to the marriage of a fixed wing platform with the maneuverability and mission flexibility of a vertical takeoff and landing (VTOL) vehicle. Twin independently articulating motor pods allow the Skate UAS to rapidly transition between vertical and horizontal flight and achieve high maneuverability. Transferring from hovering to horizontal wing-borne flight increases the endurance and



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range of Skate to levels characteristic of a fixed wing platform and far beyond those of a traditional VTOL machine. This typically can increase the performance of a quad rotor by 50% even discounting the potential for 'perching' the craft on a roof or ledge to shut down the main power drain – the engines. Aside from the 'perching' option Skate can fly overhead to provide overall situational awareness and target detection. When targets of interest are identified it can descend to street level to give the operator a closer view of vehicles, individuals, or weapons in the hover. This includes the capability to peer into windows, doorways, and courtyards.

In stark contrast to the flimsy tri-quad- and multi-rotors the Skate is a real kickabout project. It is unlikely that many a set of large police boots will accidentally [or intentionally] wreck the flight qualities of the 'airframe' of this craft. The only delicate items are the pair of power plants and they attach by strong magnets and so will break free under pressure. The wing sections are held together by Velcro and the fins simply slot together in a matter of moments and each system purchased is intended to include multiple replacement items. Buy one get two free is how it was put to me by George Kiwada. He also proved the robust nature of the structure by standing on it without discernable damage taking place.

In action, and that was what the demonstration area at the show allowed, the craft sits on the ground and lifts vertically and then it can either fly as a fixed wing for around 45 minutes or hover for 30 minutes. Hand launch is an option which might save some power and extend flight time.

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The flight profile of most craft in this class is controlled by a lap top computer – little training is required as all activities can be set out using waypoints. Once slotted together the craft will take off vertically, undertake its mission be that taking still photos or cine/IR and return to land vertically. All of this can be undertaken by a person with little flight control ability or training – the one pre-requisite probably being that they know the Aviation Authority safety rules for the flight area.

There was a time when the unmanned pressure groups in UK industry were on a roll. Aside from the tiny light craft mentioned above there was BAE Systems with its numerous solutions, Herti, Mantis and the like and ASTRAEA [not to be mistaken for the similarly initialed Californian law enforcement ASTREA] a partnership of the like minded in promoting unrestricted UAV use in civil airspace.

Both BAE and the ASTRAEA group still exist, the latter funded by £30M to undertake a six year programme set to achieve unmanned flight in civil airspace. The industry sponsors were BAE, Thales UK, Rolls Royce, EADS, QinetiQ, Cobham and AOS and a raft of government bodies. This activity is now noticeably muted and clearly accepting that the initial aim of 'free flight' by 2012 has now receded. Equally the Parc Aberporth test flying centre in west Wales is less prominent as both reality and cash flow rule the situation. A few years ago the people behind the testing field were throwing money at shipping in journalists to otherwise low key invitation only events or entertaining them to attract positive words in print but, although the constituent companies continue to negotiate, most of the frenetic activity has been put on hold. It will happen but not tomorrow.

THEY CAN RUN, BUT THEY CAN'T HIDE.



SUPERIOR 24/7 OBSERVATION SOLUTIONS FROM CARL ZEISS OPTRONICS

Not on display in the indoor systems 'cage' was the Cranfield Aerospace (CAe) solution to the autonomous Unmanned Air System (UAS) with vertical take-off and landing capability. Same job description as the Aurora product but a whole new way of getting there. It has been designed to provide ISTAR support for ground troops, special forces operations and counter-terrorism. The VTOL capability minimises the need for ancillary ground based equipment and offers the potential for a true 'perch and stare' capability. The air vehicle is all electric operation, giving a clean, low noise system that requires minimal preparation.

The system is configured as a 1.4m wingspan platform for the refinement of the flight control system and to test a variety of onboard sensors. The vehicle can be scaled up or down to meet a range of operational needs.

The on-going development programme is also addressing the issue of UAS integration into UK airspace, through pioneering and close co-operation with the UK CAA. And unlike Aurora it needs to – this is a lump that will make a mess of your soup if it lands anywhere near it!

