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AERO INDIA 2011 OFFICIAL DAILY

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[inside]

Dassault Rafale to display its flying prowess

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Aero India 2011
It's Show Time!

BY **VISHAL THAPAR**

Three notable recent events have set the stage for the eighth edition of Aero India 2011. One, the single-biggest deal in aviation history for commercial jets, struck by Airbus with India's largest low-cost airline, IndiGo, for 180 A-320s at $15.6 billion. Two, the induction of the C-130J Super Hercules in the Indian Air Force. And three, the announcement of India's Defence Procurement Procedure 2011, and a concomitant Defence Production Policy.

The presence of 675 exhibitors from 45 countries underlines India's position as one of the largest aerospace markets in the world. There's been an 11-fold increase in display area since 1998; the show has witnessed a 75 per cent growth in area over the previous edition in 2009. For the first time, civil aircraft will outnumber military aircraft on display. This marks a gradual shift from the overwhelmingly military theme of Aero India. This edition has a special focus on civil aerospace.

India now ranks ninth in the world's civil aviation market, up from 12th place in 2006. India's passenger travel sector is growing at 25 per cent a year. Growth in this sector is expected to stay ahead of the global average till 2025.

In the sector of space, India is amongst only six nations in the world capable of satellite launches. The removal of export controls on the Indian Space Research Organisation by the US should give further impetus to the development and operation of satellites, launch vehicles and remote-sensing equipment.

India's defence procurement spending is expected to go up to $42 billion by 2015, including $19.5 billion for capital acquisitions. The Indian Air Force is being beefed up to 42 squadrons by 2022. India has signed up with Russia for the fifth generation fighter aircraft; this could yield an order for up to 300 futuristic fighters. The global tender for 126 medium multi-role combat aircraft is an advanced stage of consideration. The induction of force multipliers like AWACS and mid-air refuellers will be stepped up. The dedicated special operations C-130J has joined the IAF fleet.

Increasing regional security challenges for India put a higher demand on effects-based aerospace operations and strategic airlift capability. Other than preparedness to face conflict, there are issues of energy security, trade protection and emergency assistance to friendly countries in terms of soft and hard power. A potent aerospace capability demands an indigenous industry to go hand in hand.

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C-130J Inducted by IAF

TOGETHER WITH THE RAISING OF NO. 77 SQUADRON, 'VEILED VIPERS', IAF INDUCTS THE FIRST C-130J-30 SUPER HERCULES AIRCRAFT INTO SERVICE ON FEB 5, 2011

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What to expect at **Aero India 2011**

BY **AIR MARSHAL (RETD.) B.K.PANDEY**

Aero India 2011 commencing February 09 will have close to 700 companies participating which will include around 50 per cent from abroad which will include aerospace majors from about 20 countries, including the US, UK, France, Germany, Belgium, Italy, Spain, Russia, Israel, Brazil, Ukraine and the Netherlands. Surprisingly, the civil aviation sector will have a larger presence as compared with military aviation in terms of the number of aircraft on display.

The Boeing Company will showcase a broad range of aerospace capabilities including the F/A-18E/F Super Hornet, C-17 Globemaster III, AH-64D Apache, CH-47F Chinook and Airborne Early Warning & Control (AEW&C). There would be large-scale models, interactive displays, a P-8I mobile console, and an F/A-18E/F Super Hornet simulator with a next-generation cockpit. Boeing will also project its range of best selling and futuristic commercial airplanes.

Lockheed Martin will not only showcase its latest delivery to the IAF – the C-130J Super Hercules, but will also display the F16IN Super Viper with added glamour of bollywood star Shahid Kapoor in the cockpit. For the IAF, of greater interest would be the F-35 Simulator and the likely offer of the aircraft to the IAF and the Indian Navy when developed. Other contenders for the MMRCA contract will also be present.

Embraer will be present at the expo to display the Phenom 100, Phenom 300, Lineage 1000 and the latest executive jet – the Legacy 650, which was certified in October 2010. Northrop Grumman Corporation will highlighting its industry-leading range of capabilities in intelligence, surveillance and reconnaissance including airborne early warning and control systems for maritime reconnaissance, fire control radars and unmanned aerial vehicles. Of particular interst will be the E-2D Advanced Hawkeye and the multi-role electronically scanned array (MESA) radar.

From Israel, Rafael Advanced Defence Systems will showcase full range of solutions for locating, detecting, identifying and neutralising threats as well as pin-point solutions. Israel Military Industries will display the Delilah ground launched loitering guided missile, the MPR500, multi-purpose rigid bomb, the IFB500, improved fragmentation bomb and IMI's new Spectral IR flares. It will also present the Red Sky 2, very short range air defence system. The Indian indigenous effort apart from the Tejas, IJT and Dhruv, will include the newly developed Light Combat Helicopter from HAL. •

Continued from page 01

The Defence Procurement Procedure 2011, released by Defence Minister A.K. Antony last month, aims at broadening India's defence industrial base. It emphasises self-reliance, with a larger role for the private sector. Broadbasing the scope of defence offsets to include civil aerospace and internal security is a push to enable India emerge as an important link in the international supply chain. SMEs are to be a key link in this chain.

Minister of State for Defence MM Pallam Raju has declared that India will sign offsets contracts worth $10 billion in the next five to ten years.

The Karnataka government, which has earmarked over 900 acres of land near the Bengaluru International Airport for development of aerospace industries, is participating as an exhibitor at Aero India for the first time.

The issue of limits to Foreign Direct Invesment in defence industry appeares to have been opened up again. Backed by strong endorsements from the Ministries of Finance and Home, the Ministry of Commerce & Industry is reportedly seeking a final view of the Ministry of Defence on raising the FDI limit from 26 to 49 per cent.

With 63 participating entities, the US continues to be the largest exhibitor at Aero India, followed by France, Germany, UK and Russia. Of the 95 aircraft on display, 47 are foreign. Among the prominent aircraft to be seen at Aero India for the first time are the French Rafale and Swedish Gripen fighters and the US' Weather Hercules, famous as the Hurricane Hunter. The internationally acclaimed aerobatics team, Flying Bulls, will perform for the first time.

There are new theme pavillions for UAVs and SMEs. 70,000 business visitors have registered to attend. 1,75,000 general visitors are expected. Welcome to the show! •

SP's Aviation Editor and airwarrior Bhatia to check out F-16IN

Bollywood actor Shahid Kapoor is undergoing rigorous training to fly the F-16IN Super Viper at Aero India 2011. This may help the actor play the role of an air force pilot in his next movie Mausam with utmost perfection. But for Air Marshal (Retd) V.K. Bhatia, Editor, *SP's Aviation*, flying the Super Viper would be a nostalgic trip into the past.

The Air Marshal retired from the Indian Air Force (IAF) in 2002 after four decades of service to the nation and the last he flew the F-16 was in the mid-1990s when he was an Air Vice Marshal. And now after a gap of eight years of flying a fighter plane, during the eighth edition of the Aero India Air Show in Bengaluru, the Air Marshal will fly the advanced version of F-16, the F-16IN.

The Air Marshal has more than 5,000 hours of flying experience on all types of fighter aircraft, but mostly on single-engine fighters and was conferred Vir Chakra in both the 1965 and 1971 wars against Pakistan flying the Mystere and Su-7, respectively. •

US Commerce Secretary **Gary Locke heading major delegation**

The US Commerce Secretary Gary Locke is heading a major business delegation to India, particularly visiting the Aero India International Air show. One of the agendas of the delegation is to impress on the Indian aerospace and defence sector the commitment levels the US can go with regard to different programmes.

The delegation will press for US fighter jets and other advanced technology products. The secretary is leading 24 US companies including aerospace and defence contractors, Boeing, Lockheed Martin and nuclear equipment suppliers GE Hitachi Nuclear Energy, Westinghouse Electric Company, a division of Toshiba Corp, Transco Products, NuScale Power and Exelon Nuclear Partners.

Boeing and Lockheed Martin have already acquired a toehold in the Indian market with impressive deals for maritime reconnaissance aircraft and military transport carriers respectively. •

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Indian Air Force inducts C-130J
Super Hercules tactical airlift aircraft

Together with the raising of No. 77 Squadron, named 'Veiled Vipers', the Indian Air Force (IAF) inducted the first C-130J Super Hercules aircraft into service at IAF's Hindan airbase, today. The squadron will have all of six aircraft after their phased arrival by end 2011.

At an induction ceremony held in the airbase, Defence Minister A.K. Antony handed over the keys of the aircraft to the commanding officer of No. 77 Squadron, Group Captain Tejbir Singh, in the presence of Chief of the Air Staff, Air Chief Marshal P.V. Naik, marking its formal induction. The event was also attended by Defence Secretary, Pradeep Kumar, Vice Chief of the Air Staff, Air Marshal N.A.K. Browne, Air Officer Commanding-in-Chief, Western Air Command (WAC), Air Marshal D.C. Kumaria and other senior IAF officials, including personnel of the newly raised squadron.

US Ambassador to India, Timothy J. Roemer, Chief of Staff (CoS) of USAF, General Norton A Schwartz, US Embassy officials, Lockheed Martin Corporation officials, manufactures of C-130 aircraft were among others present at the ceremony.

Adopting 'kill with stealth' as their motto, the tactical airlift aircraft will be able to undertake quick deployment of 'Special Forces' in all weather conditions, including airdrops and landings on unprepared or semi-prepared surface even in complete darkness. Capable of undertaking low-level air-to-air refueling to enhance its range, rapid forward basing of personnel and equipment in emergent situations would be one of its multifaceted roles.

The Super Hercules inducted was flown to India by the pilots of the newly formed squadron from USA. IAF pilots and personnel underwent training at various USAF bases including at the Lockheed Martin complex in Atlanta. The second aircraft is expected in first week of March, this year.

The IAF aircraft will make its debut appearance at the Aero India 2011 at Bengaluru. •

*Number affected globally by climatic crises by 2015 – projection from oxfam.org.uk

Airbus Military looking at Indian offsets

BY **R. CHANDRAKANTH**

Senior Airbus Military officials are on a whistlestop tour of India talking about the offset opportunities that exist with the A330 MRTT aircraft. While not commenting on any commercial aspects of the Airbus Military programmes in India, the officials, however mentioned that they were awaiting a response on the RFP for the next generation tanker/transport aircraft for the Indian Air Force.

Airbus Military's Head of Market Development, Didier Vernet and Vice President, Media Relations, Barbara Kracht, said "We do not know what the status of the RFPs is, but we know we have a better product." Didier said Airbus Military "always proposed offsets" and mentioned the offset programme in Australia wherein Qantas Airways is converting an A330 aircraft.

Giving details of A330 MRTT, Didier said it was a versatile strategic transport aircraft, having one mission but two roles, and this without requiring any modifications. "It can carry 300 troops in the passenger configuration plus 8 NATO military pallets and two containers." The range was 4,500 nm with 40 tonnes payload and 6,500 nm with 20 tonnes payload. The air-to-air refueling aircraft could carry 111 tonnes of fuel, addressing the needs of various types of aircraft – be it transport or fighter. Presently, the customer base was Canada, Germany, Australia, Saudi Arabia, UAE and the UK with an inventory of 28.

Pitching the A400M against Boeing C-130J (which the Indian Air Force will be getting deliveries soon), Didier said the A400M was a "tactical aircraft with strategic capabilities" and had substantial cost advantages for fleet acquisition. The aircraft can go twice the distance of C-130J with the same payload. Hence, buying 10 units of A400M would be equivalent to buying 20 C-130J, thus giving cost advantages on a life-cycle basis. The C-130J has a payload of 20 tonnes while the A400M can carry 37 tonnes. Another feature giving the aircraft an edge was the number of wheels it had to facilitate soft-landing with heavy payloads. The aircraft was versatile adapting well to military, civil and air fuelling roles.

Asked when it would enter the Indian market, he said "first we need to finalise the agreement with the launch Nations regarding the contract amendment. Only after that, will we be able to determine the export slots.." The

deliveries to the launch nations would commence in 2013, while civil certification is expected for the end of this year . Overall the programme is now back on track and progressing as per schedule.

On Airbus Military's light and medium aircraft (C212; CN235 and C295), Didier said he was unaware of the developments with regard to the Border Security Force having cancelled the orders for two aircraft. "The aircraft was tested and evaluated over a year ago. We do not know what is happening internally (in BSF) and we have not heard from them." Barbara added "We do not want to enter into any kind of speculation, but want to state here that the aircraft is fully compliant with the requirements of the BSF."

Barbara, however, stated that Airbus Military had done "well" even in the face of recession. "Last year we were able to sell 21 light and medium aircraft." •

Mark Kronenberg, Vice President, International Business Development, Boeing Defense, Space & Security (BDS) spells out the plans of BDS in India and elsewhere. Here is what he has to say…

Boeing eyeing $31 billion Indian defence market

As economies rebound and governments recapitalise worldwide, Boeing Defense, Space & Security is seeing growing international interest in our products and capabilities, especially in Asia and the Middle East.

International sales have increased from seven per cent to 16 per cent of overall BDS revenue in the past five years. We are hoping to further grow our international business to 25 per cent of total revenue by 2013.

Boeing Military Aircraft has won contracts for additional F-15SGs for Singapore and F-15Ks for South Korea. Australia was the first international Super Hornet customer and with 15 already delivered, the Royal Australian Air Force is very happy with the capabilities of its new fighter. Boeing has received its third multi-year procurement contract from the US Navy for 124 additional F/A-18E/F Super Hornet and EA-18G Growler aircraft and there are strong indications that even more aircraft will be needed.

We recently had additional international orders for the C-17 from the United Arab Emirates and the United Kingdom, and we hope to conclude a sale to India of 10 aircraft in the near future. Our rotorcraft products have sold very well, with strong international interest in the CH-47 Chinook, AH-64D Apache Longbow and our latest offering, the AH-6i.

There is a growing demand for the training, upgrade and maintenance capabilities of our Global Services and Support business, with the UK Chinook through life customer support programme a model example. Boeing Network & Space Systems is finding growing international success with recent sales of new commercial satellites, and interest in the Vigilare command-and-control and HF Mod communications systems developed offshore by Boeing Defence Australia.

Overall, we are in a very good position as present and potential customers value the depth and breadth of our portfolio.

India is a key market for Boeing and we will continue to invest in the country for the long-term. I recall, back in 2005, when I made my first trip to India for the Aero India air show. Things were moving quickly after the US State Department gave US defence contractors the green light to do business in India. Shortly afterwards, India issued a request for information (RFI) for 126 new multi-role combat fighters. We have come a long way in five short years.

In 2009, we won the biggest US defence deal with India with the multibillion-dollar sale of eight Boeing P-8I long-range anti-submarine aircraft, with more likely in the future. The Indian and the US Governments are negotiating a letter of agreement on the purchase of those 10 C-17 Globemaster III military transports. We have positioned our F/A-18 Super Hornet in the medium multi-role combat aircraft (MMRCA) competition. We are in competition for India's heavy-lift and attack helicopter contracts and completed field trials for our CH-47 Chinook and AH-64D Apache offerings last year.

Going forward, we see opportunities in the areas of cyber warfare, homeland security, unmanned systems, and space and support.

In the area of cyber, we acquired Argon ST and Narus in 2010. Narus includes a significant presence in Bangalore. Homeland security is a key priority for India, and we are evaluating what we can offer from our portfolio. As we expand our presence in India, services and support will start playing a key role in areas such as maintenance, modifications and upgrades, integrated logistics and training systems and services. In the arena of space, with our legacy in space exploration design, development and integration, we believe that we can provide value-added assistance to India's national programme.

These products and other potential defence requirements represent a $31 billion market opportunity for Boeing in India over the next 10 years. We're very well placed to become India's defence supplier of choice. But sales are only half the India success story. Boeing is forging partnerships with Indian companies to develop an indigenous aerospace industry.

We believe that expanding our local presence and investing in international markets is the key to long-term success. The key is offering the right solutions to our customers and partnering with local industry. You see this in the mutually beneficial partnerships we have forged locally with Hindustan Aeronautics and Bharat Electronics, and worldwide with the likes of Elbit, Finmeccanica, Israel Aircraft Industries, Korean Aerospace Industry, and QinetiQ. In other cases, we have invested in joint ventures or acquired subsidiaries such as Narus.

While BDS is relatively new to India, Boeing Commercial Airplanes has a 70-year legacy here that we have been able to leverage to build new relationships. Partnering with India gives Boeing access to new ideas, intellectual talent and other capabilities. The partnership will help India build its aerospace industry and become self-reliant and a key contributor in the global supply chain.

The offset policy is one way to help India achieve its objectives and we welcome the Indian Government's very progressive efforts in this regard. Boeing has demonstrated a 100 per cent success rate in meeting offset requirements around the world and is offering India the expertise and knowledge that has been gained from these projects. Currently, Boeing has more than 60 active industrial programmes worth more than $18 billion in 24 countries around the world. Boeing has completed programmes totaling more than $41 billion in nearly 40 countries over the past 30 years, with a 100 per cent success rate. •

Boeing to showcase breadth of capability

Boeing Company is showcasing a broad range of aerospace capabilities and will feature among other strengths the multirole F/A-18E/F Super Hornet strike fighter – with a full weapons payload.

"We are excited by India's growing engagement as one of our key aerospace customers and supplier partners," said Dinesh Keskar, President Boeing India and Vice President Boeing International. "The breadth and depth of our commitment is demonstrated though our companywide participation in defence and civil aviation at Aero India 2011."

Boeing's exhibit in Hall E will feature large-scale models, interactive displays, a P-8I mobile console, and an F/A-18E/F Super Hornet simulator with a next-generation cockpit. Other defence capabilities to be highlighted include the Boeing C-17 Globemaster III, AH-64D Apache, CH-47F Chinook, Airborne Early Warning & Control (AEW&C), ScanEagle, and weapons. The company also will feature commercial airplanes such as the Boeing 787 Dreamliner, 777, 747-8 passenger and freighter series, and best-selling Next-Generation 737.

Through flying demonstrations held twice daily during the show, Boeing will present the capabilities of its advanced, combat-proven, multirole F/A-18E/F Super Hornet strike fighter—with a full weapons payload—and conduct customer orientationflights. Visitors also will see the C-17 Globemaster III military transport and making its international debut, a representation of the Super Hornet International Roadmap, which will be on static display. •

The C-17 Globemaster III is the world's most capable airlifter, able to perform the full range of both tactical and strategic airlift requirements. Whether it's transporting out-sized cargo and personnel or delivering humanitarian relief into virtually any environment, the C-17 provides one-of-a-kind mission flexibility. A world of capability and value, ready now.

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HAL on Expansion Mode

The Chairman of HAL, Ashok Nayak in an interview talks about restructuring plans and the role private sector can play in taking the aerospace industry to the next level

***SP's Show News* (SP's) : HAL's turnover in 2009-10 was about Rs. 11,500 crore and profit before tax of Rs 2,680 crore. What is the target for 2010-11 and are you on course?**
Ashok Nayak (Nayak): The target is Rs 12,600 crore and we have been on track so far. We will be achieving the target with regard to both production and financials.

SP's: You have said that HAL's strategy is to go aggressive on exports,abut there was a dip in export revenues from Rs 430 crore in 2009 to Rs 200 crore in 2010? What is it like for 2010-11?
Nayak: In 2009, we touched Rs 430 crore boosted by the export of helicopters to Ecuador. The projection for 2011 is about Rs 250 crore. We are primarily looking at Latin America where they are all praise for the helicopter. We will relaunch the marketing after Aero India. The new markets we are targeting include Columbia and Peru. Helicopters of HAL are in operation in Mauritius and Maldives.

SP's: With doubling of aircraft production/acquisition there would capacity expansion, could you outline HAL's expansion plans?
Nayak: Capacity expansion will not happen overnight. The existing infrastructure will not suffice for the new inductions including MMRCA. We have to build infrastructure now for which we need massive investments and we are working in that direction. We will have to have a different factory for the light combat helicopter LCH. So also, there is need for a new infrastructure for the light utility helicopter (LUH), which presently is on the design board. The first prototype is expected to fly in 2012 and the requirement is 187 units.

SP's: With regard to MMRCA, which contender is the friendliest one to current infrastructure?
Nayak: The current infrastructure just cannot match. Each aircraft is different, accordingly infrastructure is created. Having dealt with Jaguar, Sukhoi 30 and other aircraft, we believe we can have an appreciation of something new.

SP's: On the fifth generation fighter aircraft (FGFA) what will be HAL's contribution?
Nayak: We have signed the contract for the preliminary design of the FGFA with Russia's Rosoboronexport and Sukhoi. It will involve the production of 200-250 aircraft. We are in the preliminary stages and the entire manufacturing will follow, led by HAL. And HAL on its own cannot do everything. We certainly need active involvement of the private industry.

SP's: What is the outlook for 2011?
Nayak: I will be retiring. I want to go out a happy man. We had the first flight of LCH in March 2010… that is a culmination of tremendous efforts on everyone's part. Such instances make you happy. I believe that one should learn from ones past experiences…I won't call it mistakes. We had a number of issues with the ALH….on engine, transmission etc… but whatever learning we had from ALH, the LCH programme will be a smoother one. •

Saab signs up with CIM

Saab has signed a contract with Indian manufacturer – CIM, for the manufacture of machined components for the Boeing 787, which moves production of aerostructures from the US to India. The contract is a key step in Saab's continual work to lower costs.

"Our presence in India, and in particular the establishment of manufacturing operations in a competitive low-cost environment, is vitally important for us to meet our business objectives," said Stefan Rönnmark, VP and Head of Sourcing & Supply.

"The need to have access to low cost suppliers in order to fulfil customer demands is something that is happening throughout the industry. You have to continually work to lower costs without compromising on quality and performance."

This is the third work package to be placed with CIM in Bangalore. They are already manufacturing components for the A320 and A380 programmes on Saab's behalf.

"CIM is a relatively small company, yet it has excellent machinery, tremendous commitment and a strong customer focus. Thus far, they have lived up to our expectations and they have shown that they really do want to strive ahead and develop a partnership with us," said Stefan Rönnmark.

