SHOW DAILY

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Singapore Airshow Flies High

When the Singapore Prime Minster said that his government had delivered a promise by getting the Singapore air show off the ground and right on time-he was perhaps heralding the sentiment that's come to epitomise the show's success.

The parting of ways with the Asian Aerospace show has ultimately gifted Singapore with a mega event that many say is already a resounding success.

Raymond Francis of the **Boeing Company** said: "The show has been a great success and for a first-time event organisers have done a great job. The facilities are wonderful and the new site is a hit. The show is proving to be very important for us, being able to meet our customers and suppliers in the region and take forward our relationships"

The new site has injected the show with verve. Says Pek **Kee Sum, Eurocopter's** International Media Manager:" Our relationship with the air show

Contd. on page 02

3,007 Aircraft worth US$ 393bn Forecasted For Southeast Asia Region by 2026

Boeing presented a forecast on the South/Southwest Asia market on the second day of the Singapore Airshow. At a press briefing. Dr. **Dinesh Keskar,** Senior Vice President, Sales, **Boeing Commercial Airplanes** said that the company foresees a requirement of 3,007 planes worth US$ 393 billion in the South/Southeast Asia market in the next 20-years.

He stated that the region's market will witness a robust growth across the numerous routes in the region at an average growth of 6.9 per cent per year. According to Boeing the Southeast Asian region will require a total of 1,940 aircraft worth US$ 290 billion out of which majority will be single-aisle aircraft amounting to 45 per cent (873 aircraft) of the total order. This will be followed by 38 per cent (737) twin-aisle aircraft and 12 per cent (233 aircraft), while the 5 per cent (97 aircraft) will be for regional jets.

Dr. Dinesh Keskar,
Senior Vice President, Sales,
Boeing Commercial Airplanes

On the other hand, the Southwest Asia market will be dominated by India with the overall requirement of the region coming to 1067 aircraft worth US$ 103 billion. This includes 70 per cent (747 aircraft) being dominated by single-aisle aircraft followed by 21 per cent (224) twin-aisle

Contd. on page 02

Free Power for Civilian Aircraft

Airbus has successfully tested a fuel cells system in flight. For the first time on a commercial aircraft this innovative energy source powered the aircraft's back-up hydraulic and electric power systems.

The test conducted this month is part of Airbus' overall plans for an eco-efficient aviation industry. It supports the on-going research to evaluate the potential use and environmental benefits of fuel cell technology and zero emissions power generation in civil aviation.

According to Patrick Gavin, Airbus Executive Vice President Engineering, ' Fuel cells offer tremendous potential environmental benefits and operational savings' and this is another example of Airbus providing leadership for an eco-efficient industry , one which creates value with less environmental impact."

This achievement will enable Airbus and its partners to further develop ways to implement fuel cell technology for replacing other aircraft systems such as the emergency power systems and the Auxiliary Power Unit (APU). This would significantly reduce the noise and emission levels in and around the airports.

The fuel cell system developed by Airbus and Michelin was tested on the A320 test aircraft owned by DLR, the German Aerospace Centre. Airbus has been working on fuel cell technology in cooperation with Michelin, Liebherr Aerospace and DLR since the end of 2005.

Singapore Airshow....

Contd. from 01

at Singapore has been fruitful over 26 years. This year we have good static display-with 6 helicopters on show. We are glad for the opportunity to meet customers in the Asia Pacific region, which is a booming market for us".

Says **Rany Nasser** of the **Abu Dhabi airports company:** "The show has gone well. We are very happy that such a large number of people have shown interest in Abu Dhabi and the Terminal Complex. We see much success and hope this relationship continues in the future".

Al Creque, Director of Product Marketing at **Engine Alliance, USA,** was of the opinion "the air show has been very active and we've made a lot of good contacts. This was a very well organised event with good facilities and I really liked the venue".

Over from India, Chairman **Ratan Tata** of the **Tata Group** remarked rather concisely:" It's a good show".

And an **ATR official** underlined the relationship factor which emerges as so important at the end of the day. He said: "Because ATR is well established in the area, occasions like the Singapore Air show are interesting and a good moment to get close to clients. The show has been very well organised and we've been in touch with both customers and potential clients. ATR is very satisfied". All in all, seems like the ratings are heading for a whole lot of stars.