Somewhere along the way this picked up the title of being a low cost, autonomous UAV systems intended for operation in regulated airspace. Well that might not be low cost when compared with the Aurora! The system is expected to reach full capability by the end of this year and by then we may know what 'low cost' actually means.

www.cranfielddaerospace.com

Beyond the shores of the UK Northrop Grumman Corporation were highlighting their global security capabilities at the show, including unmanned aircraft systems, defence electronics and performance-based logistics.

Northrop Grumman's unmanned craft were illustrated by full-scale models in the open-air static display area. These are not the thing of police aviation but who is to say what jobs they may get involved in on occasion. Only weeks ago the police were using supersonic Tornado GR4 bombers to track a killer in northern England. No nothing is to be wholly discounted anymore. The models included the Global Hawk high altitude long endurance unmanned aircraft system (UAS) and a full-sized model of the MQ-8B Fire Scout Vertical Unmanned Aircraft System (VUAS). Fire Scout is a multi-role UAS that can carry various payloads, which provide unprecedented situational awareness and precision targeting support, ideal for land and navy forces and regularly linked with adoption by the US Coast Guard which is a law enforcement operation [after a fashion].

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In addition, during the air show Northrop Grumman formally presented a DIRCM transmitter to the Royal Air Force Museum to mark the 15th anniversary of the UK Ministry of Defence development contract undertaken by SELEX Galileo and Northrop Grumman to develop and produce the first ever, life-saving infrared countermeasures technology widely used on RAF aircraft in combat today. Although it had no direct relationship to the PAN market at that time meeting up with the early example of DIRCM in a hangar display at Middle Wallop airfield was one of the first technology items that took my interest in the build up to launching the magazine fifteen years ago.

Making the invisible visible...

Enterprise Control Systems Ltd has developed ground-breaking technology in surveillance and RF jamming disciplines to provide innovative system solutions to counter the latest and ever-increasing military and national security threats.



Founded by Managing Director Colin Bullock in 1988, Enterprise Control Systems Ltd (ECS) has put growth and development at the forefront of its operation, increasing steadily in size over the past 20 years to its current operation.

The team combines some of the most experienced individuals in the business with a graduate training programme that ensures a constant input of new young designers and engineers keen to be among the best in the surveillance and security technology sector.

Two of the keys to the success of ECS, have been the ability to design all products in-house with emphasis on long-term reliability and proven processes that allow maximum control of quality throughout the design.

At its headquarters in Northamptonshire, ECS is today producing fully proven, fourth generation equipment and a growing portfolio of link systems to carry video, data and telemetry signals for use in situation awareness, along with a range of RF Inhibitors to counter Remote Controlled Improvised Explosive Device (RCIED) threats used by terrorists.

Constantly moving forward, ECS opened its own Technology Park to operate alongside its existing engineering and production departments, including a state of the art EMC Chamber for rigorous testing of all its products.

Situation Awareness

Enterprise Control Systems Ltd has been at the forefront of the design of microwave downlinks for fixed and rotary wing airborne platforms. ECS has an excellent worldwide reputation for the supply of COFDM microwave links and is the preferred supplier for secure Downlinks and Uplinks to a number of international helicopter providers.

Applications have been developed to meet the needs of the British Armed forces, police authorities across the UK and specialist security teams including those covering the Beijing Olympics. In 2007 the company was awarded the prestigious Queen's Award for Enterprise Innovation for its COFDM links.

RF Inhibitors



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To complement the KESTREL Family of RF Inhibitors, ECS also produces a range of vehicle-installed jammers, which include FALCON and GRIFFIN for Force Protection (FP) of military, paramilitary and other government organisations.

An essential element of any RF Inhibitor design is the performance of the antenna system. ECS's EMC chamber enables its engineering team to design and meticulously test different antenna configurations in order to provide the best practicable performance against known RCIED threats. In this way, the company has funded the development of an advanced ground plane antenna system for military and commercial vehicles. This focus and attention to detail has resulted in a significant improvement in system performance.



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BN GROUP

The BN Group was displaying three aircraft in the flight line static. The most obvious was G-CHEZ the Cheshire Police BN2B-20 piston engine aircraft with its nose mounted Wescam SX15 sensor turret.

Also on the flight line were N188AM a turbine Islander and G-ORED a Turbine Islander previously used by the Red Devils parachute team but now fitted with a nose mounted sensor pod not unlike the Cheshire aircraft and available for a range of ad-hoc survey contracts. 'Snooping by the hour' one show daily called it.