For a long period Saab has regarded India as a strategic country and after a thorough analysis of companies, Aerostructures initiated a co-operation with Indian suppliers a couple of years ago. Apart from the co-operation with CIM Tools, we have also placed and industrialized work packages with two other Indian companies with the ability to produce metallic and composite work packages.

"To establish a supply chain in India has not been without headaches, but given the position we have reached today, the long and winding road has given us immense knowledge and experiences from the companies, the setting-up of a supply chain, the culture and the opportunities and problems you meet. The new contract with CIM Tools is a good sign of the potential we see with India and its supply chain and it is a vital step in our next step in the development of our co-operation," he added. •

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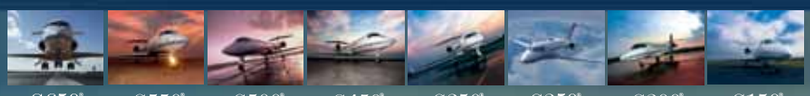

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Thundering Typhoons

Alenia Aeronautica gung-ho about Indian market

India's global aspirations and its desire to develop an autonomous aerospace industry is in line with its growing international ambitions. To support its homeland defence requirements and its international ambitions, India is now pursuing specific technological capabilities. Indian aeronautics sector offers good prospects for Alenia Aeronautica that is currently promoting its own solutions. The C-27J tactical transport aircraft produced by Alenia Aeronautica, whose special features (multi-functionality and take-off and landing capability on short and semi-prepared runways) make it particularly fit to satisfy the requirements of the Indian Air Force.

The C-27J is a twin-engine turboprop tactical transport aircraft with state-of-the-art technology in avionics, propulsion and systems. It provides high performances, high cost effectiveness, extreme operating flexibility and it is the only aircraft of its class offering interoperability with heavier airlifters. The C-27J is capable of performing many missions such as transport of troops, goods and medical supplies, logistical re-supply, MEDEVAC (Medical Evacuation), airdrop operations, paratroopers' launches, search and rescue (SAR), humanitarian assistance and missions in support of homeland security.

The C-27J has been ordered by the Air Forces of Italy, Greece, Bulgaria, Lithuania, Romania, Morocco and by the US. Army and US. Air Force. The aircraft has also been selected by Slovakia. The C-27J is equipped with modern avionics and efficient propulsion system (Rolls Royce AE2100-D2, assuring a 4,650 HP). The C-27J, thanks to a loading system perfectly compatible with the one of the C-130 family, can carry pallets weighing up to 4,700 Kg. and high up to 2,20 metres.

The new avionics system, whose architecture is completely redundant to increase the level of mission security and reliability, permits to operate in any environment condition and in any operational scenario, thanks to excellent performances and a low flight-crew workload. The C-27J is capable of taking off from and landing on unprepared strips, less-than-500 metres long, with maximum take-off weight of 30,500 kg; it may carry up to 60 equipped soldiers or up to 46 paratroopers and, in the air ambulance, 36 stretchers and 6 medical assistants. The large cross section (2,60 metres high, 3,33 metres wide) and high floor strength (4,900 kg/m load capability) allow heavy and large complete military equipment to be loaded. The C-27J can, for example, transport fighter and transport aircraft engines, such as C-130, Eurofighter Typhoon, F-16 and Mirage 2000, directly on their normal engine dollies without further special equipment.

The C-27J has been designed, developed and tested as a true military aircraft using military standards to produce a robust, safe and performing aircraft, and has obtained Military Qualification Certificate. At the same time the C-27J is airworthy to civil standards, as witnessed by its certification from the Civil Aviation Authority.

Alenia Aeronautica is also interested in the requirements expressed by the Indian Navy for a new medium-range aircraft for maritime patrol, for which the company proposes the ATR 72ASW (Anti-Submarine Warfare). The ATR 72ASW – highly effective middle-size anti-submarine aircraft, with competitive acquisition and operational costs – is a special version of the ATR 72, turboprop regional aircraft made by the Italian-French ATR joint venture (Alenia Aeronautica/EADS). The ATR 72ASW is the only modern, middle-size aircraft available in the market, equipped with state-of-the-art mission sensors, capable of carrying out anti-submarine warfare tasks. The typical missions of this version include vessels search and identification, SAR, drug, smuggling and piracy control, environmental control (pollution by oil and chemical substances) maritime patrol roles, economic exclusive zone patrol (fishing, off-shore platforms), and anti-submarine warfare.

Alenia Aeronautica has achieved a remarkable success with the ATR (the regional aircraft made Alenia Aeronautica and EADS): around 100 of these aircraft are in service with the major national airlines of the country (ATR opened a Customer Support Centre and, in partnership with Air Deccan, a training centre in Bangalore).

Typhoon

Alenia Aeronautica participates, through the Eurofighter consortium, in the MMRCA (medium multi-role combat aircraft) programme for the supply of 126 combat aircraft to the Indian Air Force in which the Eurofighter Typhoon is competing, with EADS Germany leading the campaign. The Eurofighter Typhoon is a supersonic twin-engine multi-role aircraft for air defence, interdiction and air superiority, and with a production agreement for more than 700 aircraft is the Europe's largest military aircraft programme. •

Eurofighter for India's security

Eurofighter partners affirm to transfer technology to strengthen India's independence and self-reliance in indigenous defence production

As India's medium multi-role combat aircraft (MMRCA) selection is moving into its decisive phase, the manufacturers of the Eurofighter Typhoon are confident of the prospects for the world's most advanced swing-role combat aircraft. The multi-role fighter aircraft combines the best combat effectiveness with low cost of ownership through its operational life. Its manufacturers offer India a unique industrial partnership fully supported by the four Eurofighter partner countries Germany, UK, Italy and Spain.

During intensive field evaluation trials in India and Europe, Eurofighter Typhoon has demonstrated its combat superiority and operational flexibility, both of which would strongly enhance the IAF's ability to protect India. As the youngest weapon system in the MMRCA competition, Eurofighter Typhoon provides a long-term growth potential through further upgrades and enhancements. The aircraft will be in service for the next 40 years. This ensures that India could actively participate in its future development and evolution.

Being the most modern combat aircraft currently available on the world market, the Eurofighter Typhoon was designed from the outset to achieve the best cost of ownership over the entire time of its operation. The aircraft's operational effectiveness results in substantial cost savings for the air forces: Much less aircraft are required to deliver the same combat capabilities. "The combination of unrivalled combat effectiveness with low cost of ownership makes Eurofighter Typhoon the best value for money aircraft", says Bernhard Gerwert, CEO of Cassidian Air Systems and Chairman of the Supervisory Board of Eurofighter GmbH.

Cassidian, the EADS company for Security and Defence, which is leading the Eurofighter campaign in India, has submitted a comprehensive offset proposal. Its industrial offer, however, goes beyond conventional offsets. The Eurofighter consortium combines Europe's leading defence companies: Cassidian in Germany and Spain, BAE Systems in the UK and Finmeccanica in Italy. These technology leaders and their four governments propose a unique industrial partnership which will make India a full participant in the global Eurofighter programme.

The four Eurofighter Partner Countries are willing to transfer its technology. This infusion will strengthen India's defence industrial self-reliance considerably. It will also lead to the creation of more than 20,000 highly-skilled jobs in India in diverse fields and generate massive spin-off effects in industries like electronics. An Indo-European collaboration will go far beyond India's borders: The Eurofighter consortium's worldwide footprint and market access will foster Indian high-value exports of military and non-military equipment. The involvement in the Eurofighter Typhoon programme would provide India with economies of scale that may be leveraged in future export.

In addition, India´s participation in the Eurofighter Typhoon programme would represent a step change in the EU-India relationship. A deeper strategic partnership with the four Eurofighter Partner Countries would intensify cooperation in all fields: political, economic and technological. India's relations with the Armed Forces and defence industries from Germany, the UK, Italy and Spain will reach a new level with all partners bound to the mutual commitment of ensuring security for India. •

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'We see an opportunity to supply cost-effective equipment'

Orlando Jose Ferreira Neto
Commercial Vice President
Embraer Defense and Security

***SP's Show News* (SP's): Can you briefly outline the main features of and division of responsibility in the project undertaken jointly between Embraer and Indian DRDO for AEW&CS platforms?**
Orlando Jose Ferreira Neto (Orlando): Basically DRDO is responsible for the mission systems and Embraer is responsible for the platform. The platform also includes the aircraft modifications in order to fulfil the mission systems' requirements and physical integration. The main improvements in the platform are the inclusion of air-to-air refuelling equipment (AAR), additional electrical power generation and a cooling system designed to cope with the demands of the Indian mission system under development by DRDO. Regarding the physical integration of the mission systems, one can notice not only the obvious AEW radar antenna, but also systems such as IFF, Satcom and others.

SP's: There are how many similar systems on the ERJ 145 platforms, in which countries, and for how long have they been in operational deployment? What has been the experience so far?
Orlando: ERJ 145 platform forms the base of Embraer intelligence, surveillance and reconnaissance (ISR) family comprising AEW&C, maritime patrol and airborne ground surveillance (AGS) variants. There are currently 15 EMB 145 ISR aircraft operating in three different continents. Ten of them are of the AEW&C variant, similar to the one being developed by DRDO in India. The Brazilian Air Force operates five of these AEW&C aircraft. The Hellenic Air Force operates four of them, and the Mexican Air Force operates a single aircraft. Brazil is the sole operator of the AGS variant and has three aircraft in its fleet. As for the MP variant, two aircraft are operated by Mexico, which also operates a C4I system acquired from Embraer.

Brazil operates its ISR fleet, both AEW&C and AGS, since 2002. They are part of the Amazon Surveillance System (SIVAM) programme. Acting together with the Super Tucano light attack aircraft, the EMB 145 ISR aircraft form an umbrella that is deterring drug smuggling, border infiltration, guerrilla and other illegal activities in the region.

In Mexico, the aircraft started operations in 2004 and Greece started operations with its EMB 145 AEW&C fleet in 2009.

SP's: In what way will the ERJ 145 based AEW&CS be different from or complement the IL76 based AWACS that the IAF has already acquired?
Orlando: The EMB 145 AEW&C from DRDO makes use of indigenous mission systems developed by DRDO/CABS. The Il-76 AWACS operated by the Indian Air Force is equipped with imported mission systems. We don't have information enough to compare those two systems, nor know how the Indian Government is planning to make use of both assets.

SP's: What are the advantages or disadvantages of a fixed antenna as planned to be installed on the ERJ145 vis-a-vis a rotating antenna?
Orlando: The fixed antenna is a much more reliable and lighter solution. The radar beam is steered electronically with no need of moving parts, making it sleeker and therefore more adequate to install in a smaller and more economical platform as the ERJ 145. Due to the high technology embedded, the radar performs as well as the old and bulky rotating ones. Nowadays, with the maturing AESA technology, rotating antennas are losing space.

SP's: How is the modification of the three Embraer 145 jets progressing in Brazil? When is the first aircraft expected to undertake its maiden flight?
Orlando: The work is progressing as planned. There are currently two aircraft already assembled and under modifications to receive the missions systems. The third one is currently being assembled. Embraer is proud to inform that the aircraft will be presented soon and will make its maiden flight in the first semester of this year.

SP's: Embraer caused a fuss in the defence market when it announced the development of a new military airlift, the Embraer KC-390. Is it progressing well? What is the current status of the KC-390?
Orlando: The KC-390 programme is progressing on schedule. Currently, Embraer is selecting the main suppliers for the aircraft, which is set to have its maiden flight in 2014.

SP's: Embraer is also in the counter-insurgency aircraft market. Does Embraer see a growth in this segment?
Orlando: Yes. The defence scenario today is such that more and more we witness the armed forces being employed in mission against terror, piracy, insurgents and criminal activities like smuggling and even environmental crimes. On the other hand, most armed forces inherited means designed during the Cold War to be effective in that scenario and that are not effective to deal with current demands. We see an opportunity to replace the legacy equipment, supplying countries with cost-effective equipment that are designed to meet the demands of the 21st century.

SP's: What changes can we expect with the new Embraer Defense and Security unit?
Orlando: Embraer Defense and Security will have a broader spectrum of activities, beyond aircraft and airborne systems. We see a company that will greatly increase its capabilities and in doing so is open to partnerships in many different businesses. •

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Hercules arrives, Super Viper next?

As Lockheed Martin celebrates the arrival of C-130J Super Hercules and its induction in the IAF, the defence major has avowed that it is in India for the long-haul. The Chief Executive of Lockheed Martin India, Roger Rose gives details of the roadmap

***SP's Show News* (SP's): Now that Lockheed Martin has commenced delivery of the C-130J Super Hercules, what is the strategy of the company with regard to securing the much larger IAF tender for the medium multi-role combat aircraft (MMRCA)?**

Roger Rose (Rose): Lockheed Martin's current focus is on disciplined programme performance. The on-time delivery and execution of the C-130J Hercules project is extremely important to the company. The first Hercules will be delivered to the Indian Air Force in the first quarter of 2011.

With regards to the IAF tender for 126 MMRCA, Lockheed Martin has fielded the F-16IN Super Viper which is a unique new fighter sharing a heritage with the world's only fifth generation fighters—the F-35 Lightning II Joint Strike Fighter and the F-22 Raptor. Evolutionary integration of fifth generation technologies makes the F-16IN the most advanced fourth generation fighter in the world today. We feel we have done very well during the field trials and have a fully compliant solution.

This ultimate fourth generation fighter has been tailored exclusively to meet or exceed all of India's MMRCA requirements. The F-16IN is the right choice for the IAF and is ready for integration into India's infrastructure and operations now. The ability of Lockheed Martin Aeronautics to incorporate the latest technologies into the F-16IN is the key to expanding mission roles and improving combat capability, therefore creating the most effective multi role fighter today. With a robust upgrade capacity and the continuous insertion of technology, the F-16IN can be readily equipped with emerging capabilities throughout its lifecycle.

The Super Viper has the most advanced technologies and capabilities available today in the international market. It is truly the ultimate fourth generation fighter with all it brings to the battlefield.

SP's: Can you enlighten us on the progress of the induction plan of the six C-130J Super Hercules, logistic support and offset obligations under the contract?

Rose: Lockheed Martin is very proud of its partnership with India and its ability to deliver on time and on budget. As part of this programme, more than 130 IAF personnel will undergo training on operating and maintaining these aircraft. Majority of them would have completed this training before the first aircraft arrival in India. In addition, the package includes, spares, ground support and test equipment, servicing carts, forklifts, loading vehicles, cargo pallets and a team of technical specialists who will be based in India during a three-year initial support period. Also included in the package is India-unique operational equipment designed to increase special operations capabilities.

The remaining four aircraft will be delivered in early summer and two in late summer of next year.

SP's: There have been reports that indicate requirement of the IAF for additional six C-130J Super Hercules. Has Lockheed Martin received any formal proposal or indication in this regard?

Rose: The first six aircraft are part of the foreign military sales (FMS) between the Government of USA and India. An option for additional six aircraft was part of the original agreement signed between the two governments. It is our understanding that the IAF is very happy with the way Lockheed Martin has performed on the programme so far. Experience of the IAF personnel operating and maintaining these aircraft while undergoing training in USA has also been very encouraging and we are looking forward to the Indian Government placing a letter of request for additional six aircraft in very near future.

SP's: Has there been any progress on the possible sale of the MH-60R multi-role helicopter that the Indian Navy was considering for procurement?

Rose: The US Navy was notified that its FMS offering of its newest, frontline MH-60R helicopter was non-compliant with the multi-role helicopter request for proposal (RFP). We continue to look for a path to offer this world-class capability to the Indian Navy and Indian Coast Guard.

SP's: What are the other major products that Lockheed Martin is planning to showcase at Aero India 2011?

Rose: During Aero India, Lockheed Martin will showcase the F-16IN Super Viper, the most advanced fourth generation fighter aircraft as well as the C-130J Super Hercules airlifter. In addition, Lockheed Martin will also highlight advances in it's portfolio of combat-proven, precision engagement and targeting systems including the javelin anti-tank guided missile, Sniper, Apache Systems, Arrowhead, Hellfire II, DAGR and PAC-3 Missile.

SP's: What are the chances for the IAF to acquire the fifth generation combat aircraft from the US such as the F35? Would such a possibility be contingent on IAF selecting the F16IN Super Viper as the MMRCA?

Rose: It is an Indian Air Force decision on what combat aircraft acquisitions are made in the future. We feel the F-16IN Super Viper is the right choice for the Indian Air Force base on the requirements set forth in the RFP.

SP's: Has Lockheed Martin responded to Indian Navy's requirement for a carrier-based aircraft?

Rose: We have responded to the Indian Navy's questions concerning the F-35.

SP's: How are you tackling the sensitive issue of offsets obligations in defence contracts? What are your views on the expansion of scope for offsets brought out in the recently released Defence Procurement Procedure (DPP) 2011 and what effect it could have in discharging your offset obligations? Do you see any further scope for refinement in this regard?

Rose: The DPP is an evolving policy document and it is very encouraging that the Indian Government is sensitive to changing environment and continually making adjustments to meet its security objectives. We at Lockheed Martin are here to adapt to Indian procedures and deliver best value within the laid down framework.

SP's: What is the company's policy with regard to transfer of technology?

Rose: Lockheed Martin operates within the limits set by our partner countries. We see no limitations in operating within the current FDI guidelines.

SP's: What are the future strategies and business plans for consolidating/expanding the Company's defence business in India?

Rose: Lockheed Martin is committed to a long-term partnership in technology development, manufacturing and strategic collaboration in third markets with Indian companies from both the public and private sectors. Its broad-based portfolio can address important Indian requirements in defence, security and delivery of vital public services. Lockheed Martin has an unmatched performance record in establishing partnerships with industry. Lockheed Martin is committed to working with its industrial partners and Indian defence industry to develop long-term, high-value projects that bring technology and sustainable business to India. •

FMS does not mean single vendor system: Prins

"The United States Air Force is negotiating on the foreign military sales (FMS) programme. FMS does not mean single vendor system and direct commercial sales (DCS) does not necessarily mean many competitors in the race," clarified Oriville Prins, Vice President, Business Development, Lockheed Martin.

At a press conference organised to celebrate the delivery of India's first C-130J Super Hercules on February 4, Prins said that the C-130J is already in service with 11 nations. "The C-130Js are custom made for different countries and the configuration is country specific," said Prins.

The officials said that the Indian Air Force' (IAF) response has been very positive. "We worked together with the IAF on many aspects including the training," said Abhay Paranjape, Director, C-130J programme, Lockheed Martin. "Certain changes were made in the aircraft to suit the requirements of the IAF, but there was no increase in cost or delivery time. We were rather ahead of schedule." said Prins. (An article 'Ahead of Schedule' on the delivery of Lockheed Martin's C-130J to the IAF was published in SP's Aviation January 2011 issue.)

Speaking about the C-130 programme, Lorraine Martin, Vice President, C-130 programme informed that the company has 63 direct customers for the programme. "The C-130J is in service with 72 countries including 63 direct customers. There is a backlog of 87 aircraft with 15 on order," she said. •

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Boeing and Northrop Grumman bidding for US ballistic missile systems

The Boeing Company and industry partner Northrop Grumman Corporation have submitted their joint proposal for the competitive development and sustainment contract for future work on the Ground-based Midcourse Defense (GMD) element of the United States' ballistic missile defense system.

"This development and sustainment contract proposal is backed by the full commitment of Boeing, Northrop Grumman and all of our team members," said Dennis Muilenburg, president and CEO, Boeing Defense, Space & Security. "We have been privileged to have been partners with the Missile Defense Agency through the development and deployment of the GMD system, and now with Northrop Grumman, we will bring to GMD over 50 years of experience in sustaining and modernizing the Minuteman ICBM weapon system. We look forward to continuing that partnership in this next phase of the GMD program."

The Boeing-Northrop Grumman GMD proposal submitted to the Missile Defense Agency brings together a broad industry group, selected for extensive heritage GMD capability and relevant expertise, to deliver the best offering for the future of the program. The team has worked for the past year to prepare the expansive proposal, which includes an overview of past performance and outlines future program support. •

Efficient and proven

Airbus Military A330 MRTT – the market leader

BY **SUCHETA DAS MOHAPATRA**

The A330 multi role tanker transport (MRTT) is the low risk solution for air forces across the globe. Based on the successful A330-200, a medium-to long range, twin aisle, twin engine, commercial aircraft of the Airbus family, its design combines the proven fly-by-wire control system and advanced avionics with the most up to-date manufacturing techniques enabling the lowest operating costs.

Due to begin operations with the Royal Australian Air Force (RAAF) in 2011, the A330 MRTT offers unique military strategic air transport as well as air-to-air refuelling capabilities. It is based on the latest medium- to long-range, twin-aisle, and commercial aircraft of the Airbus fly-by-wire family, the A330. More than 1,000 of these have been sold to 80 customers and some 650 are operated all around the globe, ensuring easy support and many years of commercial life ahead.

The A330-200 wing is large enough to hold all the fuel needed to make the A330 MRTT a high performing tanker without requiring any additional fuel tanks and so avoiding any reduction in its ability to carry passengers or cargo.For air-to-air refuelling missions, the A330 MRTT is provided with the advanced Airbus Military aerial refuelling boom system (ARBS), to refuel receptacle-equipped aircraft such as the F-16 Fighting Falcon, F-35A Lightning II, or even the A330 MRTT itself (when fitted with an UARRSI). The ARBS is the only new generation boom which allows the fastest fuel transfer, greatly reducing the refuelling operation time. Refuelling can be done at any altitude up to 35,000 ft while cruising at speeds between 180 kt and 300 kt.