BN's biggest problem at the moment is the perception that no more aircraft are being built from new and that those airframes coming out of the factory doors are rebuilds. It is not true but the numbers now being produced are at such a low level that few are surprised at the misconception.

BN is now offering aircraft brokerage services to its customers. The Company focus has always been on supplying products and services which support BN's strong manufacturing heritage. The sales team supports a product line which is employed in diverse roles ranging from role equipped aircraft operating in a multitude of surveillance missions through to commuter Islanders operating short haul sectors into unprepared, hot and high landing strips.

BN has, for many years tailored its sales process to specific individual customer requirements. This led, in 2003, to the formation of a maintenance repair and overhaul subsidiary that specialises in the refurbishment of earlier model Islanders, bringing them up to date with some of the latest available modifications, including both airframe and avionics upgrades.

To complement the factory approved pre-owned sales programme, BN is now introducing an OEM approved brokerage service. With the new service, BN offers hangarage, maintenance and demonstration of the aircraft, thereby reducing the cost of sale for the seller. In addition to this, the buyer has the ability to purchase with confidence, safe in the knowledge that the aircraft has been inspected by the OEM.

The most recent addition to the pre-owned stock is a 1990 BN2B-20 Islander [above] which is currently still owned by Cheshire Police. The aircraft is in excellent condition and is immediately available for sale.



If the BN products represent the old school of fixed wing police aviation then Diamond Aircraft products are probably the young upstarts. But there are other manufacturers providing options of course! The contrast is probably all about room and engines. A manned craft really needs something at least the size of the BN2 for crew comfort though the airframe technology is probably lacking. Piston is out and turbine is in – and Diesel is needed but not yet available. The crew space in the Diamond provides some pressure towards pilot only or even optionally manned if long missions are to be contemplated.

DIAMOND



Diamond and their associates had a pretty good week at Farnborough. Every cloud has a silver lining, or so they say and the downturn in public spending plus the re-organisation of police air operations in England and Wales would seem to have resulted in a new interest in the type as the more cost effective way of getting a camera turret into the air and a number of agencies have this aspect in their sights. It's all about price of course and hopefully with both sides having directly opposing aims they will not destroy the golden cow by a mixture of greed and inexperience.



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HAWKER BEECHCRAFT

Hawker Beechcraft Corporation (HBC) were exhibiting some warlike craft in the static park including variants of its trainer the AT-6 and T-6. In addition there were two variants of its venerable King Air twin-engine turboprop, including a King Air 350i, King Air C90GTx and the newer flight inspection variant King Air 350. Venerable by design or not new examples of these craft are seeing continued acceptance as patrol and surveillance machines.

www.hawkerbeechcraft.com

HBC Global Customer Support (GCS) are offering the availability of Max-Viz EVS-1500 Infrared Enhanced Vision Systems for its King Air 200 and 300 series aircraft. Through an exclusive agreement, in-service King Air owners, operators and repair stations can now purchase the EVS-1500 directly from Hawker Beechcraft Parts & Distribution. In addition, the company offers seamless, turn-key aircraft installation through its factory-owned service center network, Hawker Beechcraft Services (HBS). New aircraft buyers can also add the EVS-1500 system to new King Air 200/300 turboprops as a post delivery modification through HBS.

The Max-Viz EVS-1500 system utilises a thermal imaging camera that can be toggled between wide angle and telephoto fields of view by the pilot for display on the aircraft's Pro Line 21 video capable multi-functional display. The system also includes a connection for video capable electronic flight bags and a video distribution amplifier that enables infrared images to be displayed on passenger monitors.

EVS systems improve safety of flight and situational awareness by turning night into day and helping to penetrate haze, light fog, smoke and precipitation 8 to 10 times farther than the human eye can see in both night and day settings. It requires no programming or interpretation and permits pilots to see unlit obstacles during taxi and takeoff. In flight, pilots can use EVS to avoid clouds, fly between layers and note detailed ground features out of the night landscape.

Only days after the show another positive message from the insurance industry was indicating that substantial discount were being offered to craft fitted with Max-Vis.