The A330 MRTT can also be used on towline mission, whereby it can be on station at about 1,000 nm/1,600km from its base for some four hours 30 minutes, with the capability to provide 50 tonnes of fuel for needing receivers. Or it can provide 60 tonnes/2,170 pounds of fuel while remaining on station for five hours at 500 nm/800 km from base. With its true wide body fuselage, the A330, MRTT, is ideal to carry any kind of military or humanitarian payload on strategic missions. Its cabin is designed to ensure optimum seating configurations in every class, maximising both capacity and comfort. It can accommodate a large variety of layouts, ranging from 253 seats in a three-class configuration, through 298 passengers in two classes, or more than 300 in a single class layout. The A330 MRTT is also designed to carry a payload of up to 45 tonnes/99,000 lb. Thanks to its optimised fuselage cross section, the cargo can conveniently be carried under-floor in any of the standard containers and pallets, ranging from the LD1 to LD3 and LD6, as well as the standard 88x108 inch 463-L NATO military pallets, which can be loaded onto the aircraft through a proven semi-automatic cargo loading system. Some of the cargo can also be carried as non-palletised "bulk". The main deck cargo compartment can also be used for cargo, as required, when the aircraft is specified as a freighter.

The A330 MRTT can also be used for medical evacuation as its cabin can easily be converted to accommodate up to 130 stretchers. It is offered with a customised suite of military avionics and a mission system integrated with civil avionics. A comprehensive survivability package including a Defensive Aid System, fuel tank inerting system and an armoured cockpit are all available. •

Rafael's Iron Dome for asymmetric threats

Iron Dome is the only dual mission counter rocket, artillery and mortar (C-RAM) and very short range air defense (VSHORAD) system. Iron Dome is an affordable, effective and innovative defense solution (CR&AM Class) to the asymmetric threats of short-range rockets, (up to and over 70 km), and mortars as well as VSHORAD missiles system (up to 10 km) against traditional air defense targets.

The Iron Dome system has been selected by the Israeli Defense Ministry to provide the lowest layer of Israel multi-layered air and missiles defense umbrella. The system was chosen as the best system, offering the most comprehensive defense solution from a range of threats, in relatively short development cycle and low cost per kill.

Iron Dome is an advanced defense system, designed for quick detection, discrimination and interception of rockets and mortar threats with ranges of up to and over 70 km and against aircraft, helicopters, UAVs, PGMs. The system is effective in all weather conditions, including low clouds, rain, dust-storms, or fog. The Iron Dome provides robust, yet selective defense. Its ability to discriminate between threats headed towards the defended area and those that will fall into the sea and open field reduces costs and limits interceptor launches in vain.

A single launcher can protect against a medium-size city from rockets and mortars.

Iron Dome uses a unique interceptor with a special warhead that detonates the targets in the air within seconds. The system can handle multiple threats simultaneously and efficiently.

The Iron Dome system includes the following components: Mobile detection and tracking radar – Multi-Mission Radar (MMR); Battle Management & Control Unit; Sensors; Mobile Missile Firing Unit (MFU) with 20 Tamir interceptors.

It meets requirements such as all weather operation; effective and selective handling of salvo threats aimed at the "Defended Zone"; threat warhead is detonated on its trajectory; threats are destroyed outside the defended area, during their flight; ignores targets designated outside the defended area zone; capable of continuous operation day-night and in all weather conditions; can be connected to high echelon air situation picture; enables classification of target threat families; battery with all its components is transportable and moveable; and interceptors are maintenance free with life cycle of 15 years. •

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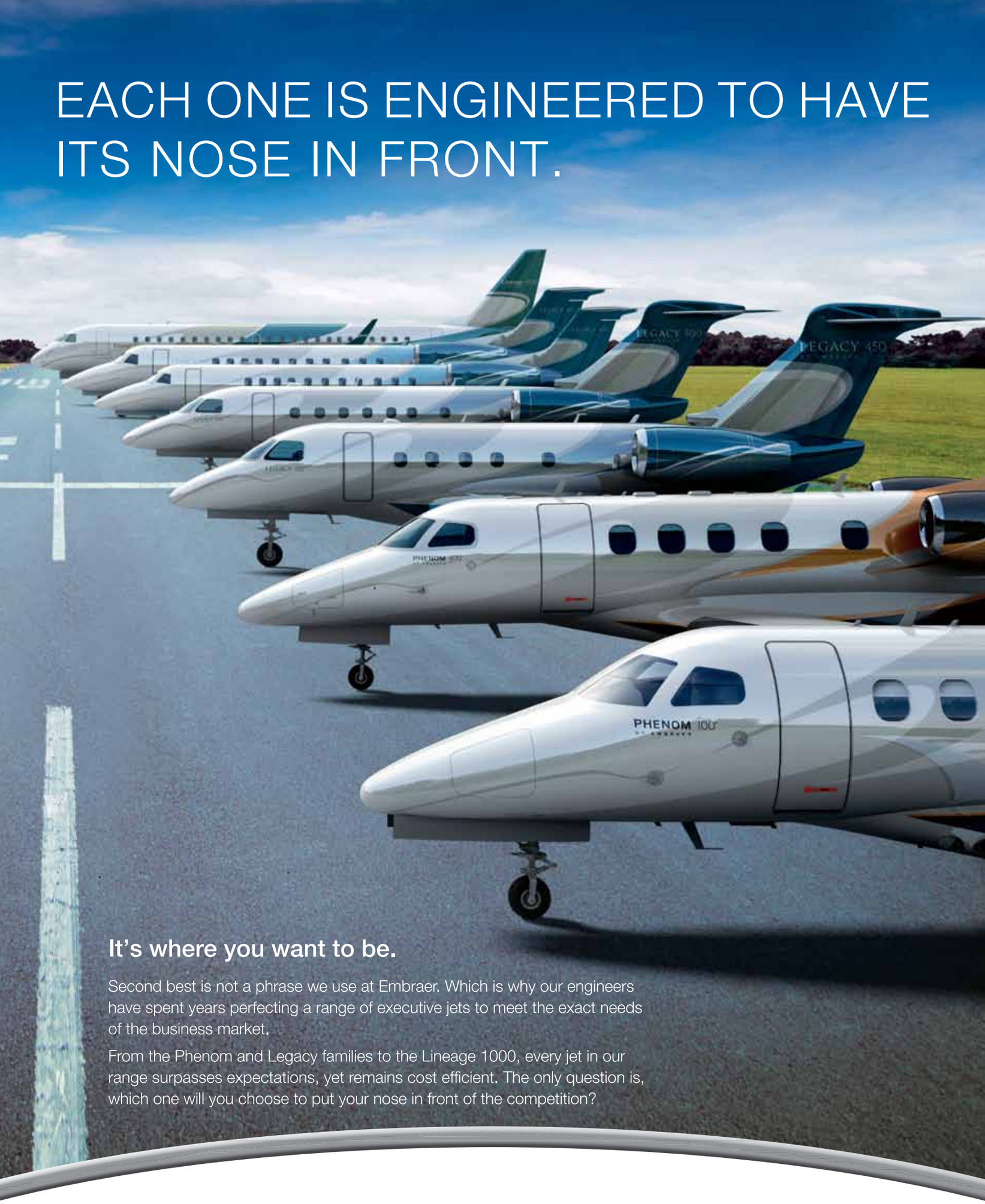

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A global technology leader in the areas of intelligence, surveillance and reconnaissance (ISR); integrated air and missile defence; missile systems; radar/sensor; command, control and communications (C3); and homeland/internal security, Raytheon is showcasing a broad range of capabilities for the Indian military community at Aero India 2011.

"Raytheon offers innovative solutions and industry leadership to help to provide and develop current and future capabilities for India's defence safety and security. Raytheon's intelligence, surveillance and reconnaissance systems provide technologically advanced solutions to locate, identify and track targets. Raytheon's tactical airborne systems provide next generation tactical sensor solutions to protect aircrew and aircraft," said Walter F. Doran, President, Raytheon Asia.

"For the medium multi-role combat aircraft (MMRCA) competition in particular, Raytheon has a number of sensors and weapons products which would equip the Indian Air Force with critical capabilities," he added. "Our weapons are reliable, supportable and have growth and spiral development," said Harry Schulte, Vice President, Raytheon Missile System's air warfare systems product line. "Raytheon's air-launched weapons are regarded as the affordable global standard for interoperability and integration," he added.

Schulte, whose product line manufactures the advance medium air-to-air missile, AIM-9X Sidewinder, high speed anti-radiation missile, joint standoff weapon and pave way, went on to explain why this provides the defenders of the world's largest democracy an advantage.

"Raytheon's weapons are recognised by the Global Air Chiefs as exceeding safety margins," Schulte said. "Reliable means that Raytheon weapons will work every time the pilot pushes the launch button. We know this because the premier air forces of the world have test- fired these weapons thousands of times under the most exacting conditions to ensure that they work exactly as advertised," he added. For the F/A-18IN in the MMRCA competition, Raytheon offers an integrated sensor suite that is comprised of the APG-79 active electronically scanned array (AESA) radar, ALR-67(V)3 advanced radar warning receiver (RWR), ALE-50 towed decoy, and the ATFLIR targeting pod, which comprise baseline equipment on frontline Block II Super Hornets for the US Navy F/A-18E/F and Royal Australia Air Force F/A-18F aircraft. For the F-16IN, Raytheon offers an advanced electronic warfare suite and towed decoy system.

The APG-79 AESA radar can provide Indian aircrews with advanced capabilities that allow war fighters to detect and identify targets at longer ranges than ever before, thus delivering critical air superiority when it matters. This long-range capability, along with a host of other cutting edge technologies, allows pilots more time to process, share, and assess information before critical decisions are made.

"The power of Raytheon's innovative sensor technologies has revolutionised combat capabilities and significantly improved situational awareness for aircrews," said Jim Hvizd, Vice President, International Business Development, Space and Airborne Systems. "Raytheon's APG-79 AESA radar technology, combined with our other key sensors, electronic warfare systems, advanced targeting pod and sophisticated weapons, offer the Indian Air Force incomparable tools in support of their requirements for today and the future," he added.

"At Aero India 2011, we intend to put some additional focus on our SeaVue XMC radar family," said Neil Peterson, Director, Business Development for Raytheon's intelligence, surveillance and reconnaissance business. The SeaVue XMC radar has been acknowledged for detecting stealthy self propelled semi-submersible crafts.

"At Raytheon, we're ready to bring this capability to India where maritime and coastal surveillance are of paramount importance. This versatile airborne surveillance radar can also be used for commercial and military applications, including customs drug enforcement, border surveillance, exclusive economic zone monitoring, illegal traffic monitoring, and oil spill detection," added Peterson. •

US to sell Harpoon missiles worth $200 mn to India?

The US Defense Security Cooperation Agency has notified the US Congress of a possible Foreign Military Sale (FMS) to India of 21 AGM-84L Harpoon Block II missiles and associated equipment, parts and logistical support for a complete package worth approximately $200 million.

India has requested a possible sale of 21 AGM-84L Harpoon Block II missiles, 5 ATM-84L Harpoon Block II Training missiles, captive air training missiles, containers, spare and repair parts, support and test equipment, publications and technical documentation, personnel training and training equipment, US Government and contractor representatives' technical assistance, engineering and logistics support services, and other related elements of logistics support.

India intends to use the missiles on its Indian Navy P-8I Neptune maritime patrol aircraft which will provide enhanced capabilities in effective defense of critical sea lines of communication. India has already purchased Harpoon Block II missiles for integration on the Indian Air Force Jaguar aircraft and will have no difficulty absorbing these weapons into its armed forces.

The prime contractors will be The Boeing Company in St. Louis, Missouri, and Delex Systems Incorporated in Vienna, Virginia. Details of a potential offset agreement in connection with the proposed sale are not known as of the date of this transmittal. •

Textron to supply Sensor Fuzed Weapons to IAF

Textron Defense Systems, an operating unit of Textron Systems, has announced that it has received a contract from the US Air Force to produce 512 CBU-105 Sensor Fuzed Weapon (SFW) units for the Government of India under a Foreign Military Sale agreement. The total value of the contract is $257 million with $126 million funded immediately.

"We believe that SFW is truly the best area attack weapon in the world. Through a process of rigorous research, testing and analysis, we have created a weapon that is reliable, safe and meets current clean battlefield standards," says Ellen Lord, senior vice president and general manager of Textron Defense Systems.

The Textron Defense Systems' combat-proven SFW is unique among munitions systems because of its redundant technologies for clean battlefield operation. SFW has been engineered to eliminate the risk of unacceptable harm to civilians or non-combatants. As a result, it is the only air-delivered weapon that meets the strict unexploded ordnance (UXO) criteria for cluster munitions — requiring less than one percent UXO in intended operational environments — set forth by the US Secretary of Defense in June 2008.

The first and only combat-proven clean battlefield weapon of its kind in the US Air Force inventory, the SFW contains Textron Defense Systems' BLU-108 submunition and smart SkeetTM warheads equipped with dual-mode passive infrared and active laser sensors. If a Skeet warhead does not detect a valid target over its lofted trajectory, one of its three safety modes will activate. The first two modes enable the Skeet to self-destruct after eight seconds from launch or within a 50-foot (15 meters) altitude above the ground. Combined, these two features deliver greater than 99 per cent reliability. The Skeet's third mode automatically renders the Skeet inoperable via self-deactivation within minutes of hitting the ground. •


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The C-27J is a field-proven tactical airlifter with advanced Cargo handling systems and safety features that make it an ideal partner for operational theatres across India. A dedicated military airlifter interoperable with legacy equipment, it's also suited to disaster relief and transfer of troops and materials in hot zones such as border areas. The C-27J, truly unconditional support in all conditions.
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Span Air gets first **Bell 429 into India**

Bell Helicopter, a Textron Inc. company, has announced the first delivery of a Bell 429 helicopter to a customer in India. The announcement took place at the biennial Aero India air show where the company has the aircraft on display.

The customer, Span Air, is headquartered in New Delhi and is one of the region's most prominent air charter operators, offering a mix of jets and Bell helicopters. The addition of the new Bell 429 to Span Air's fleet will allow the operator to offer customers superior speed and range, the ability to land in remote areas, along with a luxurious and expansive cabin.

"In every way, the acquisition of the Bell 429 for operations in India makes excellent business sense," said Capt. Sudhir Malik, COO, Span Air. "The aircraft's performance capabilities make it ideal for the challenging operating environment presented by India's weather and geography. The 429 is also equipped with all the latest safety features and offers the legendary reliability of Bell helicopters, something we have already experienced with our other Bell aircraft."

The Bell 429, the world's newest and most advanced light twin-engine helicopter, has been designed, built and certified to the most stringent airworthiness standards.

"The 429 is a highly adaptable helicopter that was designed for very demanding operators looking to address a wide assortment of mission requirements," said Larry Roberts, Senior Vice President, Commercial Business, Bell Helicopter. "Customers in India will find the 429 to be intelligently-designed, robust, have ample power margins, very fast, impeccably appointed and more spacious than any other helicopter in its class. Customers here also have access to the world-renowned Bell Helicopter customer support network."

India currently has two Bell Helicopter customer service facilities, Airworks India and Deccan Charters, to support the more than 100 Bell helicopters operating in the country.

Prior to arriving at Aero India, Span Air's 429 helicopter completed a cross-country demonstration tour that gave key prospective customers the opportunity to experience the aircraft first hand. In Asia Pacific, the Bell 429 has already found customers in China, Japan, Korea, Indonesia, Philippines, and New Zealand, in addition to India. Interest in the aircraft has come from private companies, including corporate transportation and utility missions, as well as civil and military government agencies. •

Elbit top in helos upgrades

Elbit Systems' primary modernisation activities include conversions of utility and assault helicopters into multi-role platforms, upgrading existing utility and attack platforms, supplying cutting-edge systems for latest-generation aircraft and providing full maintenance and support packages.

Elbit Systems continues to implement its operational experience into next-generation systems and technologies offering innovative integrated solutions. Excelling in its ability to provide total solutions going beyond systems and products to long-term maintenance, technical support, full integration, installation and product training, Elbit Systems teams with local industries and original platform manufacturers.

Elbit Systems commands a broad range of core technologies, systems and products that include mission computers, multifunction displays, and electro-optical payloads with FLIR, CCD and laser range finder/laser designator (LRF/D). Additional offerings include advanced glass cockpits, flight management systems and mission management systems incorporating digital maps. Three generations of innovating and integrating helmet mounted display systems (HMDS) in both fixed and rotary-wing aircraft have established Elbit Systems as a global leader in the HMDS field. The HMDS business has been a key growth engine and its pre-eminence in the field extends to a broad range of platforms. A full range of high quality HMDS are operational in over 11,000 fixed- and rotary-wing aircraft in the air forces of more than 30 countries. •

Eurocopter AS550 C3 Fennec armed to the teeth

Having confirmed its position as the world's no. 1 helicopter manufacturer in the civil and parapublic market once again in 2010, with a turnover of 4.8 billion euros; orders for 346 new helicopters; and a 49 percent market share in the civil and parapublic sector, Eurocopter products today account for 33 per cent of the total world civil and parapublic helicopter fleet. Eurocopter hopes to replicate such success in the India market as well in the next few years.

Aero India 2011 will be the latest among several airshows in India to attract participation from Eurocopter. The current edition, however, is especially significant since this event will play host to the coveted AS550 C3 Fennec helicopter that would be on display in India for the first time. With full armament on board, this helicopter has recently successfully completed field trials for the tender floated by the Indian Ministry of Defence to acquire 197 reconnaissance and surveillance helicopters for the Indian Armed Forces. In addition to the Fennec, Eurocopter will also showcase models of the AS565 Panther, the military version of the Dauphin, which is best suited for the requirements of the Indian Coast Guard. The Panther is used for roles including combat assault, fire support, anti-submarine warfare, anti-surface warfare, search and rescue, and MEDEVAC.

Another model presented to be presented by Eurocopter would be the EC135 in Helicopter Emergency Medical Services (HEMS) configuration. The EC135 is a helicopter that has been especially 'designed' for HEMS, complete with large cabin, rear and side access to easier stretcher loading, protected tail rotor and lowest noise signature of the world. As a natural progression in its relationship with India, Eurocopter recently inaugurated its Indian subsidiary in October 2010, reinforcing its support and services network throughout the country, and further developing the company's four-decade relationship with Indian industry. Eurocopter is the world's first and only major helicopter manufacturer to establish a subsidiary in India, which underscores its commitment to the development of this market. Eurocopter India Private Limited is headquartered in New Delhi and has an existing facility in Bangalore for the management of industrial activity. Eurocopter India will address current and future operators' needs for maintenance and support by offering responsive, cost-effective solutions for spares management, technical documentation, warranty claims and training. It will also develop a country-wide MRO network building on existing local assets and partnerships within India.

In the coming years, Eurocopter's focus in India will be on developing the HEMS, law enforcement and utility markets. The EC135, EC145 and AS350 Ecureuil family are perfectly tailored to India's emergency medical services and law enforcement duties. The AS350B3 is the recent success story of Eurocopter in India as the helicopter has been chosen by all the main Indian operators to become the preferred single engine helicopter. The only helicopter in the world able to land on the top of the mount Everest and rescue alpinists at 6900m meet Indian operational needs in passenger transport, corporate service and tourism.

In the military segment, Eurocopter is currently a front-runner in the race for 197 Reconnaissance and Surveillance Helicopters for the Indian Army and Indian Air Force. It is also looking forward to the RFP for the requirements of the Indian Navy and Coast Guard. So far, an RFI has been issued and Eurocopter believes that the AS565 Naval Panther, the military version of the highly successful Dauphin, is the perfect answer to India's requirements. •

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AgustaWestland attractive range of maritime helicopters

AgustaWestland is promoting its complete range of maritime helicopters at Aero India this year. Having recently delivered AW139 helicopters to the Malaysian Maritime Enforcement Agency, Japan Coast Guard and the Republic of Korea Coast Guard the Company sees growing potential for the AW139 and its other maritime helicopters, not only in India but elsewhere in the region, due to an increasing focus on maritime surveillance and security.

With the widest range of maritime helicopters of any manufacture, AgustaWestland has products for all maritime helicopter requirements. The AW109 Power and LUH variants, both 3-ton light twin engine helicopters, have already proven to be popular platforms for naval, coast guard and port security missions. The AW109 Power and LUH are all-weather, multi-role maritime helicopters, equipped with the latest navigation, communication and avionics equipment. For interdiction purposes they can be equipped with a machine gun and a sniper rifle with a laser sight. Other equipment includes a Forward-looking Infra Red (FLIR) system for night operations, along with a night-vision compatible cockpit. Last year the Bangladesh Navy signed a contract for two AW109 Power maritime helicopters capable of being operated from the frigate BNS Bangabandhu.

Moving up to the weight scale AgustaWestland has the 5.3 ton Super Lynx 300 shipborne naval helicopter that has found success in the region with sales to the navies of Thailand and Malaysia. The Super Lynx 300 and its earlier variants have earned the reputation as the best small ship helicopter, due to its ability to operate from small ships in adverse weather conditions. AgustaWestland is also developing the 6-ton multi-role AW159 which will succeed the Lynx in UK military service. First flown in 2009 deliveries will start next year fulfilling the UK's Surface Combatant Maritime Rotorcraft requirement.

For maritime surveillance and coast guard missions the best selling 6.4 ton AW139 has become the helicopter of choice in many countries. The AW139 has the performance, range, cabin space and equipment package to perform a wide range of maritime tasks including coastal surveillance, anti-piracy, armed interdiction, search and rescue, port security and economic zone patrol.

In the 10-12 ton weight class is the NH90 naval helicopter, developed by the European consortium NH Industries in which AgustaWestland has a 32% share. The NH90 is a new generation naval helicopter capable of performing autonomous shipborne ASW and ASuW missions as well as maritime patrol. Deliveries of the NH90 are now underway with over 500 of the type on order by various armed forces.

At the top of the weight range is the 16 ton AW101, designed for long range maritime missions and for shipborne operations from frigate sized ships. The AW101 is operated by the British Royal Navy and Italian Navy where it has replaced Sea Kings in the ASW and ASuW roles. Additionally the Japanese Maritime Self Defense Force is now operating the AW101, built under licence by Kawasaki, for Antarctic Support and Airborne Mine Countermeasures missions. Designed from the outset as a Sea King replacement and for shipborne operations the AW101 is the most advanced naval helicopter available today. •

Pratt & Whitney is Powering the Next Generation of Military Fighters

This marks the 86th year since the founding of Pratt & Whitney, and we are proud to continue deliver¬ing an ever-expanding collection of propulsion systems to customers around the world. Since our forma¬tion, unmatched safety, dependable reliability and maturity with proven performance have been a hallmark of the Pratt & Whitney name.