DYNAMIC

Just down the static park though there was another similar machine from the same stable and this was clearly more in keeping with the 'venerable' title, being an ex-US military cast off with a history of its own and yet at the show to illustrate that some old aircraft never die – they just change their role in life. The King Air was outfitted as an ISR platform featuring a high-power surveillance camera and painted in flat gray.

The Beech came to England with a first-time exhibitor at Farnborough who's story has yet to be told—and yet its work puts its teams in the midst of some of the most compelling news headlines around the world.

Dynamic Aviation are large, they have hundreds of aircraft, but we can be forgiven for never having heard of them for they have been undertaking all the unsung jobs across the United States from oil spill cleanup in the Gulf of Mexico, to the War on Terror and post-hurricane insect control. Dynamic Aviation's work for government and private industry makes it one of the leading international providers of innovative, special-mission aviation solutions but with that work they do not necessarily get widespread recognition.

With a 75-year legacy, the company has one of the largest privately owned fleets of King Air in the world, and can modify those planes into customised aircrafts to support DoD, the Intelligence Community, other civilian US government agencies (for example, departments of Agriculture, Commerce and Interior, as well as state and local governments) and private industry with special-mission support in the areas including fire and disaster management, insect control, and more. The ages of their range of aircraft is wide, from a restored 1940s Douglas C-47 to a heavily modified sensor equipped DHC Dash 8 operated for the US Army and even smaller airliners including the DC-9/MD-80. In the main though the fleet are cousins of the craft they brought to Farnborough, forty years old Beech 65 A90; nominally the King Air.



The company employs approximately five hundred staff and operates from twenty locations in ten countries across four continents.

Their appearance at Farnborough was a chance to introduce a wider customer base to their unique product. Dynamic Aviation president and CEO Michael Stoltzfus was in town as much to learn where the areas of opportunity that Europe might offer, to try and get some media air time.

Headquartered in Bridgewater, Virginia on the Eastern side of the USA Dynamic own more than 150 aircraft and maintain one of the world's largest inventories of Beechcraft King Air parts, operate a heavy maintenance and modification center, engine shop, and privately owned airport [Bridgewater Airpark] that can provide customers somewhere quiet to test equipment, strategies and techniques before deployment.



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SJ30

Many issues ago PAN was reporting on the bright future for what was then seen as a bright future for the Swearingen 30 business jet, and later reporting that a medical interior was pending for the little jet. The jet was 'ahead of its time'... well that was then. But that was two [or was it four] years ago? Anyway at Farnborough the story was that the product... now the Emivest SJ30 based out of Dubai ... of which only a few have yet entered service ... was finally displaying a medical interior.

FLIR SYSTEMS



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FLIR Systems and Elektroniksystem-und Logistik-GmbH (ESG) announced an agreement to enhance product support for German customers. This agreement establishes ESG as an independent service and support facility for the German Armed Forces and the German State Police.

Tasks performed at the ESG/FLIR Fürstenfeldbruck facility will include inspection, overhaul and repair of systems with responsibility for spare parts logistics and the provisioning and supply of spare systems.

The highly skilled work force, and the newly established German hotline service, will greatly improve response time and equipment mission availability. The product support services will also allow ESG to offer to tailor customer specific support contracts that will satisfy any operational requirements.

ESG will provide support for FLIR Systems' products including the UltraFORCE® II and Star SAFIRE® HD technologies.



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BELL HELICOPTER

Bell Helicopter took its display area in its customary position Bell Helicopter, near the main entrance and somewhat in the shadow of the giant red Finmeccanica stand.

The company made a number of major announcements at the show but they were somewhat limited in content primarily in that they related to what most would consider 'old' projects. In the main the civil interest remained with the Model 429 and its success [or otherwise] in the World market; of that there was precious little information. Customers continue to mull over the ongoing recession and the affordability of a new type into a very difficult executive transport market. The utility market is more sure footed but the 429 has yet to recover from the cancellation of its major US EMS sale. The 429 – fresh from a repositioning through Europe from Prague – was at the show in the chalet static park and available for close inspection.

The post show period saw the continuation of a series of flight test opportunities for potential customers and the media based out of the PremiAir facility at Blackbushe, Hampshire. You may recall reports of visits to UK police and utility operators last month.