Accelerates to supersonic speeds in seconds. Operation at metal-searing temperatures, with uncompromising reliability. These are some of the performance demands placed on Pratt & Whitney engines that power the world's most technologically sophisticated weapon systems—the F-22 Raptor and the F-35 Lightning II—today and into the future.

Pratt & Whitney's F117 provides power for 100 percent of the C-17 Globemaster III – the world's premier heavy airlifter. Four F117 engines, each rated at 40,440 pounds of thrust, enable the C-17 transport to carry a payload of 160,600 pounds, take off from a 7,600-foot airfield, and fly 2,400 nautical miles without refueling, which enables the C-17 to 'answer the call' for humanitarian aid around the globe. With more than eight million hours of proven military service and more than 40 million hours in commercial use, the F117/PW2037 reinforces Pratt & Whitney's promise to deliver Dependable Engines.

Pratt & Whitney's F100-series engines are the workhorse for the U.S. Air Force's (USAF) F-15 Eagle and F-16 Fighting Falcon and air forces in 23 nations. More than 6,700 engines have been built since entering into service in 1972. The latest evolution, the F100-PW-229 EEP, is now in production.

The JT8D-219 engine was cho¬sen to re-engine the USAF's Joint STARS surveillance aircraft and has successfully demonstrated its capability in flight. Our unmatched experience in stealth and integra¬tion positions Pratt & Whitney to be a leader in the emerging unmanned air vehicle market.

Our military products and cus¬tomers worldwide benefit from a proven and comprehensive range of services to meet all maintenance, readiness and product support requirements.

(Caption for F-35 photo) Pratt & Whitney engines power the world's most technologically sophisticated weapon systems such as the F135 powering the F-35 Lightning II.

(Caption for C-17 photo) Four powerful F117 engines enable the C-17 Globemaster III to fly 2,400 nautical miles without refueling. •

Pratt & Whitney EcoPower engine wash for Air India reduces fuel burn

Air India announced it has performed 124 Pratt & Whitney EcoPower engine washes to date, saving more than 540,000 gallons of fuel worth $1.9 million USD while reducing its carbon dioxide (CO2) emissions by approximately 5,300 metric tons. Pratt & Whitney is a United Technologies Corp. company.

Air India uses Pratt & Whitney's patented, environmentally friendly EcoPower engine wash at its Mumbai International Airport-based service center. As an EcoPower engine wash franchisee, Air India offers the service to other carriers in the region and is able to perform washes on nearly all commercial engines in service today.

"Pratt & Whitney's EcoPower engine wash will help us and our customers decrease operating costs, while reducing fuel burn and CO2 emissions," said Executive Director Mr. S. Rotkar, Air India Sales & Marketing (MRO-SBU). "By using EcoPower engine wash, we estimate about 2.6 million gallons worth approximately $9.0 million USD in annual recurring fuel savings while eliminating more than 25,000 metric tons of CO2 emissions."

"Pratt & Whitney is pleased to partner with Air India and welcomes them to our global EcoPower service network," said William Welch, general manager, Line Maintenance Services, Pratt & Whitney. "As one of the world's fastest growing aviation markets, the demand for engine wash service is expected to grow significantly in India in the coming years. Air India has the capability to expand its wash capacity to meet the market's growing demands."

Pratt & Whitney's patented EcoPower engine wash system reduces fuel burn by as much as 1.2 percent, eliminating three pounds of carbon dioxide emissions for every pound of fuel saved, while also decreasing engine gas temperature thus increasing the amount of time an engine can stay on wing. Pratt & Whitney is a world leader in the design, manufacture and service of aircraft engines, space propulsion systems and industrial gas turbines. •

Rolls-Royce and British Airways complete $5bn Trent engine contracts

Rolls-Royce, the global power Systems Company, and British Airways have completed contracts for Trent 900 and Trent 1000 engines to power up to 61 new wide-body aircraft.

The order originally announced in September 2007 and worth in excess of $5 billion at list prices if all options are exercised, is for Trent 900 engines to power 12 Airbus A380 aircraft, with a potential additional seven options, and Trent 1000 engines to power 24 Boeing 787 Dream liners, with 18 options. The contracts include Total Care® long-term support agreements.

Willie Walsh, Chief Executive Officer, British Airways, said: "We are delighted to have concluded these contracts, which position British Airways strongly for the future. We have had a long and positive relationship with Rolls-Royce, and we look forward to continuing to work with them in the future. We believe the support of the Rolls-RoyceTotalCare package will significantly benefit British Airways operations."

Sir John Rose, Chief Executive, Rolls-Royce, said: "We welcome the conclusion of these contracts with a valued customer. We are pleased that British Airways continues to put its trust in our world class Trent engine technology and service provision." •

CFM engines for Thomas Cook A321 aircraft

Thomas Cook Group has announced that it has selected the CFM56-5B engine to power 12 Airbus A321 aircraft scheduled for delivery in 2014. The engine order is valued at more than $200 million U.S. at list price. In addition to the firm aircraft order, Thomas Cook Group also plans to lease CFM56-5B-powered A320 family aircraft from operating lessors.

Thomas Cook Group is one of the world's leading leisure travel groups and operates a total fleet of more than 90 aircraft and carries 17 million passengers each year. The fleet is split into four airlines: the UK airline, the German airline flying under the Condor brand, the Scandinavian and Belgian airlines.

All of Thomas Cook's new CFM56-5B engines will incorporate an engine performance improvement package. The modifications will reduce engine fuel consumption by 0.5 percent and lower maintenance costs by 1 percent.

The CFM56-5B PIP is currently undergoing flight tests at Airbus and is schedule for certification in the second quarter 2011. Airline entry into service is planned for the third quarter 2011. The engine will maintain the same noise signature as the current production engine. These engines also meet current International Civil Aviation Organisation (ICAO) Committee of Aviation Environmental Protection standards (CAEP /6) requirements.

CFM56-5B engines are a product of CFM International, a 50/50 joint company between Snecma (Safran group) and GE. CFM, the world's leading supplier of commercial aircraft engines, has delivered more than 21,600 engines to date. The CFM56-5B engine powers every model of the Airbus A320 family and has been chosen to power approximately 55 percent of all A320 aircraft in service or on order. •

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Air India Signs OnPoint Solution Agreement for its GE90 engine fleet

GE Aviation and India's national carrier Air India have signed a 20-year OnPoint solution agreement that covers its GE90 engines. The value of the agreement is not being released.

Air India will expand its maintenance, repair and overhaul (MRO) capabilities at its Mumbai, India facility to include GE90 engine overhaul. The current schedule calls for the Mumbai facility to be certified for basic GE90 MRO by 2012. Eventually, Air India plans to build a new MRO facility in Nagpur, India, that will include GE90 testing capabilities.

As part of the OnPoint solution agreement, GE will provide Air India with comprehensive material support, training and assistance on overhaul works coping. While Air India develops its GE90 MRO capabilities, GE will provide the airline with overhaul services at GE's MRO facilities to support the carrier's GE90 engine fleet.

"Air India has more than 40 years of providing high-quality MRO services in India," said Nalin Jain, Country Director for GE Aviation, " adding that GE90 engine overhaul service is the perfect expansion of Air India's MRO capabilities.

"Air India has already established partial capabilities on GE90 engines in Mumbai with the help of GE. Three engine overhauls were recently completed, saving us shipping costs and also reducing our turnaround time significantly. This will help us as we prepare to take on third-party work in the facility," said K.M. Unni, SBU Head of the MRO SBU and Board Member, Air India.

Air India ordered 23 GE90-powered Boeing 777 aircraft in 2005 and currently operates 20 of these aircraft with the remaining three aircraft to be delivered in the next few years.

OnPoint solutions are flexible, long-term commitments designed to meet the customers' unique engine service needs. Backed by GE's world-class support, these solutions help lower our customers' cost-of-ownership and maximise the use of their assets. The available services include overhaul, on wing support, new and used serviceable parts, component repair, technology upgrades, engine leasing and diagnostics. •

VALC and IAE sign engine deal

International Aero Engines (IAE) has announced that it has signed an agreement with Vietnam Aircraft Leasing Company (VALC) to provide 20 V2533-A5 engines to power 10 Airbus A321-200 aircraft, on order.

The contract, valued at more than $184 million with deliveries being made in 2012 and 2013, was previously announced during Farnborough Air show in July 2010.

The aircraft will be operated by Vietnam Airlines, who have been a customer of IAE, and used on major domestic routes between Hanoi and Ho Chi Minh City and on regional routes serving Hong Kong, Taipei, Bangkok and Singapore.

IAE Executive Vice President Customer Business Jim Guiliano said, "We are proud to be the first major engine manufacturer selected by VALC; the very first aircraft leasing company in Vietnam. I believe these aircraft will be the beginning of strong, steady growth for the VALC fleet."

IAE will deliver the V2500 SelectOne build standard which provides an additional one percent fuel burn advantage, along with a corresponding reduction in CO2 emissions. It improves time-on-wing by up to 20 per cent and demonstrates compliance with all applicable CAEP emissions standards.

The V2500 is available in seven different thrust settings, from 22,000 to 33,000lb, to power the Airbus A319, A320 and A321 family of aircraft as well as the Airbus Corporate Jetliner. IAE's in-service fleet has doubled in the last five years and is the third largest engine programme currently in production. Nearly 6,500 V2500 engines are in service or on firm order and the worldwide fleet has accumulated over 85 million flying hours. •

Turbomeca strengthening ties with Indian operators

BY **R. CHANDRAKANTH**

With the helicopter market expected to "fully recover" by 2012, Turbomeca, part of the Safran Group, has reworked its strategy to stay afloat. Three key aspects emerge—connecting on a continuous basis with the existing customers base; restructured organisation; and strengthening operations in emerging and key markets that includes China, India and Russia.

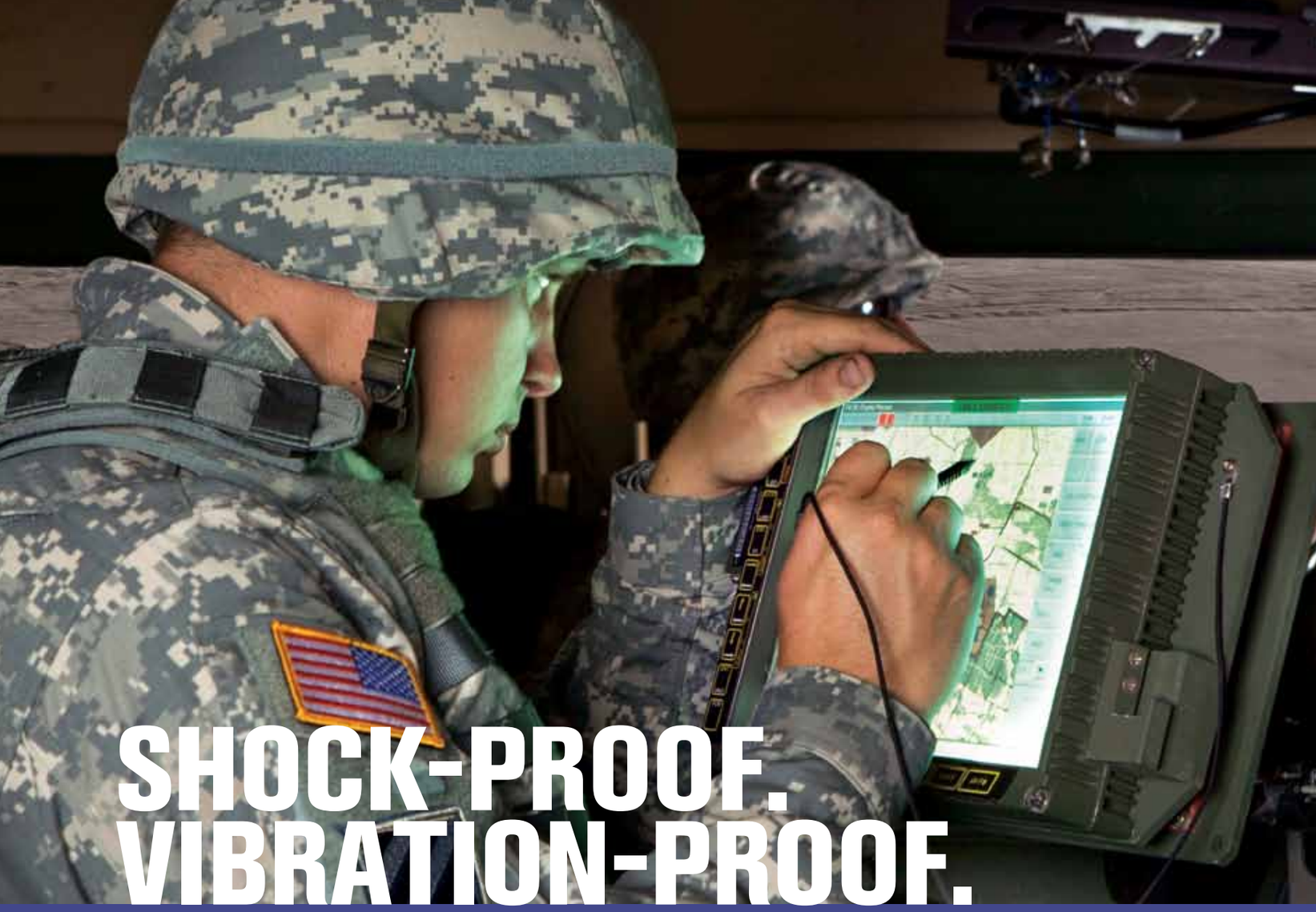
Giving details of Turbomeca's strategy, after a two-day interaction with its Indian operators, Philippe Couteaux, Vice President and General Manager, Airframers, Turbomeca said, "We want to be as close to our customers as possible. There are about 2,400 customers worldwide and in India we have about 30 civilian, besides the armed forces and the paramilitary. We engage with them constantly."

In Delhi, Turbomeca officials from India and France interacted—one day exclusively for the civilians and another for the armed and paramilitary forces. "The interactions have been very fruitful. We listen to their concerns and we explain our programmes and at the end of the day it is satisfying to both."

As the economic crisis snowballed the helicopter market went plummeting. "The helicopter market has not restarted on the recovery path unlike other sectors in the aviation industry. The smaller and the lighter helicopter segment was the worst hit. Turbomeca produced about 1,300 engines in 2008, around 1,100 in 2009, fell to about 900 in 2010 and is expected to be around that much in 2011. The crisis was mostly in the civilian helicopter market as the military segment was more or less stable. We hope to see recovery in 2012."

However, Philippe mentioned that the helicopter market is set to grow "dramatically" in the next 10 years with Indian demand expected to go up by 122 per cent from 829 helicopters in 2009 to 1844 helicopters in 2019. There are almost 140 civil engines of the total of 300 Turbomeca engines in India.

Turbomeca has been supporting indigenous platforms such as advanced light helicopter; reconnaissance and observation helicopter); Indian multi-role helicopter); light combat helicopter; light utility helicopter and Jaguar of Indian Air Force (via RRTM Adour engine). The LCH is equipped with Shakti engines. Turbomeca will support the Indian helicopter industry, both civil and military, including the Adour powering the Hawk and Jaguar. Turbomeca is ready to invest in India and has been having discussions with key players. The company is closely watching the issue of foreign direct investment (FDI) in India as we see tremendous business opportunities here. "Our relations with Indian companies, particularly HAL, have been long lasting. It was in 1961, the Artouste engine was licensed to HAL to power Chetak and Cheetah fleets. In 2003, we entered into a contract with HAL – co-development of Ardiden 1H1 (Shakti) engine and delivered it to power the Dhruv helicopter and supplied TM 333 2B2 engines for the first 99 Dhruv helicopters of HAL," said Philippe. •



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DRS TECHNOLOGIES

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Axis and Rosoboronexport JV

Axis Aerospace & Technologies and FGUP Rosoboronexport have announced signing of a strategic memorandum of understanding for creation of a joint venture, focusing on cutting edge technology for aerospace and defence applications, besides design, production and integration of avionics systems.

Some of the key areas the JV would address include:
Development of MIPS technology for use in avionics. This would be a major leap towards achieving self reliance in processor technology. Axis Aerospace would build on the Russian efforts in this field to create MIPS based avionics.

- Communication Systems & Software Defined Radio (SDR). The JV would seamlessly fuse the building blocks of this technology held by both companies to design and produce SDRs, the future of all communication systems.
- Avionics Manufacture. The JV would undertake manufacture of Avionics equipment for MIG 35, SU 30, MIG 29, MI 17, MI 28, Kamov 28 etc. enabling better offset discharge by Russian OEMs.
- Design and development of New Generation Test Solutions for maintenance of avionics equipment.
- License production of Avionics equipment of Russian origin.
- The venture would take part in establishing service centre in India for Maintenance and Repair of Avionics equipment of Russian origin.
- Avionics systems integration on aircraft & helicopters for both Russian and Non Russian design.

Ravi Narayanan, CEO, Axis Aerospace said "This JV would be the perfect vehicle to support indigenous efforts to develop, support and upgrade avionics and other types of equipment for Russian origin defense product, which would continue to be the dominant factor in Indian Defense for the years to come. Also this would marry Russian domain expertise, OEM knowledge along with cutting edge technology build to suit Indian requirements." •

Elta Systems comprehensive solutions

ELTA Systems Ltd., a group and subsidiary of Israel Aerospace Industries, is one of Israel's leading defense electronics companies and a global leader in its area of expertise. ELTA operates as a Defense Systems House, focused on electromagnetic sensors (Radar, Electronic Warfare and Communication) and integrated solutions. ELTA Systems' products are designed for Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR), Early Warning and Control, Homeland Security (HLS), Self-Protection and Self-Defense, and Fire Control applications. ELTA Systems' products include systems, subsystems and critical technological sub-assemblies and components, designed and produced in-house. These capabilities enable ELTA to provide comprehensive solutions and manufactured products and systems tailored and adapted to the special requirements of customers and users, thereby creating a unique competitive advantage. ELTA Systems has a variety of unique technological excellence centers, as well as state-of-the-art facilities and national infrastructures.

ELTA operates a worldwide marketing network, which also includes customer service and after-sales support activities. •

UK's Secretary of State for Defence Liam Fox with CEO of Cassidian Air Systems Bernhard Gerwert at Eurofighter Office in New Delhi

Weapons Carriage and Release Solutions for modern military requirements

Best known for its aerial refuelling legacy, Cobham also has a long heritage in providing Weapons Carriage and Release solutions for air forces worldwide. In India Cobham's ejector release units (ERU's) have more than 30 years service on Indian Air Force platforms, with some 800 in current use with the Indian Air Force fleet of Kiran and Jaguar aircraft. Light duty Ejector Release Units and Carrier Bomb Light Stores (CBLS) products are also fitted to the IAF Hawk Advanced Jet Trainers. Today Cobham continues to supply equipment for IAF and Indian Navy requirements having recently received a contract to deliver further units for the 57 additional Hawk aircraft ordered in 2010.

In addition to its extensive portfolio of free-fall ordnance release systems, Cobham's core product range includes missile rail launchers for air to ground and air to air missiles developed for the latest generation of fighter jets. The Company's first foray into rail launcher design began in the late nineties with the Triple Rail Air to Ground Missile Launcher for carriage of the MBDA Brimstone anti armour missile on BAE Systems Harrier and Panavia Tornado. This was closely followed by an order to supply the Common Rail Launcher (CRL) for the Advanced Medium Range Air to Air Missile (AMRAAM) and Advanced Short Range Air to Air Missile (ASRAAM) on Royal Navy Sea Harriers.

In more recent years the Company has developed a new generation Multi Missile Launcher (MML) derived from the CRL which carries a range of air to air missiles on SAAB Gripen: Diehl BGT IRIS-T, Raytheon AIM-9 Sidewinder, AMRAAM and very soon MBDA Meteor Beyond Visual Range Air to Air Missile (BVRAAM). MBDA's Meteor is designed for long range engagements and had its initial airborne launch from a Cobham MML in 2009. MML provides the capability to adapt to revised weapon load out configurations without the need for role change. This enhances the flexibility of the overall combat aircraft significantly which is an important requirement within the IAF's Medium Multi Role Combat Aircraft (MMRCA) competition.

Eurofighter's Typhoon, is also fitted with a wide range of Cobham's Weapon Carriage and Release equipment. Spanning wing tip to wing tip, the equipment comprises Missile Eject Launchers, Light and Heavy duty ejectors for up to 2,000lb bomb carriage, and Chaff and Flare dispensers. The Missile Eject Launcher was specially designed for Eurofighter Typhoon and provides rapid ejection and separation of missiles away from the aircraft fuselage. It uses long rams which force the semi-recessed missile safely away from the airframe before ignition of the missile rocket motor. The Chaff and Flare Defensive Aids System incorporates dispensers which release infra-red flares to defeat heat seeking missiles and chaff to disrupt radar guided missile homing.

Looking ahead, Cobham is working with partners to support the IAF's further requirements for fast jet close combat missile capability. The Cobham Advanced Missile Launcher, which is part of the Common Rail and Multi-Missile Launcher family of products, is likely to satisfy IAF needs on a number of platforms due to its ultra-lightweight structure and superior performance with short range air to air weapon systems. •

'We are looking to expand in the international aerospace market'

Puneet Kaura

Executive Director, Business Development & Procurement Samtel

***SP's Show News* (SP's): What are your short-term and long-term goals for the Samtel HAL JV?**

Puneet (Kaura): We at Samtel are extremely excited about the future, as we are now one more step closer to the goal we had set for ourselves. Last year was a landmark year for us, as after a long journey of development, flight testing and qualification, one of our key products—multifunction display (MFD) for Su-30 MKI has been qualified and is now in production. Thus, the aim with which the Samtel HAL JV was set-up—that of addressing the avionics requirements of Hindustan Aeronautics Limited (HAL), especially cockpit displays of all kinds, is now closer to realisation. The goal of Samtel-HAL joint venture is to indigenise critical primary display technology in India, and create a Centre of Excellence to produce indigenous displays for all existing and upcoming star platforms and upgrades of HAL. We are looking forward to move ahead on our journey towards induction of indigenous cockpit displays on all Indian platforms.

SP's: What is the roadmap for your JV with Thales?

Kaura: Our joint venture with Thales—Samtel Thales Avionics has now been incorporated and is intended to locally develop, customise, manufacture, sell and maintain indigenous helmet-mounted sight and display systems and modern avionics systems for the Indian and export defence markets. Now that the company has been incorporated, we are looking forward to see some positive traction in this company as well. At Aero India, we are planning to showcase a glimpse of the complex systems that one can expect to see the JV produce in the near future.

In the international space, we have started the production of electronic flight instrumentation systems (EFIS40) for Honeywell's Bendix/King range for general aviation aircraft. Samtel Display Systems has signed a long-term contract for production of this product and is the only supplier worldwide for this display. Year 2010 also marked the opening of our marketing and project management office in the USA, which is helping us expand our footprint in the US market and is also intended to serve our US customers in a more closely-coordinated manner. Last year, we also signed an memorandum of understanding with SAAB Avitronics for RIGS HUD, which adds on to our product portfolio as it is a head up display for rotary wing platforms.

SPs': So what does the road ahead look like?

Kaura: Our road ahead includes development, production and induction of indigenous avionic displays and systems on all HAL star platforms. The mandate for this JV is to address the avionics requirements of HAL, especially cockpit displays of all kinds. With our other joint venture with Thales—Samtel Thales Avionics, we are planning some high technology complex Avionics systems for the Indian and export defence markets.

We are also looking to expand in the international aerospace market and are already in advanced stage of communications with some global majors. As part of our contract with Honeywell, the EFIS40 displays are already under production.

Visit **Samtel booth at Hall-E, Stand E-27**. •

'We see opportunities for many of our solutions in India'

T.C. Chan
Vice President and Managing Director, Asia Pacific, Rockwell Collins

***SP's Show News* (SP's): What is Rockwell Collins' strategy in India?**

T.C. Chan (Chan): India represents one of the most dynamic markets in the world with gross domestic product (GDP) growing at eight to 10 per cent annually and defence expenditures ranked ninth in the world. We are actively engaged in both the commercial and government sectors of the aerospace and defence market.

Rockwell Collins is committed to India, growing our investment, presence and contribution to the local economy as well as transferring technology. We see opportunities for many of our solutions, ranging from network-enabled communications to advanced, integrated avionics and communications for fixed and rotary wing aircraft, as well as unmanned aerial vehicles (UAVs).

Rockwell Collin's strategy in India is straight—strengthening our position by capturing business related to airborne system upgrades and updating communications infrastructure with net-enabled interoperable solutions.

We plan to do this through strategic partnerships, by developing new and tailoring existing capabilities in India through our growing in-country systems engineering, programme management and business development resources, as well as tapping Rockwell Collins' best of breed solutions from across our enterprise.

SP's: Does Rockwell Collins plan to expand its existing presence in India?

Chan: Rockwell Collins in India offers all the breadth and depth of our products and capabilities, as well as an entire international business team to champion sales, marketing, strategy, engineering, operations, services and support for business pursuits.

We are expanding our efforts in India with the opening of a facility in New Delhi. We plan to grow this facility over the next five years, providing more jobs to the Indian economy. This facility will house business development, programme management, engineering and related support activities for net-enabled communications, navigation, surveillance, displays, sensors, simulation and training, and integrated systems and subsystems for airborne, ground and maritime applications.

We established our initial presence in India in 2008 with the opening of our India Design Centre (IDC) in Hyderabad to meet the needs of our customers while providing a local presence. With it, our customers have access to top-notch, around-the-clock engineering talent backed by our extensive experience in developing innovative avionics, communications, navigation and electronic solutions.

This facility enables us to support local and international governments, aerospace original equipment manufacturers and defence contractors with engineering design services and systems that can help achieve a shorter time to market, at a lower programme or project life-cycle cost, with innovative solutions of the highest quality.

In October 2010, we expanded the IDC with the opening of Phase 2 of the facility in order to accommodate the growth of the IDC team, which today totals to 250 employees with plans to double by 2012.

Rockwell Collins is committed to helping India achieve mission success. We will continue to demonstrate this through increasing employees, facilities, capabilities, technology transfer and partnerships. •

For more information, visit www.rockwellcollins.com

'BEL has identified contract manufacturing as one of the major areas to address offset obligations of vendors in the various RFPs of MoD'

Ashwani Kumar Datt
Chairman and Mangaing Director, Bharat Electronics Limited

SP's: What are you showcasing at Aero India 2011? Will you be signing any memorandum of understandings (MoU) at Aero India?

Ashwani Kumar Datt (Datt): BEL will showcase indigenously developed network-centric warfare technologies such as command and control system, multi-sensor tracking, situation simulator and tactical algorithm for air defence applications; battlefield management system and coastal surveillance system. BEL will also showcase its inherent research and development (R&D) capabilities by demonstrating some of its new products / technologies including software defined radios, next generation bulk encryptor and high data tactical radio. Airborne products on display will include radar finger printing system, data link, digital flight control computer and identification friend or foe. Also on display will be the complete range of optoelectronic equipment, including night vision devices, digital hand held compass and advanced land navigation system.

We are in advanced stage of discussion with a few proposed joint venture partners. We are also discussing with original equipment manufacturers (OEMs) and some MoUs may be signed during Aero India 2011.

SP's: What are the unique selling points of BEL products that can be offered to enhance your export business? How much progress has been achieved in exports? What is your export plan/target for the next two years?

Datt: R&D, very good quality systems, extensive manufacturing infrastructure and capability of providing total system solutions are the core competencies of BEL. This along with a pool of technically sound manpower takes care of customer requirement and provides long-term product support.

Export registered growth of 33 per cent from $17.77 million in 2008-09 to the US $23.6 million during 2009-10. The year 2010-11 too has seen significant improvement in exports turnover. This year, we are targeting an export turnover of $40 million. This includes offset, direct and deemed export. The total export orders acquired this year is $24 million and the order book is around $64 million. Further orders worth about $15 million are expected during the year.

Apart from the export of products and services, BEL has identified contract manufacturing as one of the major areas to address offset obligations of vendors in the various request for proposals (RFPs) of Ministry of Defence (MoD). Turnkey solutions' is another new area of focus for increasing exports.

SP's: Can you mention some of the new products/systems in the pipeline and upgrades that are planned for existing products?

Datt: Some of the new products that BEL is looking forward to are weapon locating radar, multi-function hand-held thermal imager, low power jammer system, 3D tactical control radar, low level light weight radar, software defined radio, radar warning receiver, coastal surveillance system and battlefield surveillance system. An upgradation has been done for Schilka, the tank-based fire control system for the Indian Army.

SP's: Have you received any orders received for weapon locating radar, 3D tactical control radar and battlefield surveillance system (BSS)?

Datt: Weapon locating radar is undergoing user trials and has performed extremely well. Orders will follow the completion of these trials. The 3D tactical control radar is in the advanced stage of order placement. An order is expected shortly. We are also expecting an order shortly for battlefield surveillance system.

SP': Are there any other important contracts that BEL is pursuing?

Datt: We are also pursuing orders for command information decision support system, night vision devices and missile approach warning system.

SP's: What kind of business do you expect from offsets? In the area of contract manufacturing, how many contracts has the company won?

Datt: BEL is targeting a total offset business of $300 million in the next three to five years. It is estimated that the percentage of BEL share in offset business is expected to be around eight per cent of the total offset business possible. Among the RFPs issued so far, about 80 per cent value of total acquisition by MoD is for air platforms and rest are for naval platforms, Gun programme and radar and missile systems (in the range six per cent-9 per cent). The percentage of BEL's share of offset may improve when more RFPs in naval, radar and missile systems area issued.

BEL has signed MoUs with major aerospace and defence companies abroad to take advantage of the mandatory offset clause in the RFPs for Indian defence procurement. In addition, BEL has planned plant upgradation in identified areas to address the offset opportunities. BEL has already identified homeland security as a focus area and has initiated development of state-of-the-art night vision devices, jammers, etc. As the current DPP allows for offset in the area of inland security, BEL expects to gain substantially through these development efforts.

BEL signed 15 MoUs and 11 NDA in the year 2010 with major international players for offsets arising out of RFPs issued by MoD, for example with Northrop Grumman, Boeing, Honeywell, etc.

In the last two years, we have won manufacturing contracts worth $12 million for supply to Hamilton Sundstrand, Northrop Grumman and GE, Varian, Philips and Siemens. We are expecting some orders from Boeing this month. •

Northrop Grumman
ISR systems to beef up homeland security

BILL SCHAEFER

Northrop Grumman Corporation is highlighting its industry-leading range of capabilities in intelligence, surveillance and reconnaissance (ISR) including airborne early warning and control systems for maritime reconnaissance, fire control radars and unmanned aerial vehicles, at the Aero India 2011 exhibition and air show.

"ISR systems are critical to effective homeland security and our leadership in multiple-domain ISR strongly positions Northrop Grumman to help create solutions for India's coordinated national defence structure," said Bill Schaefer, Vice President, Business Development, Northrop Grumman Aerospace Systems sector. "Developing our relationship with India and our presence is an important dimension of the company's activities. We look forward to highlighting our range of products and capabilities and to supporting India's defence modernisation objectives."

The exhibit will showcase Northrop Grumman's world leading capabilities in airborne early warning and control. Featured will be the E-2D Advanced Hawkeye and the multi-role electronically scanned array (MESA) radar. •

DRS all-new small mobile computer

DRS Tactical Systems expands armor product offering with its all-new compact tablet

DRS Technologies, a Finmeccanica Company, has announced that its Tactical Systems Group has recently unveiled its newest ARMOR rugged mobile computer, the ARMOR X7 compact tablet. This all-new small mobile computer is specifically-designed for those mission-critical tasks that require connectivity, hand-held mobility, ease of use and the durability to support all-weather operations.

"The ARMOR X7 is a completely new product created in response to our customer's request to take our knowledge in tablet computing and make it more portable," said Mike Sarrica, Vice President and General Manager for DRS Tactical Systems. "The result is a very unique, ergonomically-friendly compact tablet that expands the capabilities of tablet computing in the field and mobile workplace like never before," he added.

"Built with integrated non-slip handgrips, the ARMOR X7 utilises dual, hot-swappable battery options to exceed nine hours of operating time. It builds on many years of our experience in field service; transportation, rail and port facilities; public safety, and other areas of challenging environments as well as the experience from our military and commercial personnel that have deployed our rugged mobile computers around the world," Sarrica added.

The ARMOR X7 is certified to MIL-STD-810G for extremes in temperature, vibration, shock and drops. It is highly resistant to dust and moisture, earning an IP65 rating for ingress protection, while providing a 7" sunlight readable touch screen display. It includes a range of connectivity options such as Gobi 2000 WWAN, Bluetooth wireless, integrated GPS and 802.11 a/g/n WiFi, at a weight of only 2.8 lbs. It features a single-core Intel Atom processor N450 and runs Windows Microsoft Windows 7 Professional.

Additionally, the ARMOR X7 marks the debut of the new m-SATA solid-state drives from Intel in the rugged marketplace, in both 40GB and 80GB capacities. "Our compact tablet carried a requirement for a compact memory solution and the Intel Solid-State Drive 310 Series design fit the bill," commented Sarrica. "It was an easy choice based on quality and performance," he added.

"The ARMOR X7 from DRS is an excellent embedded implementation of the Intel Solid-State Drive 310 Series m-SATA form factor," said Pete Hazen, Director, Marketing, Intel's NAND Solutions Group. "The ultra-small Intel SSD offers high performing, reliable and low-power storage for on-the-move systems like the DRS ARMOR," he added. •

Enabling MicroCoMPASS EO payload

Elbit Systems Electro-Optics-Elop has developed a unique hardware and software capability to enable its MicroCoMPASS electro-optical (EO) payload to connect with maritime platform

Elbit Systems Ltd wholly owned subsidiary, Elbit Systems Electro-Optics-Elop has announced that it has developed a unique hardware and software capability, enabling its MicroCoMPASS electro-optical (EO) payload to connect with any maritime platform via "plug and play" technology.

The users will benefit not only from Elop's worldwide experience in payload systems, but also from the MicroCoMPASS flexible "plug and play" software that allows for easy integration with other systems onboard the platform, using common protocols and an open architect interface. The "plug and play" configuration does not require any adjustments or interference with other existing systems on the ship, thus improving safety and saving costs.

The MicroCoMPASS is the latest member of Elop's CoMPASS stabilised electro-optical (EO) payload family already operational with leading armed forces worldwide. An ultra-lightweight extremely compact electro-optical payload, the MicroCoMPASS is a cutting edge payload that delivers superb day and night intelligence, surveillance, target acquisition and reconnaissance (ISTAR) capabilities, even in the harshest weather conditions featuring a unique, miniature cooled continuous zoom forward-looking infrared (FLIR) and color day continuous zoom camera, the MicroCoMPASS includes a laser range finder, laser target illuminator and an automatic video tracker. It also offers integration with the onboard radar, gyro compass and fire control system, providing accurate line of sight and range data while meeting the strict requirements of naval platforms.

Federal governments, military and homeland security forces worldwide are coming to terms with the complex challenges posed by modern terrorism, especially in the maritime arena. Drawing on extensive operational experience in military C4I, unmanned systems, electro-optics and sensors, Elbit Systems offers its MicroCoMPASS payload for coast and border protection, force protection/anti-terror (FP/AT) and search and rescue (SAR) missions. Integrated onboard the customer's Coast Guard interception boats, the MicroCoMPASS will allow early detection and identification of potential threats, enabling quick and efficient threat neutralisation and/or preventing terror attacks throughout the customer's maritime arena. The system enables the Coast Guard to enhance situational awareness and to reinforce protection along the country's borders. •

Easy solutions from RADA

At Aero India 2011, RADA Electronic Industries Ltd is showcasing a wide and continuously expanding range of solid-state, digital servers, recorders, cameras and debriefing solutions for aerospace and land military applications. The data recording and management systems include airborne data servers—the latest approach to mission data management on board fighting platforms; flight data recorders for fighter aircraft and helicopters; video/audio/data recorders (with data transfer functionality) for airborne and land vehicles; high-rate, no compression data recorders for aircraft and airborne pods; a variety of ground debriefing solutions.

The other solutions the company is highlighting on are:

Inertial navigation systems (INS)
RADA includes a broad range of advanced yet affordable inertial navigation systems, designed for new and upgraded aircraft, helicopters and unmanned vehicles (UAV).

RADA's navigation solutions include sophisticated and unique sensor fusion algorithms, and embed modular design principles leading to minimal integration efforts into larger mission systems. The compact, reliable and affordable INS are applicable to manned and unmanned platforms, and to expendable applications.

Radars for force protection and homeland security
RADA's digital radar technology is applicable to a wide variety of force protection solutions, whether stationary or mobile, for defence and homeland security applications.

RADA's RPS -10: Radar for active protection systems for armoured fighting vehicles (AFV). The compact, lightweight yet armoured radar detects and tracks all incoming threats (missiles, rockets, projectiles…) and provides all necessary interception data for the active protection system as proven in dozens of live field fire tests.

RADA's RHS 20: Perimeter surveillance radar for homeland security and field force protection solutions. The radar is extremely compact and lightweight, designed to be carried and assembled by a single person, combining all these with low power consumption and excellent detection ranges make it the perfect solution for both HLS and battlefield surveillance needs. •

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CAE focuses on bringing "mission" to UAS training

Leveraging its broad portfolio of simulation technologies as well as training systems integration expertise, CAE is focusing on bringing a new level of virtual mission training capabilities to the unmanned aerial system (UAS) sector. By combining its simulation experience and technologies in areas such as sensor simulation, weapons effects, computer-generated forces, artificial intelligence, common databases and high-fidelity modeling, CAE believes the UAS market is ripe for a more comprehensive UAS mission training solution.

"Our aim is simple – to allow the entire UAS mission crew to conduct virtual mission training that is consistent with what they will likely see on the battlefield," explains Adolfo Klassen, CAE's Chief Technology Officer. "To do this, militaries need a much greater level of integration and interoperability with their UAS training systems."

Current methods of UAS training typically consist of procedural training modes built into the original equipment manufacturers (OEM) ground control stations (GCS) or utilizing the actual UAS platform for training opportunities. These training approaches, while sufficient for familiarization or procedures, can be limited in scope and capability when it comes to mission training. In addition, they utilize limited and valuable UAS platform resources that could be used for operational tasking. Today's UAS crews have performed remarkably well, but their mission training has taken place primarily during actual operations on the battlefield.

"Having trained as a fighter pilot, I have had a lot of combat time with close air support missions," said Keven Gambold, a former Royal Air Force Tornado pilot turned Predator/Reaper operator, and now Operations Director for Unmanned Experts. "When transitioning to operate UAVs, it was more of a conversion course. We weren't trained very well for the missions we had to operate, but we knew what was important because of our previous combat experience."

Gambold is quick to point out that the new generation of UAS operators will have limited or none of this background experience, which makes a more comprehensive virtual UAS mission training capability all the more important.

"In a UAS unit today, the operators basically go directly to combat," says Gambold. He describes a scenario where an instructor sits over your shoulder and you are fighting the fight from day one. "These UAS operators have never seen an integrated mission scenario until they are in the middle of one for real," explained Gambold. "For many of these new operators, the first time they speak to a forward air controller in a complex environment with other aircraft and ground forces is when they are actually doing it in combat."

With that understanding, Gambold and others with experience in UAS operations see that there is an enormous gap in training, specifically in realistic mission training.

CAE recognized this requirement and has set out to provide a complete UAS mission training solution that is "platform agnostic". The company is striving to provide an open-architecture, multi-service integrated training tool to address all aspects of a UAS mission.

"Most military customers increasingly want to acquire platform independent training solutions because they are going to have multiple unmanned system platforms and myriad sensor platforms in service," said Klassen.

CAE's UAS mission training solution includes a complete GCS, a mission management station (MMS), and a comprehensive and growing suite of high-fidelity simulated payloads. The system is designed to support all mission crew positions for every aspect of a mission, including pre-mission planning, mission briefing, simulated missions, and post-mission debrief. The CAE-developed common database (CDB), an open architecture and industry standard, provides the foundation so that all pieces of the simulation system are operating off the same database and using the same synthetic environment. The CDB supports the ability for the database to be updated rapidly so that mission scenarios can be rehearsed in hours or days, not the months it often takes to create and correlate a typical training database.

The UAS mission training solution from CAE can also serve as a test-bed for customers wanting to integrate and validate platforms, evaluate sensor systems, modify payloads, establish procedures, and explore doctrines of UAS deployment and integration into existing C4ISTAR capabilities. The system is designed for STANAG 4586 compliance allowing the operator to switch between real and synthetic environments.

With ever increasing budget constraints and growing operational demands on the unmanned community, CAE's UAS mission training solution has real potential to reduce training expenses, increase training effectiveness, and enhance mission success in comparison to traditional training methods. CAE also addresses the gap in training a complete mission crew as the solution brings together all aspects of a UAS mission. This comprehensive and dynamic mission training capability is something the company is now focused on delivering to customers worldwide.

"From my perspective, CAE is stepping up to fill a gaping void in UAS training," said Gambold. "I can honestly say that if I was starting my UAS career now, this is the type of mission training I'd want to have because I would be much better prepared when I had to do it for real."

CAE is demonstrating its UAS mission training solution in its booth (Hall C, #7) during Aero India. •

ESL Infrared Threat Simulator A400M demo successful

ESL Defence Limited, a strategic business of AAI, an operating unit of Textron Systems, a Textron Inc. company, announced it has successfully demonstrated to Cassidian Electronics its Phoenix Lite Infrared (IR) Threat Simulator for the A400M program .

In addition to supporting Cassidian and the A400M program, the Phoenix is successfully being used to simulate both missile signatures and hostile fire in test and evaluation programs for United States, United Kingdom and other international customers.

The Phoenix provides long range simulation to both aircraft missile warning systems and hostile fire indicators. ESL has a range of products providing both Red and Blue IR threat emitters utilizing Quantum Cascade Laser (QCL) technology. The Phoenix product family can address a number of simulation requirements and also is available in several power ranges. The Phoenix IR Threat Emitter is provided in a modular form ranging from a single laser configuration, the Phoenix Lite, to a four and eight laser configuration, depending on customer requirements.

The successfully demonstrated Phoenix operates in a unique and novel frequency modulated quasi-continuous wave (CW) mode, which offers a number of important benefits to the test and evaluation community. Furthermore, quasi-CW offers a reduced electronics space, weight and power and increased mean time between failures over CW operation. Should the test require, the Phoenix also can operate in a CW mode. •

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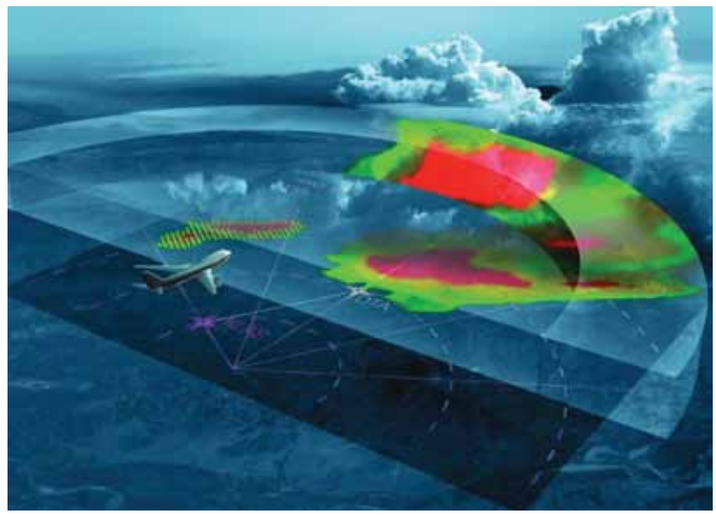
Honeywell's ATM technologies to the fore

Priyanshu Singh Director Marketing and Strategic Planning, talks about the plans of Honeywell with regard to Air Traffic Management in which the Airports Authority of India is taking keen interest.