The editor enthusiastically took up Bell's offer of a back seat ride in the 429 – the sampling pilot was Georgina Hunter Jones the Editor of Helicopter Life – so it was in a way a sample of the TFO's experience of the type. I guess most other write ups will be of the pilots point of view so perhaps I have an opportunity of providing something different.

I do not withdraw any of the detrimental words I have written about the general exterior impression the 429 made on me over the years. There are still aspects I have reservations over, including that low slung tail rotor not so far behind the rear loading doors but hopefully we can forget that aspect and 'go indoors' to sample the beast in flight.

The interior passenger cabin was set out in a manner that allows potential executives to sample both the two-seats and three seats layout and was not therefore typical of either police or ambulance utility seating. The seats were plush and featured a supremely comfortable hide covering but did illustrate that with even the plushiest of seats there is plenty of headroom for those in the rear even with helmets worn.

Aside from the generous feeling of height the whole cabin exuded a feeling of spaciousness and with four of the five cabin seats taken there was plenty of room for all.

The amount of unrestricted view forward afforded the rear observer has long been a matter of divided opinion. Some say that it does not matter but others disagree; it is a fact that the most successful police aircraft extant tend to offer unrestricted views forward from the rear. There is a modern reliance on sensors but still the absence of the all-seeing Mark 1 eyeball is the very sensor a UAV cannot offer.

In the flight test 429 the executive triple seating back-to-back with the pilots restricted the view forward but this was a by-



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product of the sumptuous seating and would not relate to a utility fit. Take away the bulk of the seat squabs and the headrests, replace them with forward facing seating of a more modest specification and the forward view from the rear becomes superb if not best in class.

Equally rearward access was restricted by the seats fitted – the void behind the seats fitted is deeper and more patient friendly than many. In many cases it is a good job that patients are very ill when they are transported by such as the venerable BO105 for it must be daunting to be slid into the tiny space under the engine deck. Once on board access to the lower body of the patient is virtually impossible and this difficulty remains in even later types. Assuming that the bulky role equipment bays to come do not severely impinge on it the space available in the rear of the 429 it should enable crews to work on all parts of a stretcher case with ease.

This is an area where the brochure tends to drift away from reality. In the real world some types can offer the EMS operator a superb platform for picking up and treating patients primarily because the level of role equipment is low.

As soon as you enter the world of either multi-role or pure police operation the space available for the patient dwindles alarmingly. In the UK both the BK117 and the EC135 work well as EMS platforms but the police versions have so much equipment in the rear that getting a patient litter in is problematical. It was this problem that the now sidelined high skids and Macpod solution was designed to overcome.

The ride quality of the 429 is superb and devoid of many of the vibrations associated with rotary wing flight; in particular this is noticeable when holding the aircraft in a tight turn, a factor that will get the vote of many rear seat crew.

The 429 flight was primarily about demonstrating the pilots point of view and as such it was effectively being flown by a [well qualified] novice. Aside from the skills of the two pilots it seems that the 429 has so many flight safety systems that at times it was difficult to demonstrate their 'failure' but clearly from the front end perspective it is a satisfying and safe fly. The performance is pretty good and it is a very pilot friendly design.

And of course it should be all of these things. Its failed predecessor the 427 was being developed alongside the MD902 and EC135 and failed to make the grade through a range of faults including being overweight. This new craft, which also has some weight issues, has ten years of nominally clean paper development on the other pair and so it should be far better than them. The 427 made the ultimate mistakes and Bell will have been able to see from afar the errors that MD and EC made with the earlier rivals. All Bell have to do now is sell the machine.

Currently the aircraft on offer is a twin-engine JAR27 specification craft with skid gear; for the future it might be expected that a single engine version will overcome the continued aversion that the US market has to operating twins and beyond that a wheeled version. The timescales of these remain clouded in secrecy but we might expect the single in the coming year as it is an urgent requirement now.



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Bell is partnering with BLR Aerospace to incorporate its FastFin™ System on the Bell 412EP helicopter.

After a long period out in the cold as only an 'American STC' the BLR FastFin™ System offering a cost effective performance enhancing modification for single rotor helicopters and when installed on the Bell 412EP, it will increase altitude performance providing more tail rotor effectiveness resulting in enhanced low speed and hover controllability.