***SP's Show News* (SP's): Could you tell us about Honeywell's footprint in India with regard to Air Traffic Management equipment/solutions?**
Priyanshu Singh (Singh): ATM in India is currently in development stage. Honeywell offers a host of relevant technologies, and has participated in both the Next Gen and SESAR programs in the USA and Europe respectively. Honeywell provides requisite equipment for most commercial aircraft, e.g., EGPWS, TCAS, etc. On land, Honeywell offers an FAA certified GBAS system, RNAV, RNP, PBN, SWIM, ASAS, etc.

SP's: Airports Authority of India has embarked upon modernization of ATM systems, could you outline how you are contributing in this endeavor and how long do you think it would take to replace legacy systems?
Singh: Among other initiatives, Honeywell is part of a DGCA committee responsible for reducing emissions in India and is supporting that initiative through our technologies like GBAS, etc. Honeywell has also participated in the Next Gen and SESAR programs, which places it on a strong footing to support AAI's initiative of air traffic modernization.

SP's: Could you indicate the benefits that your ATM products/solutions offer – indicate the kind of savings effected on fuel (percentages); average shortening of flight times etc?
Singh: When fully deployed, advanced ATM technologies and operations are expected to increase efficiency (reduce fuel burn) by 8-12%.

SP's: What kind of training is required when the next-gen systems are deployed and what role does Honeywell play?
Singh: Honeywell imparts training on Honeywell systems and services to airlines that have Honeywell technologies on their aircraft. Training is not only limited to pilots, but also other airlines functions on a case basis.

SP's: Traffic flow management in India is a challenge, how do you think Honeywell can help in this?
Singh: Given the nascent nature of the initiative, Honeywell suggests focus on RNP and GBAS as solutions for the near-term; and ADS-B and Data Communications in the longer term.

SP's: is the market for ATM in India, for the next years and what kind of market share does Honeywell have?
Singh: At the current stage of development, it is difficult to quantify the market size. Future roadmap needs to be prepared in conjunction with the AAI and other relevant stakeholders.

SP's What are the challenges in the ATM scenario in India and what are the suggestions to overcome them?
Singh: Implementing ATM systems is always challenging, but India should have an easier task than say Europe given there is only 1 agency unlike 27 in Europe. That said, it is a gargantuan project linking complete radar coverage with Area Control Centers using a central network. AAI should learn from the experience of the USA and Europe, and plan accordingly. AAI should also enlist help of companies that participated in those programs. •

Honeywell continues to expand in India

Over 40 years ago, Honeywell began its investment in India with a vision to strengthen both its presence and strategic partnerships with Indian Industry. Today, Honeywell has grown from 1,000 people in 2002 to more than 11,000 in locations throughout India.

The contributions to Indian engineering, manufacturing, research and technology development capabilities continue to expand as we support the growing demands of India's aviation, aerospace and defence industries.

F125IN
Honeywell is confident that our F125IN engine is the best choice to provide safe and reliable power for India's Jaguar fleet. The Honeywell F125IN will provide a 29% improvement in take-off thrust relative to the current Jaguar engine. This will provide the Jaguar with an additional 2,000kg of take-off payload capability for the same take-off distance or reduce take-off distance 23% for a given payload.

T-Hawk
Honeywell demonstrated its T-Hawk Micro Air Vehicle to paramilitary forces in Chhattisgarh at the Counter Terrorism and Jungle Warfare College in April 2010. The T-Hawk features a ducted-fan engine, which allows it to hover and stare, ideal for surveillance and detection.

Helicopter Safety
Honeywell offers a full range of helicopter equipment, from aircraft engines, auxiliary power units and other mechanical systems to the Zing™ Health Usage Monitoring Systems (HUMS). Honeywell's safety systems for helicopters address the challenges of traffic, terrain and weather, helping to ensure safe flight and guard against Controlled Flight Into Terrain (CFIT), weather related hazards, and collisions with obstacles and other aircraft.

Runway Safety
SmartRunway and SmartLanding address the $1 billion cost of runway excursions and incursions to the commercial flight industry.

SmartRunway and SmartLanding are the latest software enhancements to Honeywell's Enhanced Ground Proximity Warning System (EGPWS), which is found on more than 30,000 business and air transport aircraft.

Air Traffic Modernization
Honeywell developed the world's first and only FAA-certified Ground Based Augmentation System (GBAS) navigation aid, SmartPath, for use in instrument (non-visual) meteorological conditions. Honeywell's technology will eliminate significant disruptions to airport traffic caused by ILS signal interference from weather, other aircraft, or terrain and obstacles.

TPE331
Honeywell's Turboprop engine TPE331-5 is made under license by HAL for the Dornier 228 aircraft, also made by HAL. In addition, Honeywell is transitioning the manufacturing to the HAL Engines Division which will manufacture those engines for customers worldwide. The manufacturing of the TPE 331-10 model engine to the HAL Engines Division in Bangalore Manufacture and sourcing of engine parts has already begun with orders placed on the HAL factory for over 30 engine kits. •

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Dave Prater,
Vice President,
Advanced Network Solutions

ITT Tactically Ahead

***SP's Show News* (SP's): What are the new technologies that ITT Communications can offer to India? What are your thrust areas and objectives and what are the current fields of research and development?**

Dave Prater (Prater): ITT was the developer of the Tactical Internet, TI, for the US Army. Historically, ITT created the interfaces to legacy communications systems allowing them to use the IP-based TI through a SINCGARS product called the INC, Internet Controller. Since the inception of the TI, ITT has focused on Mobile AD-HOC networks; particularly waveforms. We are providers of both narrow band and wideband waveforms to both the US and UK Armies. We look forward to working with the Indian Defense establishment in developing a Network Centric Waveform which is unique to the Indian requirements. ITT is currently developing and refining waveforms and the radio hardware to run those waveforms.

SP's: What has been your experience with the Indian defence market? What difficulties do you face in marketing your products to them?

Prater: The Defence market in India is a sophisticated market based on sound technical knowledge and a firm understanding of requirements needed for the defence of the country. For ITT, establishing a strong relationship with our Indian customer is essential to providing viable solutions that meet both current and future needs of India. Our desire is to be a value-added partner as India continues its modernization of the military by providing the most cost effective, technologically advanced and sustainable defence solution to combat their current and future threats.

SP's: The JTRS SDR developed by ITT Communications is interoperable with UK's Bowman waveform. It is an achievement that will benefit US-UK soldiers in a coalition force. However, what about communicating with other nationalities that form part of such coalition? Is research being done to evolve a universal waveform that would give such capability including communicating with legacy radios?

Prater: One strength of a Software Defined Radio is the ability to host different waveforms creating multiple communication opportunities for the user. ITT's ability to host a U.S. waveform that is interoperable with a U.K. waveform demonstrates our system's capability to host waveforms that could be used for communication between many nations.

Under an initiative by the Director of International Programs, Joint Tactical Radio Systems (JTRS), and in partnership with a number of other countries, a common/joint waveform is being discussed. This is a Government to Government initiative in which ITT has no direct involvement. Should this government initiative move forward, ITT's experience in developing complex waveforms such as the Soldier Radio Waveform and the JTRS Bowman Waveform make us well-suited for the effort.

SP's: How are robotics and artificial intelligence being exploited by ITT Communications? What are the products in which they have been programmed and what are the advantages would they provide in the battle zone?

Prater: ITT has worked with Robot manufacturers to provide the communications link to allow for remote untethered operation in demonstrations. ITT has been awarded the US contract to provide the waveform for US untethered operations. ITT plans to use related technologies in the development of a next generation network centric waveform for India.

SP's: Single Channel Ground and Airborne System (SINGCARS) has been recently demonstrated by ITT Communications, successfully exchanging both Radio Based Combat Identification (RBCI) and Radio Based Situational Awareness data between airborne, vehicle based and soldier units. Can you elaborate on capabilities of the SINCGARS and whether these technologies are available for sale and transfer?

Prater: RBCI and RBSA have been shown to be an effective tool against fratricide in the U.S. SINCAGARS system. As India is not a SINCGARS user, we would recommend the RT-1947 A/U (GEN III) RBCI radio. This small radio is a standalone RBCI Receiver-Transmitter that provides RBCI capability for coalition partners. An RT-1947A/U implements the RBCI Interrogator, Responder and Range Extension (RE) Relay capabilities for dismounted and mounted forces and is compatible with the SINCGARS radio RBCI system. This low cost device is easily installed on new or existing vehicular platforms and is instrumental in the reduction of fratricide by accurately identifying platforms as friendly. After being initially setup, RT-1947A/U does not require operator interaction to perform the responder function. When interrogated, the response will be automatic and transparent to its users. This same RT is also capable of being integrated into an Indian Weapons Platform to perform the Interrogator RBCI function. RT-1947 also supports the RBSA function. However, Blue Force tracking is only available for your local network members. ITT has a license to market RBCI in India.

SP's: ITT Communications has successfully integrated EGR support embedded GPS receiver into the SINCGARS tactical radio, enabling the system to provide position, navigation and timing for the warfighters. How can ITT Communications assist Indian Defence Forces incorporate such technology into their communications systems using the indigenous GPS under development?

Prater: ITT is able to offer Selective Availability Anti-spoofing, SAASM GPS, to Indian integrators. Whether they use SAASM or commercial grade GPS, ITT is also able to help the integrators with legacy waveform modifications to efficiently make use of the Situation Awareness data created by the embedded GPS.

SP's: How is ITT Communications tackling the problem of bandwidth in the net centric environment? What has been the experience in fielding SINCARS and JTRS SDR and what are the compression technologies being exploited? What is the basic level of bandwidth that a modern force acquiring net-centric capability should be looking at?

Prater: ITT is at the forefront of bandwidth efficiency in the net centric environment. Our current generation of radio products, SpearNet, HCDR, and GNOMAD, provide the highest data throughput capabilities for mobile networks in the world today. This combination would allow the Indian Army to accomplish a triple-play (voice, video, and data) from the front line soldier all the way to headquarters.

SINCGARS is the most widely field combat radio in the world today with over 550,000 radios in service. SINCGARS was a fixture in the first U.S. tactical internet capability and successfully transferred data and situational awareness across the battlefield as part of the US digitization capability. ITT's development of the Soldier Radio Waveform provides the next generation data transfer capability for the U.S. Department of Defense. ITT has a long history of designing network centric waveforms for the U.S. and International forces and understands the capabilities required to achieve net centricity.

Modern Network-Centric capabilities continue to increase their needs for more bandwidth. Armed Forces continue to develop new uses for data transfer capability and ITT expects this data need to continue. ITT expects a modern force to need well over 1 Mbps of capacity to acquire a network centric capability.

SP's: The Indian Army is in the process of acquiring a Tactical Communications System (TCS) for the Tactical Battle Area (TBA). What can ITT Communications offer in this context? What are the state of the art technologies and devices presently available and what are likely to be developed in the 5-10 years?

Prater: As we understand TCS requirements, TCS will need Mbps of bandwidth. ITT provides a Global Network on-the-move Active Distribution (GNOMAD) Ku-band satellite system. GNOMAD can extend the Indian Tactical Network to an on-the-move capability with data rates up to 2 Mbps. For the U.K. MoD, ITT developed the High Capacity Data Radio (HCDR). HCDR is a vehicular mounted communications system which is an IP-based MANET radio. HCDR is currently going through an important update. ITT also has the last-mile data communications through our dismounted soldier team member radio, SpearNet. SpearNet provides voice, video and data throughout its MANET network. A product and service not currently available in India, Distributed Tactical Communications System (DTCS) could be a communications aide to all Defence services in the future. DTCS offers extreme on-the-move communications over-the-horizon secure voice and position. DTCS requires no ground infrastructure and allows the soldier to communicate with all "local" DTCS radios within a 400 km radius or any DTCS radio anywhere on the globe. DTCS is a small 500g handheld radio.

SP's: Cyber warfare is emerging as a very potent threat. What protection measures have been incorporated by ITT Communications in its products? Can you elaborate on these?

Prater: Cyber warfare is a serious threat. ITT is responding to this challenge thru the incorporation of encryption modules in all of our radio products.

SP's: Present day conflict situations can have terrorists entering own communications networks. Is any research being done in the fields of speech and language recognition and processing and are there any plans to incorporate such technology into ITT Communications products?

Prater: ITT is not currently performing any research into the fields of speech and language recognition. •

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L3Com makes strong forays in ISR

A leading supplier of products and services employed on aerospace and defence platforms, L-3 Communications Corporation has rapidly emerged as the sixth largest defence company in the United States. With an employee strength of over 62,000, today it is a leader and prime defence contractor in Intelligence, Surveillance and Reconnaissance (ISR), secure communications, government services, training and simulation and aircraft modernisation and maintenance. In the commercial segment, the company has established itself as a leading supplier of guidance & navigation products and systems, sensors, scanners, fuses, data links, propulsion systems, avionics, electro optics, satellite communications, electrical power equipment, encryption products, signal intelligence, antennas and microwave products.

The company is also a major supplier of systems, subsystems and products for a variety of platforms, including those for secure networked communications and communication products, mobile satellite communications, information security systems, shipboard communications, naval power systems, missiles and munitions, telemetry and instrumentation and airport security systems. It is also a prime system contractor for aircraft modernisation, operations & maintenance , Command, Control & Communications (C3), Intelligence, Surveillance and Reconnaissance (ISR) collection systems and services, training and simulation, intelligence services and government support services. The list of customers include agencies of the US government such as the Department of Defence, Department of Homeland Security, government intelligence agencies as also major aerospace and defence contractors, allied foreign government ministries of defence, commercial customers and certain other US federal, state and local government agencies. The company has the broadest base of Electronic Systems in the industry and is a major supplier of products and services for a variety of emerging markets.

C³ISR

In the field of command, control, communications, intelligence, surveillance and reconnaissance (C³ISR), the company provides products and services for the global ISR market, specialising in signals intelligence (SIGINT) and communications intelligence (COMINT) systems. L-3 provides a unique ability to collect and analyse unknown electronic signals from command centres, communication nodes and air defence systems for real-time situational awareness and response. L-3 technologies connect a variety of airborne, space, ground and sea-based communication systems and provide transmission, processing, recording, monitoring and dissemination functionality. In addition, L-3 provides C³ systems and secure, high data rate communications systems and equipment for military and other domestic and foreign government ISR applications, as well as intelligence, logistics and other support services to the US Department of Defence and intelligence agencies.

L-3's capabilities range from products and major subsystems to prime ISR platforms, including secure communications systems, data links and command and control, network communications, remote sensors and encryption. L-3's C³ISR support services include support and sustainment activities for the US Missile Defence Agency and other test activities; intelligence collection, analysis, dissemination and sharing for the intelligence community and systems acquisition services and operational support for US and allied military platforms and programs.

L-3 integrates UAVs, sensors and communications equipment to support a variety of surveillance missions for US forces in Iraq and Afghanistan. In addition, L-3 provides full-service training support to the US Coast Guard and provides weapon system, avionics technical and engineering support on programs such as the F/A-18, EA-6B, EA-18G, F-14, Joint Strike Fighter, P-3, H-60, H-1, V-22, E-6 and multi-mission aircraft.

Homeland Security

In the regime of homeland security, L-3 Communications has leadership in a wide range of products and capabilities including crisis management; explosives detection systems for aviation, maritime, mass transportation, port and cargo security; intrusion detection; law enforcement, bioterrorism detection C² vehicles and human patient simulators.

Aircraft Modernisation & Support Services

Equipped with state-of-the-art facilities in the US and Canada, L-3 is a world-renowned provider of aircraft modernisation and support services, supporting such major platforms as the P-3 Orion, C-130 and C-27J, as well as Special Operations Forces rotary-wing platforms and the Canadian Maritime Helicopter Project.

Sensors, Guidance, Navigation & Simulation

L-3 is the world's premier provider of aircraft simulators, offering highly realistic, real-world training for a full range of rotary- and fixed-wing platforms. L-3 also offers unmatched EO/IR, guidance and precision engagement products, including an array of stabilised imaging turrets, thermal imaging systems, advanced weapon sights for the military and law enforcement, fusing products and sonars.

Microwave, RF, SATCOM & Antenna Products

For over 50 years, L-3 has been a leading provider of RF components and subsystems that range from passive catalogue RF parts through complex multi-band transceivers and space-qualified channelised amplifiers and assemblies. L-3 also leads the industry in military communications with mobile SATCOM terminals, modems and multi-band tactical radios and is a worldwide provider of ground-based radomes and precision antenna systems. •

SELEX securing military communication

The company is showcasing its wide range of products and capabilities in the ground tactical and avionics sectors.

Ground tactical sector: **SWave Radio** in both the vehicular and the handheld versions, a scalable compact software defined radio (SDR) 4-channels system based on a state of the art technology that will be the standard and the heart of every military communication in next years; Guardian, a combat proven system to protect land troops and military vehicles against Remotely Controlled Improvised Explosive Devices (RCIED) threat.

Avionics: **LOAM** (Laser Obstacle Avoidance & Monitoring), a state-of-the-art navigational aid system for rotary wing platforms able to detect potentially dangerous obstacles in flight and warn the crew to implement timely and effective avoiding manoeuvres; **M424**, a new generation IFF (Identification Friend or Foe) Transponder able to satisfy the broad spectrum of IFF requirements established for modern aircraft and helicopters (Stanag 4193), identifying both military (Mode 5) and civil aircraft (Mode S); **ANV-353**, a new generation Doppler Velocity Sensor that provides a continuous and accurate three axes velocity measurement for both fixed and rotary-wing aircraft applications; **AS-3000**, a TETRA mobile terminal built in full compliance with avionic specifications, to extend TETRA services to users in helicopters and light aircraft; **CM117**, a multiprotocol digital voice/data crypto device for airborne, naval and land tactical applications; designed for use on a wide range of civil aircraft, **1090 MHz Extended Squitter ADS-B/TIS-B Airborne Receiver** is a key technology for air traffic management to locate and identify en route aircraft as well as those in the airport area through a satellite-based system.

Selex Communications' presence in India stretches back over 20 years. It supplies avionic, tactical and naval communications systems either directly to end-customers or in partnership with leading local companies, such as HAL and BEL. In the near future, Selex Communications could provide its proven expertise in secure military communication and next-generation systems, through some of the major domestic programmes under way supporting tactical communications and the telecommunications component of the battle management system for India. •

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The new Air India on the upswing

As India scales new heights as a nation on the move, its national carrier Air India is soaring to emerge as a premier airline. The urge to excel and the enthusiasm to achieve, which characterised Air India's first flight, 75 years ago is palpable even today. The merged entity operating under the Air India brand is indeed India's finest flying Ambassador and lifeline of the nation. Air India, since its first flight on October 15, 1932, has grown to become a mega international airline with a network of 33 destinations across the US, Europe, Canada, Far-East and South-East Asia and the Gulf. On an average, Air India has been flying around 1.13 million passengers per month currently. Today, Air India is not just an airline—it is a multifaceted aviation company with state-of-the-art in-house infrastructure for maintenance repair and overhaul (MRO), ground handling and cargo operations—set to dominate the Indian skies.

Air India's efforts to turn the corner kept pace for the second month in December 2010 when it posted a record operating surplus (cash profit) of Rs 49.48 crore—as compared to Rs 21.66 crore in November 2010. This continuing trend of making cash profits, for the second consecutive month, in recent times is largely due to a significant improvement in efficiency parameters and adoption of better yield management strategies.

Air India's network passenger revenue during April—December 2010 rose up to Rs 7,941 crore as compared to the revenue of Rs 6,564 crore registered during the corresponding period of the previous year, showing a significant growth of 21 per cent. International and domestic yields improved by seven per cent and five per cent in December 2010 respectively as compared to the previous year.

All set for star alliance: On the operational side, after successful implementation of the SITA departure control system, a state-of-the-art passenger reservations system (PSS) is set to take off by January—resulting in the single code operations for Air India. This is a huge step forward before joining Star Alliance by mid-2011. Star Alliance, is a leading global airline alliance of 21 top international carriers.

Tapping core competence: Air India will also be expanding its reach through GSAs, improving customer retention through better code sharing and loyalty programmes, improving the web presence, as part of its marketing strategy. Modern processes and IT enhancements are being planned for network planning and crew management. A joint venture has been entered into with an internationally renowned service provider Singapore Airport Terminal Services (SATS) at Bangalore and Hyderabad to carry out ground handling activities for Air India and Customer Airlines flights at both these airports.

In 2011, when Indian Aviation is celebrating the centenary year in 2011-12, it is significant that India's national carrier is breaking barriers to fly into new frontiers of excellence, conscious of its commitment towards the nation and yet staying ahead of market competition to serve the best to the passenger like only it can. •

Mixed outlook

BY **R. CHANDRAKANTH**

In 2011, the recovery phase of the airline industry is expected to pause. Increase in average oil price from last year (likely to go up by at least $5 a barrel) and slower global GDP rate are among the industry dampeners.

Although the $9.1 billion profit projection for 2011 is better than the previous forecast of International Air Transport Association (IATA), the Director General and CEO of IATA, Giovanni Bisignani forecasts that the "industry would face tougher conditions than what we are experiencing today".

The purple patches come from the Asia-Pacific and the Middle East regions while the growth in North America and Europe continue to lag. Consequently, the IATA has revised its projections of net profits for 2011, up from its earlier forecast of $5.3 billion to $9.1 billion. However, the net margins remain weak at 2.7 per cent for 2010 and falling to 1.5 per cent in 2011.

IATA analysed that the operating environment will become more difficult because of:

- Increased fuel cost: For 2011, the average oil price is expected to increase to $84 per barrel, up from the $79 per barrel for 2010. This will increase fuel costs to 27 per cent of operating costs (up from 26 per cent in 2010).
- Slower GDP growth: The global GDP growth is expected to slow down to 2.6 per cent, from 3.5 per cent in2010.
- Taxation: Austerity measures, particularly in Europe, are expected to dampen demand. Significantly increased taxation in some European countries (Germany, Austria, and the UK) is increasing the cost of travel by between 3 and 5 per cent--significant enough to discourage travel and slow the industry recovery.

Aircraft demand expands

Airbus in December forecast that 26,000 new passenger and freighter aircraft would be needed up to 2029, driven primarily by replacement of aircraft for newer more eco-efficient models in mature markets, dynamic growth in emerging markets, low-cost carriers particularly in Asia and capacity growth on existing routes.

Out of the almost 26,000 additional passenger and freighter aircraft needed, around 25,000 will be passenger aircraft valued at over US$2.9 trillion. Of these additional passenger aircraft, 10,000 will replace older less eco-efficient aircraft and some 15,000 will be for growth. Taking into account today's passenger fleet of over 14,000 aircraft, the world passenger fleet will rise to some 29,000 aircraft by 2029.

In passenger traffic growth terms, emerging economies are leading the recovery. Domestic Indian traffic growth (9.2 per cent) is the fastest of any

major market and the third fastest growth overall, after traffic between the Middle East and South America, and between North Africa and the People's Republic of China (PRC). Seven out of the top 20 fastest growth flows connect China (PRC) to the rest of the world.

"Airlines in Asia Pacific including China and India will carry one third (33 per cent) of the passenger traffic by 2029, making it the largest region, overtaking Europe (25 per cent) and North America (20 per cent)," said Chris Emerson, Head of Product Strategy and Market Forecast, Airbus. •

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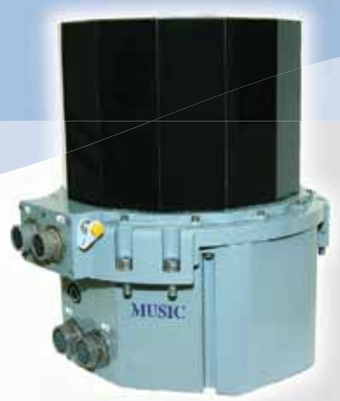

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"The Indian economy is growing strongly'

India is important to Cessna and the expanding economy should soon support a robust business aircraft fleet and infrastructure. The Indian market has readily accepted both the Citation CJ2+ and the Citation XLS+ as particularly strong aircraft for the sub-continent, alongside the Citation Sovereign. These aircraft offer excellent short-field capability in hot climates and non-stop capability anywhere within India, so are well-suited to the market.

There are currently 20 Cessna Citation aircraft operating in India, part of a total fleet of around 100 business jets. I would expect to see a total business jet fleet of 200 to 250 aircraft in India in 10 years' time.

There are nonetheless bureaucratic and regulatory issues that are not very favourable for the business jet market in India, such as high import taxes and the difficulty of transferring money into and out of the country. These issues are certainly inhibitors to the fast acquisition of aircraft. Furthermore, the limited business aviation infrastructure is currently an impediment to the development of the Indian business jet market.

There is a need to increase the number of business aviation airfields and fixed base operations (FBOs) in place, and to ease the restrictions on when aircraft can land. Airports tend to prevent business jets from landing at peak times and without FBOs, business jet passengers need to be processed through the same terminal facilities, such as security, as all other passengers. Furthermore, a larger supply of professional aircraft management companies and indigenous pilots will be a key ingredient for further growth.

By 2025, I would expect India to be in the top 10 individual countries for business jet ownership outside the US. •

—Trevor Esling, Vice President, International Sales, Cessna Aircraft Company

Falcon displays Its prowess

Thierry de Poncins
Director, International Sales, Dassault Falcon

***SP's Show News* (SP's): How has Dassault developed its well-established business relationship with India and how successful have you been?**

Thierry de Poncins (Poncins): We have a long established presence in India, thanks to our military sales which started some 50 years ago. Dassault opened its first office in the Indian capital, New Delhi, in 1987, to liaise with the air orce when we delivered the first of a series of 59 Mirage 2000 aircraft to the Indian Air Force (IAF).

The fact that we produce military aircraft with advanced technology, such as the Rafale, and that we use the same technology in our Falcon business jets, gives us some competitive advantages and is one of the reason why our brand awareness is so high in the Indian market. We delivered the first Falcon jet to a large corporation in Mumbai 15 years ago and so far we have delivered about 20 Falcon jets to customers in Delhi, Mumbai, Bangalore and Hyderabad.

SP's: How are you managing this relationship with regard to your business aviation division?

Poncins: Even as the market has become much more rational in the last few years, with customers knowing exactly what to demand and expect, our business still has a lot to do with passion, in India. Indian customers are really passionate about technology and innovation. They don't only want to know about the Falcon performance and advantages; they also want to understand why our aircraft are better than the competition. I travel to India every three weeks or so to meet with potential customers face-to-face and explain the technology. I am as passionate as my customers.

This emphasis on technology in the Indian market is a great advantage for Dassault. For example, we pioneered a lot of high-tech systems for fighter jets, such as the heads up guidance system and the advanced man machine interface, like the easy cockpit. The Falcon 7X is the first (and still the only) business jet available that's equipped with a fully-digital flight control system. Incorporating digital flight control systems has greatly increased flight precision, safety and comfort. The company is also proud of its track record in other innovations including advanced materials and aerodynamics, and the use of full digital processes during the entire product life cycle management.

Our customers are also very happy with the performance and capabilities of our aircraft because in India there are many short, elevated runways and often hot weather conditions. The Falcon jets can easily deal with these demanding situations, and much more effectively than the competition, because they are very well optimised in terms of design and weight.

SP's: What kind of customers do you have in India—corporates or high net-worth individuals?

Poncins: Our customers are mostly corporates—medium size and large companies have perfectly understood the key benefits of business aviation. Business aviation is now seen in India as a powerful tool to enable quicker and convenient access to customers within the country and worldwide. The dramatic growth of the economy, poor customer experience of travelling on commercial airlines and infrastructure improvements have all contributed to the expansion of the market over the last few years. The number of charter companies has grown impressively and more and more high net worth individuals and entrepreneurs also want to become owners. The Ministry of Transportation has well understood the importance of business aviation to the economy by offering closely tailored flexible door to door transportation for individuals, enterprises and local communities.

SP's: Which aircraft has proved the most popular in the market?

Poncins: Till date, the best performing aircraft has been the Falcon 2000 series, because of its exceptional flexibility and low operating cost. A Falcon 2000 can fly you from south to north India nonstop, in a large and comfortable cabin. At the top of our range, the Falcon 7X was certified in India last year (2010) and is becoming more attractive in India. We have already sold six Falcon 7Xs in India; the first was delivered in early 2010 and we will deliver the other five - along with 10 more Falcon aircraft (Falcon 900s and 2000s) within the next two years.

Our aircraft are also very cost-effective to run as they use up to 40 per cent less fuel than other aircraft in the same category, even with three engines (such as the Falcon 900LX and 7X). This is very important in India, as operators and owners are focused on operating costs. It also means lower gas emissions—another important factor in a market which is very concerned about environmental issues.

SP's: What level of maintenance do you offer Falcon owners and operators in India?

Poncins: There are four service centres in India—Delhi, Mumbai and Bangalore— approved for the Falcon family of jets by the local civil aviation authority. Operators can also benefit from our approved service centres in Singapore, Saudi Arabia or Dubai. Some owners prefer to go for heavy maintenance work to our main Falcon Service Centre, Dassault Falcon Service in Paris-Le Bourget. In addition to our liaison office in Delhi, we also have a technical representative in Mumbai as well as an inventory of spare parts.

SP's: What is Dassault's long-term strategy for business aviation in the Indian subcontinent?

Poncins: In the last few years, Dassault has invested heavily to increase its footprint in Asia. We opened a new office in Beijing last year in addition to our existing sales offices in Hong Kong and Kuala Lumpur. We have been in India for a long time and we have been successful. However, we are continuing to increase our efforts locally to ensure our operators continue to benefit from cost efficient and reliable operations, with the optimum support and response. In addition to our comprehensive support network, we have opened a new Falcon technical command centre in Saint-Cloud (France) providing round-the-clock advice and assistance to customers worldwide. We have also developed a suite of new and innovative technologies and online solutions for real time trouble-shooting that will start to benefit our customers by mid-2011. Last but not the least, our design office is now working flat out on the SMS, the code name for our new aircraft programme which will enter service in 2016. The new aircraft will obviously be loaded with the cutting edge technologies acclaimed by our customers.

We will have three Falcon aircraft at the Aero India. Mirage 2000 and Rafale fighters will also take part in the air display. We have supported the Bangalore Air show since its inception and also the India Aviation at Hyderabad. We intend to continue to support these shows in order to maintain a high profile within the Indian market as we do in the Middle East. •

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Versatility: Unique 8-seater multi role aircraft that can be readily converted for freight / passenger

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Economics: Unbeatable cost per seat mile, cost efficient, easy maintenance, reliable operations platform, bigger cabin & superior load carrying capacity

Safety: The only aircraft in its class certified to latest safety standards and meets the world highest airworthiness certification

Popular: More than 150 aircrafts, used for varied services in 35 countries around the globe

Choice: Powered by the reliable Lycoming family of engines, it is available in normally aspirated & turbo charged variants with optional under slung cargo pods for even more volume.

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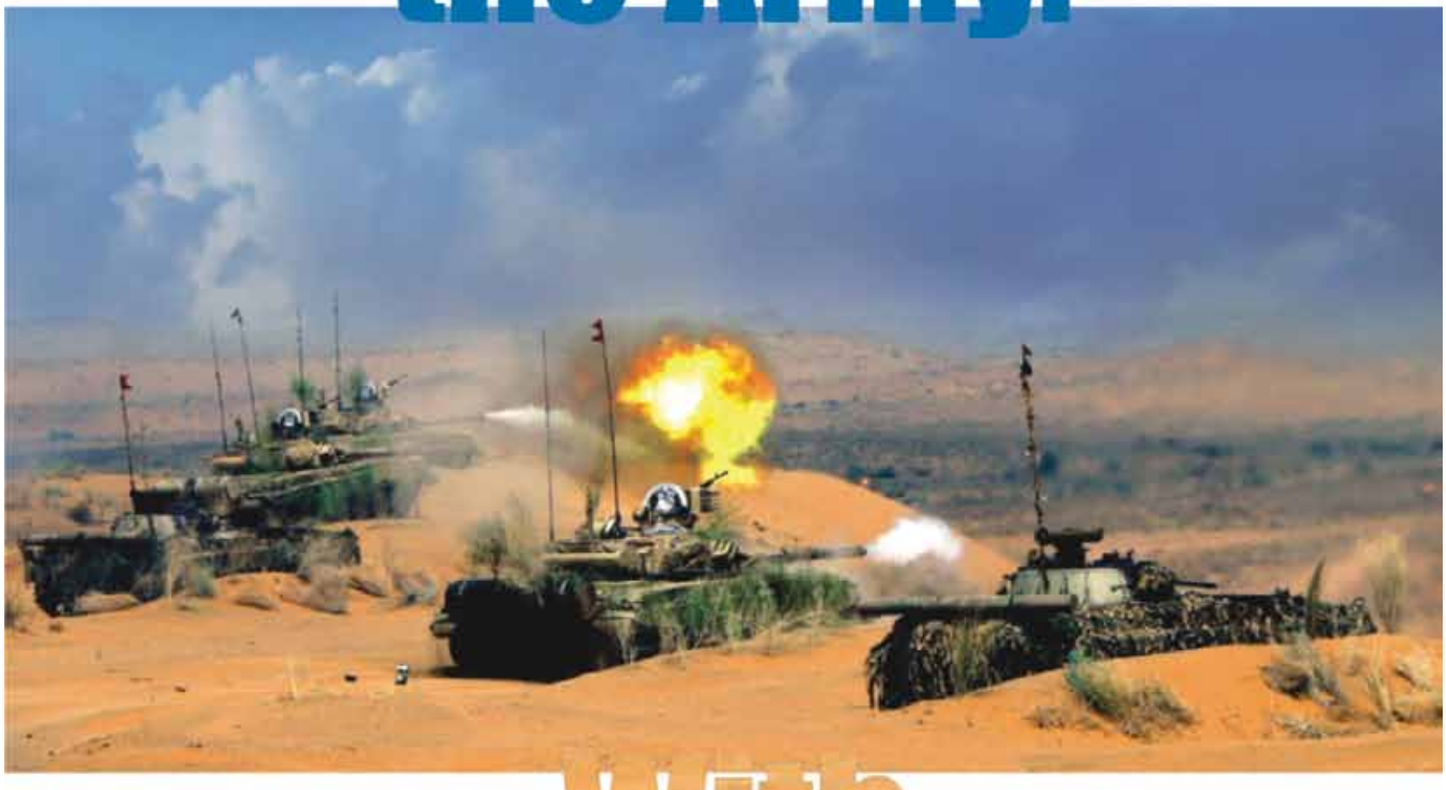

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Mahindra's Airvan

India's Mahindra Group has been making calculated forays into the aerospace industry and is well on its way towards establishing a strong global presence in both aerostructures and utility aircraft.

Having completed the acquisition of these two companies, Mahindra Aerospace is now in consolidation and build-up mode. Arvind Mehra, CEO, Mahindra Aerospace said, "Our current priority is to consolidate our achievements and build a strong foundation for ourselves in the global aerospace industry. This would be necessary to accomplish our strategic plans— commission the new Indian facility and quickly move up the value chain in aerostructures, as well as complete development and commercially launch the new aircraft models in the pipeline". He also mentioned, "In the medium term—for the aerostructures business we aim to establish ourselves as a Tier 1 supplier to large aircraft original equipment manufacturers (OEMs). On the aircraft side of the business we want to become globally recognised as a manufacturer of cost-effective, efficient, robust utility aircraft, producing and supporting a portfolio of four to 6 aircraft models.

At Aero India, the centerpiece of Mahindra Aerospace Private Limted's (MAPL) stall (A-1) will be the newly launched GA8 TC-320 Airvan, designed and built by GippsAero. The GA8 TC-320 Airvan at Aero India 2011 is bringing the same aircraft that flew around the world last year for this event. With more than 200 aircraft produced and in service across the globe, GippsAero enjoys a leading position in the field of utility aircraft. The Airvan is a unique eight-seat multi-role aircraft that can readily be converted to carry freight or passengers. Its global clientele find the aircraft ideal for a variety of operations including humanitarian relief, charter, tourism, medical evacuation, aerosports (para jumping), surveillance, freight, and training. With robust metallic construction and powered by the reliable Lycoming family of engines, the Airvan is available in either normally-aspirated or turbocharged variants. Both models offer unbeatable costs per seat-mile, ensuring an economical, low maintenance and reliable operations platform. •

'The future of business jets in India will continue to gain momentum'

Jose Eduardo Costas
Vice President
Marketing and Sales
Asia Pacific-Executive Jets, Embraer

The increase in the number of high net worth individuals (HNWI) in India is just one component that encourages the development of the executive aviation industry. Historically, the main drivers of executive aviation are GDP growth, corporate profits and stock market performance.

India's economy has not been seen to be as affected as some other parts of the world by the global financial crisis; its real GDP has grown in strong single digits since 2005, with a consistent 7.40 per cent growth from 2008 to 2009 and 2009 to 2010, respectively (source: cia world factbook). And included in the indices of Indian national wealth generation/accumulation is the fact that India's millionaire population grew by 51 per cent to 1,26,700 individuals in June 2010, according to a report releases by Capgemini and Merrill Lynch Wealth Management.

As a Brazil, Russia, India and China (BRIC) country, it is identified with much potential for further growth and the example indices mentioned above are favourable to the development of the general business environment and consequently business needs, which include the greater use of business jets as tools of trade.

However, some impediments stand in the way of significant growth for the moment, and these include infrastructure (for e.g availability of FBO's.) and logistics of arranging permits, etc.

As such, we anticipate that the future of business jets in India will continue to gain momentum but slowly and steadily as the culture develops.

What we have done and continue to do to profile our products India include performing demonstration tours around Asia with our products, presenting them to prospective customers, pilots and operators, and engaging the media to share with them, updates and information about our products, at media briefings and press conferences.

We have also extended our presence through a network of authorised sales representatives to maintain a look out on prospective opportunities; and our customer support team has been steadily increasing its network in Asia, in order to provide our clients with the best-in-class service network in the region.

Today, Embraer Executive Jets are flying all over Asia Pacific including Malaysia, Thailand, Singapore, Indonesia, Philippines, Pakistan, Australia and China.

Indeed, globally, Embraer is making a mark on the executive jet industry; our Phenom 100 jet was the most delivered executive jet in the industry in 2010, and we have also increased our market share. •

G650 Ultra Large and Expanding!

Upbeat with market projections that large-cabin business jets like the G650 will "pace the recovery" Gulfstream, the business-jet making unit of General Dynamics Corp, has announced that it would additionally invest $500 million in the next seven years to build plants for large-cabin planes.

"We are already seeing more demand for our large-cabin, long-range aircraft and are having a pretty good year so far," he said. Sales for the G650, which typically carries 8 passengers and as many as 16, will be driven by international demand," said Gulfstream President Joe Lombardo.

The Gulfstream G650 ultra-large-cabin, ultra-high speed business jet is, quite simply, the gold standard in business aviation. The flagship of the Gulfstream fleet flies faster and farther than any traditional business aircraft and envelops its privileged passengers in a level of comfort far greater than any other aircraft in its class.

Introduced in 2008, the G650 will carry eight passengers and a crew of four on nonstop legs of 7,000 nautical miles (12,964 km). That means it will link Dubai with New York and London with Buenos Aires. With its powerful Rolls-Royce BR725 engines, the G650 will cover shorter distances at a speed of mach 0.925. No traditional business jet will take you closer to the speed of sound.

Exceptional power and ultra-long legs aside, the G650 will be remarkably versatile. It will deliver excellent takeoff and landing performance with a balanced field length of just 6,000 feet (1,829 m).

The G650 is the most technologically advanced business aircraft in the sky. The G650 comes standard with many advanced safety features such as Enhanced Vision System (EVS) II, the Head-Up Display (HUD) II and the Synthetic Vision-Primary Flight Display (SV-PFD). Its Planeview II cockpit comes equipped with a triplex flight management system, automatic emergency descent mode, 3-D weather radar, advanced flight controls – in short, a full array of sophisticated, next-generation technology to improve pilot situational awareness and enhance safety.

Gulfstream engineers paid particular attention to the cabin environment. In fact, they designed it from the inside out. Longer, wider and taller than any other cabin in its class, the G650 living environment provides comfortable accommodations for up to 18 people. Choose from 12 select floor plans to configure the G650 to meet your specific mission requirements. The cabin can be configured with a four-place conference table with two additional seats across the aisle for meals or meetings for up to 6 people. Enjoy wider seats, more aisle room and a large stateroom option for resting up between world capitals.

If time is money, then the time saved jetting from continent to continent is money in the bank. Consider the value of the G650 not only in terms of time saved, but also in more tangible ways: In the excellent warranty Gulfstream offers on the primary aircraft and the secondary structure. In the worldwide product-support network that Gulfstream maintains on 6 continents. In the technological advancements that enable the flight crew to reach new levels of situational awareness and overall aircraft safety. And in the inherent value of the Gulfstream name itself.

"We built the first airplane specifically intended for business use decades ago. We know our business. We believe the G650 is the finest aircraft we've ever built." •

In the defence sector, trust does not just emerge from the blue. It evolves through the confidence imparted by a truly deserving partner. We, at Merlinhawk, have nurtured the trust of India's defence and aerospace sectors for over 25 years. With precision airborne and ground-support solutions; all requisite accreditations for design and manufacture; the precision and quality that comes from cutting-edge facilities and processes and above all, the zeal and commitment of a true partner.

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MAKING IDEAS FLY

From SU-30MKI to MC-21

Oleg F. Demchenko,
President, Irkut Corporation

***SP Guide Publications*: Irkut Corporation has been very well known in India by the Su-30MKI. What are the prospects of the program?**

Oleg F. Demchenko (Demchenko): The Su-30MKI program has already produced excellent results, and thus it has a big future ahead.

The program allowed both the aviation industries of Russia and India to upgrade bilateral relationship as "buyer-seller" to the stage of scientific-industrial partnership with ambitious prospects.

Together with the "Sukhoi" Company we have started negotiations with Indian experts on the image of the Super-30 upgraded aircraft. It is absolutely clear that it will surpass all existing 4++ generation aircraft due to active phase-array radar, state-of-the-art avionics and new generation weaponry of Russian and foreign origin.

The Su-30MKI will be equipped with the Russian-Indian BrahMos supersonic missiles able to penetrate the most advanced air defense.

Carrying on our cooperation on Su-30MKI we have been developing new programs. In the military field it is Yak-130 - the new generation combat trainer, and MC-21, medium range prospect airliner – in civil aviation field.

Q: What is the reason for Irkuts engagement with civil aviation, while being so successful in the military field?

Demchenko: Our main goal is to become a high-tech diversified enterprise – the main player on the world's transport and narrow-body passenger aircraft market.

Irkut Corporation nowadays has been expanding all spheres of its activity including the Corporation size, production volume and export destinations. We have been reaching the first results of our diversified program being started several years ago. By now, the order book is exceeding 6 bln. USD.

Q: What are the MC-21 main features?

Demchenko: This aircraft will surpass all existing ones by cost-efficiency and comfort. MC-21 will ensure direct operational costs cut-off by 12-15% in comparison with the aircraft we fly today. Moreover MC-21 will provide passengers with a significantly higher level of comfort onboard.

Q: When do you expect MC-21 take-off? Is there any demand on this aircraft?

Demchenko: We are going to start MC-21 aircraft delivery in 2016. During the second half of 2010 we concluded firm contracts as well as memorandums on 190 aircraft. To my point of view MC-21 will be of great interest for our industrial partners in India as well as the local airlines.

Q: India-Russia established a joint venture on the Medium Transport Aircraft (MTA) development. Will Irkut participate in this program?