The BLR FastFin™ System was designed as a tail rotor enhancement with dual strakes along the left side of the tail boom to control aircraft rotorwash and a reduced area vertical fin or FastFin for increased usable thrust. The FastFin™ System benefits on the 412EP include increased takeoff and landing capability and improved crosswind capabilities for the customer an immediate performance enhancement that will allow them to effectively, efficiently and safely complete their mission without changing their helicopter.

Earlier this year, Bell was issued a STC for the FastFin™ System installation on the Bell 412EP, which has been certified by the FAA through Bell Helicopter's Organization Designation Authorization (ODA). The STC includes a Flight Manual Supplement that allows operators to take credit for the resulting performance improvements.

The BLR FastFin™ System kit is available for purchase to the fielded fleet through Bell affiliate Aeronautical Accessories and BLR Aerospace.

Bell Helicopter working in cooperation with Esterline CMC Electronics, has developed and flight tested a new generation global positioning system (GPS) sensor to replace existing high-cost Doppler or inertial velocity sensors used in automated approach-to-hover and hover-hold systems.

This new product is anticipated to be available for installation on the Bell 412EP within the next 12-months with plans to expand availability to other models.

The Bell-CMC low-cost ground velocity sensor is a fraction of the cost of previous technologies. Designed to work with the existing autopilot systems it provides significant SAR safety enhancements at an affordable price.



The Gippsland GA-8 Airvan is selling well across the world and is currently promoting a greater market share. The backdrop for the tiny craft this time out was the newly flown Airbus Military freighter.



The Boeing 787 visited the show ground from Sunday to Tuesday so PAN missed the opportunity to capture an in house image of the new airliner formatting with two Spitfire fighters in the skies over Farnborough
[FI image]

ORDER ROUND UP

As with most shows the organizers want to show that it was a forum where large orders were signed even though they are mostly stored up for the event rather than actually falling in that week.

On this basis they were able to point to over \$47 billion dollars of orders & 120,461 show attendees by the last Trade Day of the event. The order value was on par with 2006 but almost half of 2008.

Although there were signs of some cost cutting the 2010 show was sold out with an increased number of exhibiting companies (1450) compared to the 2008 show (1393). This year's event saw good engagement from decision-makers with 11 UK Government ministers, as well as ministers from overseas plus 70 delegations from 44 countries, in attendance. With over 120,000 visitors on trade days and 160,000 expected on the public weekend this will put 2010 almost on a par with the total numbers for 2008, which were 285,000.



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The Airborne Technologies Tecnam Multi Mission Aircraft demonstrator seems to have been everywhere in Europe this year.



In among the military projects was the latest artists impression for the replacement AW EH101 AEW version of the venerable Sea King AEW [left]. Whether this will see the light of day against a background of deep cuts is open for debate.

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There may be a recession on but there are wars to be fought too. This armed Air Tractor AT-802 was first featured in PAN last year at the Paris Air Show. Now the news is that it has taken start up orders for the type but it is unclear whether this will be for conventional war or simply in the 'heavy' policing role against the drug runners. [PAN]



GYROJET

And finally to a project that many will see as a pipe dream.

The PR suggests that the police ‘may soon operate’ this resurgence of the autogyro and the colour scheme suggests that policing may be the primary purpose of this craft. Others further suggest that the craft might be used for covert surveillance missions—but in that case the covers blown and the markings did it.!

This craft restyles the autogyro into a thing of beauty as a Manned Airborne Surveillance (MAS) platform and is being developed by Gyrojet based in Derbyshire in the UK Midlands. The two-seater Scorpion S3 autogyro has been designed for the intelligence, surveillance and reconnaissance (ISR) market, but could also be modified for use by the film, entertainment and commercial sectors.

Company founder and pilot Barry Jones was impressed with the reliability and performance of autogyros following an *attempt* to fly around the world in one several years ago and has been to great lengths to promote the S3 throughout the UK. By placing his case at every forum in the land including Parliament.

He has an uphill struggle even with the current desire by politicians to save money. The quickest way to save money is the remove the element that costs money and that is not the aircraft. It is the crew that costs the money.



At a technical level some of the reasons he has not been wholly successful lie in the fact that his target market gave up similar craft in 1939 and have now moved away from each of the primary features the craft offers, single engine and piston.





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