Demchenko: Will be for sure, as Irkut is responsible for all the military-transport aviation programs. The Irkut Corporation Engineering Center will take part in MTA design. The aircraft production line is supposed to be arranged at the Ulianovsk-based Aviastar-SP plant where I was elected as the Chairman of the Board of Directors. This enterprise will be the core element of the Russian aviation industry for the transport aircraft production.

Nowadays Aviastar-SP has been producing the IL-476 upgraded military-transport aircraft to surpass a well-known IL-76. The aircraft efficiency is to be extended due to the low consumption and environment-friendly engines, glass cockpit and new avionics. It will form up a family of specialized aircraft including tankers.

Q: During various exhibitions in 2010 Irkut promoted the An-148 aircraft. What is this aircraft? Are you going to promote it in India?

Demchenko: An-148 – is a regional aircraft with 80 passengers capacity which came into service with the Russian and international airlines in 2010.

It is the best choice for operations in undeveloped and poorly equipped airfields. An-148 could be used as a basis for production of transport and specialized aircraft.

I am sure that many of the new Irkut programs are of great interest for our customers in India and all the South-Asian region. From our side we will do our best to follow the path of our state leaders to increase further development with our partners in India. •

MC-21

Aircraft family with expanded operational capabilities and a new level of economic efficiency

- 12–15% operational cost reduction in comparison with existing analogues.
- Innovative design solutions for airframe.
- Optimal fuselage cross-section to increase the comfort level or to reduce the turnaround time.
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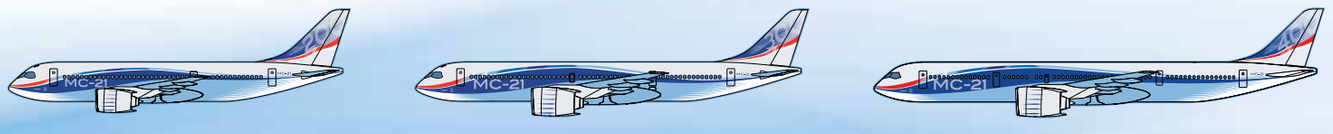
- Matching future environmental requirements.
- Expanded operational capabilities.



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Self-reliance for strategic and economic reasons

The Government of India has recently announced the Defence Production Procedure (DPP) 2011, in its endeavour to become self-reliant in defence production, for both strategic and economic reasons.

After consultation with various stakeholders, the government has put in place a Defence Production Policy. The objectives are to achieve substantive self-reliance in the design, development and production of equipment/weapon systems/platforms required for defence in as early a timeframe as possible; to create conditions conducive for the private industry to take an active role in this endeavour; to enhance potential of SMEs in indigenisation and to broaden the defence research and development (R&D) base of the country. The overall aim is to ensure that the Indian armed forces have an edge over its potential adversaries at all times—in immediate terms as well as in sustainability.

The Policy

- Preference will be given to indigenous design, development and manufacture of defence equipment. Wherever the required arms, ammunition and equipment can be manufactured by the Indian industry within the timelines required by the Services, the procurement will be made from indigenous sources. If the Indian industry cannot make and deliver the equipment as per the service quality requirements (SQRs) in the requisite timeframe, procurement from foreign sources would be resorted to, in accordance with the DPP. While examining procurement cases, the time taken in the procurement and delivery from foreign sources vis-à-vis the time required for making it in the country, along with the urgency and criticality of the requirement will be examined as per the DPP before deciding to proceed with procurements from foreign sources.
- Based on the approved long-term integrated perspective plan (LTIPP), equipment/ weapon systems/platforms required 10 years and beyond will by and large be developed/integrated/made within the country. Sub-systems/equipment/components that are not economically viable or practical to be made within the country may be imported, ensuring their availability at all times. However, as far as possible, the design and integration of the platform/system will be undertaken within the country.
- Government will endeavour to build a robust indigenous defence industrial base by proactively encouraging larger involvement of the Indian private sector in design, development and manufacture of defence equipment.
- In order to synergise and enhance the national competence in producing state-of-the-art defence equipment/weapon systems/platforms within the price lines and timelines that are globally competitive; all viable approaches such as formation of consortia, joint ventures and public private partnerships, etc within the government approved framework will be undertaken. The academia, R&D institutions as well as technical and scientific organisations of repute will be involved for achieving this objective.
- Government will further simplify the procedures under the "Make" category of the DPP in such a manner that it enables the indigenous design and development of the required equipment/weapon systems/platforms by both public and private industry in a faster timeframe.
- Service Headquarters (SHQs), while laying down the qualitative requirements for defence equipment/weapon systems/platforms to be developed/integrated/made, will exercise due diligence at all times to keep in view feasibility and practicability of the QRs. It will be ensured that the systems/platforms designed/developed/integrated in the country provide a competitive edge to our Services vis-à-vis our potential adversaries.
- Government also recognises that development of complex systems is generally a stage process with incremental changes progressing from Mk-I and Mk-II and so on. The stage process will be followed. However, at every review of such developmental projects by the Defence Production Board or Defence R&D Board as the case may be, it will be ensured that our equipment, weapons systems and platforms are such that they provide an edge to our forces over our potential adversaries. In case of delays in the realisation of the projects, the corresponding proposal will be processed as per the DPP and the option of "Buy" shall be followed for the necessary numbers till indigenous production capability is established where after indigenous systems shall be procured.
- Policies will be put in place to encourage the OFB, DPSUs and the private sector to strengthen their research and development wings so that constant upgradation and improvement in systems under manufacture is possible.
- Government will set up a separate fund to provide necessary resources to public/private sector including small and medium enterprises (SMEs) as well as academic and scientific institutions to support research and development of defence equipment/systems enhancing cutting edge technology.
- In all cases of transfer of technology, DDP along with DRDO, HQIDS and SHQs will be involved in identification and evaluation of requisite technology, and subsequently would be responsible to ensure that appropriate absorption of technology takes place in the Indian industry. Thereafter, successive generations of the weapon systems/ platforms will be developed in the country.
- Upgrades will be carried out by the Indian Industry as far as possible. DRDO, HQIDS, SHQs, OFB, DPSUs and the private sector will work in close coordination for continuous upgradation in systems.
- The Committees set up under the DPP will process the acquisition proposals in accordance with the above policy guidelines.
- The Defence Minister will hold an annual review of the progress in self-reliance that has been achieved during the year. •

Products eligible for discharge of Offset obligations

Defence Procurement Procedure 2011 was released by the Minister of Defence, A.K. Antony on January 6, 2011. The list of products eligible for discharge of offset obligations under (DPP) 2011 are as follows:

Defence Products

- Small arms, mortars, cannons, guns, howitzers, anti-tank weapons and their ammunition including fuze.
- Bombs, torpedoes, rockets, missiles, other explosive devices and charges, related equipment and accessories specially designed for military use, equipment specially designed for handling, control, operation, jamming and detection.
- Energetic materials, explosives, propellants and pyrotechnics.
- Tracked and wheeled armoured vehicles, vehicles with ballistic protection designed for military applications, armoured or protective equipment.
- Vessels of war, special naval system, equipment and accessories.
- Aircraft, unmanned airborne vehicles, aero engines and air craft equipment, related equipment specially designed or modified for military use, parachutes and related equipment.
- Electronics and communication equipment specially designed for military use such as electronic countermeasure and counter countermeasure equipment surveillance and monitoring, data processing and signalling, guidance and navigation equipment, imaging equipment and night vision devices, sensors.
- Specialised equipment for military training or for simulating military scenarios, specially designed simulators for use of armaments and trainers.
- Forgings, castings and other unfinished products which are specially designed for products for military applications and troop comfort equipment.
- Miscellaneous equipment and materials designed for military applications, specially designed environmental test facilities and equipment for the certification, qualification, testing or production of the above products.
- Software specially designed or modified for the development, production or use of above items. This includes software specially designed for modelling, simulation or evaluation of military weapon systems, modelling or simulating military operation scenarios and command, communications, control, computer and intelligence (C4I) applications.
- High velocity kinetic energy weapon systems and related equipment.
- Direct energy weapon systems, related or countermeasure equipment, super conductive equipment and specially designed for components and accessories.

Products for Internal Security

- Arms and their ammunition including all types of close quarter weapons.
- Protective equipment for security personnel including body armour and helmets.
- Vehicles for internal security purposes including armoured vehicles, bullet proof vehicles and mine protected vehicles.
- Riot control equipment and protective as well as riot control vehicles.
- Specialised equipment for surveillance including hand held devices and unmanned aerial vehicles.
- Equipment and devices for night fighting capability including night vision devices.
- Navigational and communications equipment including for secure communications.
- Specialised counter terrorism equipment and gear, assault platforms, detection devices, breaching gear, etc.
- Training aids including simulators and simulation equipment.

Civil Aerospace Products

- All types of fixed wing as well as rotary aircraft including their airframes, aero engines, aircraft components and avionics.
- Aircraft design and engineering services.
- Technical publications.
- Raw material and semi-finished goods.
- Flying training institutions and technical training institutions (excluding civil infrastructure). •

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A-grade is what we want: Defence Minister

On the eve of the eighth edition of the International air show Aero India 2011, the Minister of Defence, A.K.Antony was categorical that no country in the world will transfer technology which "A grade". I am very clear about it. It is the reality and we have to build our own technological capabilities."

Inaugurating the International seminar on Aero and Aerospace technologies, organised by the DRDO here in Bengaluru, Antony said "we need critical technologies and we cannot say that India has come of age." The need for enhanced cooperation between DRDO, industry and universities is urgent.

"While the success stories of LCA Tejas, Akash missile system and unmanned aircraft – Nishanth, pilotless target aircraft Lakshya and varieties of airborne early warning systems are a cause for satisfaction, a lot more needs to be done to meet the needs of our Armed Forces. DRDO and our Armed Forces need to step up the quality and pace of interactions to develop latest technologies and the best products."

The Minister said that India's challenging roadmap to develop advanced medium combat aircraft, aerostats, unmanned combat aircraft, airborne early warning and control system, etc indicated the opportunities that exist not only for all indigenous institutions and industries, but also for partners around the globe. •

Anand Mahindra's take on India leap-frogging in aerospace

Setting the tone for Aero India 2011, Anand Mahindra, Vice Chairman and Managing Director, Mahindra & Mahindra on February 7 said if India had to leap-frog in aerospace sector, three areas – design engineering services, aerostructures manufacturing and utility aircraft – needed to get increased attention from both public and private enterprises.

"We have set in motion plans in all the three areas," he announced at the International Seminar on "Aero and Space Technologies success through global cooperation", organised by Defence R & D Organisation (DRDO). These three areas, he stated, would help India tightly fit into the global aerospace supply chain.

Without disclosing further plans on manufacture of a five-seater light utility aircraft, Anand Mahindra said there was need to connect the hinterland of India to put the entire nation on the growth path. Mahindra would be moving facilities from Australia to India to manufacture the light utility aircraft.

While praising the efforts of the public sector, he said the private sector "is far from being what it should be. Private sector lacks the scope and scale. We at Mahindra believe that the current state of the private sector is a glass half-full, an opportunity, not an obstacle."

The policy in its new incarnation is a fundamental game-changer, he said and added that to ensure that large purchase from abroad have to be matched by large domestic spends. "The offset situation is creating a flood. Industries have positioned themselves to serve these waters, but the danger is the flood could drown us. The policy could blunt our competitive edge because guaranteed business lulls one into complacency. The policy is an enabler and not an end in itself."

For the sector to transform itself into a global hub, the policy has to be used smartly and it would mean doing global co-investments. India had to ensure that it got the best of technology and also future technology. "From transfer of technology we should move to technology co-creators." The third aspect was increased public private partnerships. •

Star performers from Northrop Grumman

Northrop Grumman, a leading global security company, is highlighting a range of capabilities in the regime of intelligence, surveillance and reconnaissance (ISR) including airborne early warning and control systems for maritime reconnaissance, fire control radars and unmanned aerial vehicles.

The latest is the Hawkeye E2D Airborne Early Warning and Control System. Successor to the E2C, the aircraft carries the newly designed electronically scanned AN/APY-9 radar, matching suite of sensors, avionics, processors and software to provide the most technologically advanced command and control capability available. The Indian Navy is keen to induct this capable and the only carrier borne system in its category which is already operational with the US Navy. An E-2D Advanced Hawkeye crew work-station will be among the exhibits to demonstrate the benefits of the E-2D for military and civil applications.

Northrop Grumman has also responded to the RFI floated by the Ministry of Defence for the naval version of the Global Hawk for the Indian Navy . Currently designated as the MQ-4C Broad Area Maritime Surveillance Unmanned Aircraft System (BAMS UAS), the system is envisaged by the Indian Navy to operate in coordination with the Hawkeye E2D. It builds 40 per cent of the fuselage of the Super Hornet and provides AN/APG-80 Actively Electronically Scanned Array (AESA) fire control radar for the F16. The AN/APG-81 AESA Radar is fitted on the fifth generation F35 Joint Strike Fighter Lightning II. In over four years of operational service, there has not been a single case of failure under field conditions of the AN/APG-80 AESA radar. Sale of the AN/APG-80 AESA radar has been cleared by the US for sale to India.

Talked about for the first time in India is Northrop Grumman's STARLite programme, a small, lightweight wide area surveillance radar that can be carried on board a variety of manned and unmanned platforms. It is now moving beyond defence applications for its products to offer homeland security solutions for which the company perceives the market potential in India to be enormous. •

BEML's foray into aerospace domain

Launched in February 2009, the Aerospace Manufacturing Division (ASMD) of BEML was setup to foray into the aerospace domain as a diversification strategy to exploit the manufacturing opportunities likely to be generated due to the defence offset policy. The manufacturing unit's initiatives include:

Aircraft Towing Tractor

Aircraft Towing Tractor (ATT) is an indigenously developed equipment having compact and low profile design which enables the machine move under the fuselage of wide body aircraft for push out and dock-in operations. It can also be adopted for towing heavy duty trailers. Three variants of ATT are available to pull the aircraft weighing up to 300 tonnes. An ATT with inbuilt 40 KVA, GPU is specifically designed and developed for military applications.

Salient features include high torque engine for sustained power and fuel economy; automatic power shift transmission with power load matching; soft shift system for smooth gear shifting; air actuated brake system for positive brake action on both front and rear wheels; and LED warning clusters, indicators and rocket switches.

Automatic Weapon Loader

Automatic weapon loader (AWL) is manufactured by BEML for the use of Indian Air Force. This design can even be used for towing of small aircraft on tarmac. AWL has a maximum lift capacity of 1,000 kg.

Crash Fire Tender (CFT)

The crash fire tender (CFT) is used for extinguishing fire in the event of air-crash. The CFT is designed with special features required for emergency applications. The CFT vehicle is provided with centralised tyre inflation/deflation system inside the cabin which enables inflation/deflation of tyres depending on terrain conditions.

Slat Jig

The jig used for assembly of the wing slat for SU 30 was manufactured at BEML. This jig is one of the complicated jigs of the SU 30 aircraft structure building. The jig has been successfully commissioned and proven at HAL, Nasik Division. The jig is 5,200 mm in length, 2,000 mm in height and 1,100 mm in width. The Jig has 12 locators on top, 12 locators in bottom and six E-locators. The manufacture of jigs involved conventional machining operations, CNC milling and accurate jig setting.

GEARS

BEML being a pioneer in manufacturing of transmission assemblies, final drive and hydraulic systems for earth moving equipment, has the core competence of gear manufacturing and precision hydraulic assembly. The variety of machinery and skill sets available in this domain as paved way for BEML Aerospace manufacturing division to manufacture gears for helicopter requirements. Currently, the Aerospace Manufacturing Division has taken up manufacture of gears for advanced light helicopter (ALH), Cheetah and Chetak helicopters of Hindustan Aeronautics Limited. A dedicated facility for aerospace gear box manufacturing is being set up and will be commissioned by year 2012. •

Aces High! **Shahid Kapoor in F-16**

Indian film actor Shahid Kapoor will be flying on a US F-16 fighter aircraft at the Aero India 2011. The young actor is playing the role of an air force officer in the yet-to-be-released movie 'Mausam'.

Shahid Kapoor will do the "sortie", certainly as a joy ride, on the fighter jet of US aerospace major Lockheed Martin, with a pilot giving him company in the cockpit, according to a Lockheed Martin spokesperson. 'It is a huge honour and privilege and at the same time probably the coolest thing I've done yet in life... I am super excited about it,' Shahid said in a statement. •

Ambulances on alert

The organisers of Aero India 2011 are not taking any chances in case there are casualties during the show. They have organised medical rooms, and mini hospitals with a team of doctors at the venue.

The air force base has also tied up with over 20 hospitals in the city to treat people in case of need. There is an IAF hospital just opposite the venue too. There will be two air ambulances and a transport aircraft to take the injured people to various hospitals.

Two helicopters will be kept ready to fly any injured persons to the HAL airport, from where they will be taken to the Command Hospital and other hospitals. •

"Flying car" on static mode

While the jets of various airframers are going to roar, parked at Yelahanka Air Base will be a "flying car", made out of the popular small car Maruti 800. The "flying car", a concept designed and developed by a Bengaluru-based company – Bangalorean – is not going to be a show-stopper, but a distraction nevertheless.

"A Bangalore-based gentleman has developed the concept and he claims that this car can fly. He has done necessary modifications," according to Secretary Defence Production Raj Kumar Singh. "Since it has not received necessary permissions from the Director General of Civil Aviation (DGCA) to fly we have granted it space for static demonstration only," Singh added. •

"Top Gun" Fly a Gripen contest

It is a once-in-a-lifetime opportunity. To fly one of the most advanced fighter aircraft – the Gripen. And you don't have to be a Top Gun to do that. You just have to be lucky. Yes, of course, to be flying with a hot shot Saab pilot.

To get to be in that hot cockpit, anyone with brains and a lot of luck, Gripen has run a series of contests, of course all related to aviation. For details visit www.gripentopgun.com. The Gripen Top Guns contest has an amateur and professional level challenge to test the knowledge of aircraft buffs while providing an opportunity for XBOX, PSP and computer games buffs the opportunity to enter their best flying effort on the Gripen and take a shot at flying the real Gripen. The Gripen game entries will be judged by top Swedish and Indian pilots to select a few who will get a shot at flying the real Gripen aircraft simulator. Out of the five chosen simulator 'pilots', one will get to fly the real thing: the JAS 39 Gripen. We will know soon who the "aviator" is going to be. •

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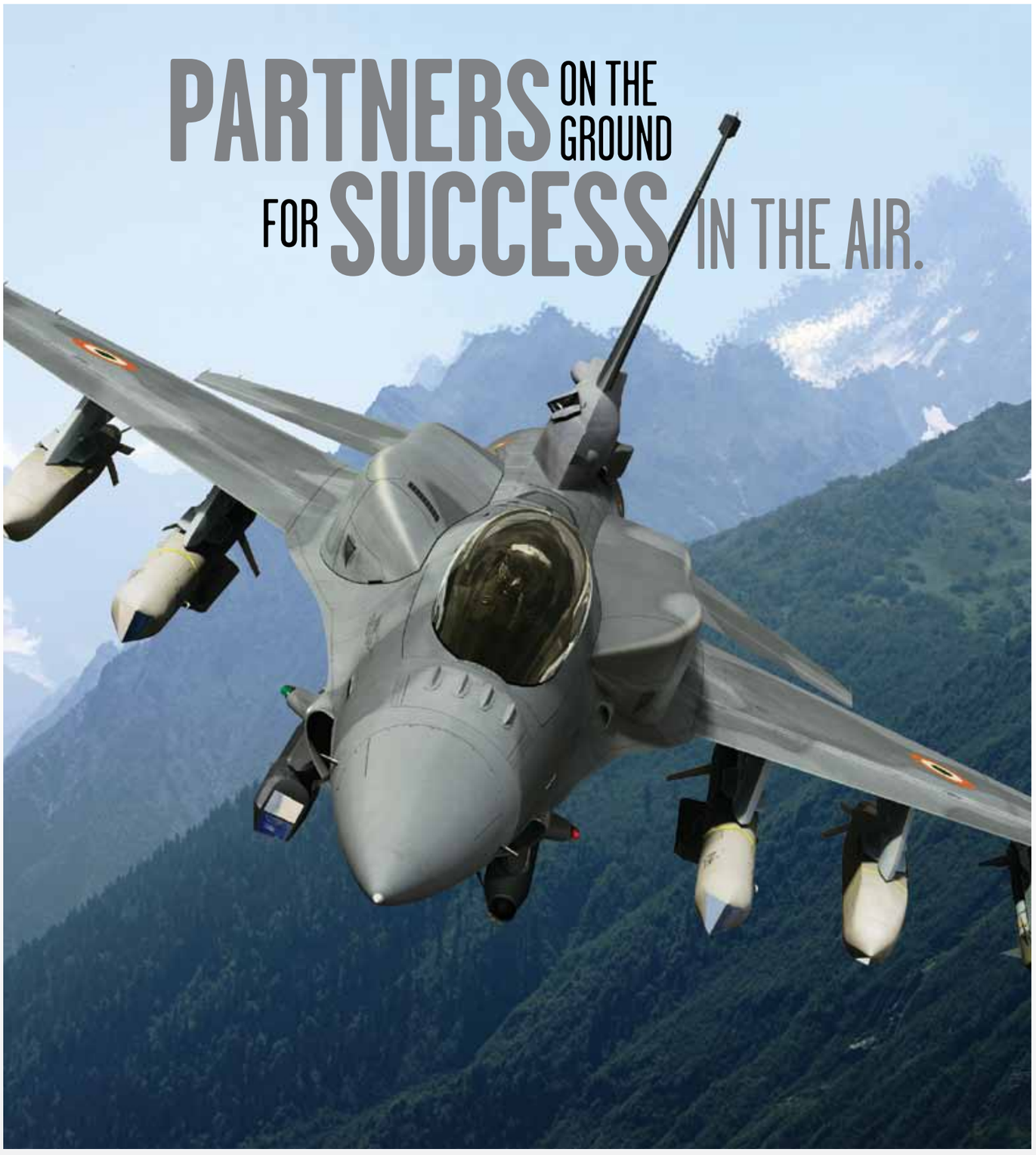

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