-Amitabh Joshi

3,007 Aircraft worth US$ 393bn.....

Contd. from 01

aircraft, 8 per cent (85 aircraft) single-aisle and 1 per cent (11) for larger aircraft.

Out of the total 1,940 aircraft, the requirement for new airplanes in the Southeast Asia region would be for 1,430 new airplanes for growth, 510 for replacements while 370 will be retained in the fleet. "One of the fastest growing region in terms of demand in the Southeast Asian region will be Indonesia as well as Malaysia with a combined requirement of 740 new aircraft in the next 20 years." The Southwest Asia region will witness a high percentage of new aircraft deliveries at 882 new aircraft for growth followed by 185 new aircraft for replacement and 180 being retained in the fleet out of the total demand for 1,067 aircraft.

As mentioned before, the Southwest Asian region will be dominated by India with a whopping 85 per cent of the aircraft delivered to the Indian carriers with a total of 911 aircraft worth US$ 86 billion. The requirement in the single-aisle aircraft will continue to dominate until 2026 but the popularity of the twin-aisle aircraft will increase in the coming years. "The majority of the growth from the forecast last year has been due to the change in the twin-aisle market and if the market leaders in the India want to retain their market share then they will have to expand their fleet."

But Keskar was also quick to point that if the Indian carriers have to survive and sustain in the market condition then they will have to consolidate since over capacity will lead to closure for many operators. "The options that are available for the Indian carriers to survive in the market are to consolidate, improve yield and hope for a reduction in the fuel prices."

With the phenomenal increase in the number of aircraft as well as the operators in India, Keskar predicts that this growth will allow the operators to connect flights to destinations like Australia, Munich among others, which were not operated before.

-Bhavya Desai

BAE forecast
Market for Hawk Jet likely to Total 1000 by 2018

BAE Systems expects the possible market for the next generation Advanced Jet Trainer Hawk to a total about 1,000 aircraft in the next 10 years, the group's training solutions new business director Mike Rudd said at the Singapore Air Show.

BAE is hoping to turn at least half of the potential market for its Hawk trainer jet in the next decade into firm business, the British defence and aerospace group said.

'We would estimate for business planning purposes that we would be able to access about half that market,' Rudd said.

BAE has won orders for the latest version of the aircraft from Bahrain, India and

the UK and up to 20 air forces in the world use the trainer.

India is already on course to acquire another 40 British 'Hawk' advanced jet-trainers to add to the 66 such aircraft already contracted in the US$ 1.45 bn project finalised in March 2004.

According to reports, the proposal will be placed before New Delhi's Cabinet Committee on Security for the final nod. The 40 new Hawks will be manufactured by Hindustan Aeronautics Ltd (HAL), which is already gearing up to take on the production of 42 AJTs from the earlier deal.

The original 66 Hawks are slated to be delivered in a phased manner by 2010-2011.

The Hawk deal, was signed in 2004 after a delay of almost two decades despite the Indian Air Force desperate that it needed around 120 AJTs to teach its rookie pilots the intricacies of combat flying.

BAE is, meanwhile, facing growing competition for trainer jet business from the Aer Macchi trainer jet made by Italy's Finmeccanica SpA and the T50 Golden Eagle from Korea Aircraft Industries.

Pg No. 3 Lockheed How between AD

REX Announces Pilot School Plan to Deal With Shortage

Regional Express (REX), the largest independent regional airline in Australia, has started its own pilot school to alleviate a severe pilot shortage in Australia. The first batch of 16 cadets, handpicked from 1,600 applicants, will graduate in July 2008.

Highlighting the pilot shortage Lim Kin Hai, executive chairman of REX said: "No airline in the world can withstand a 60 per cent annual attrition rate of its pilot strength without catastrophic damage and the fact that we have only suspended 6 per cent of our services is a testimony to the dedication and sacrifices of our staff and the rapidity of management's response to this severe crisis."

"With the school, we will have about 20 new pilots every three months, largely sheltering Rex from the massive recruitment of our trained pilots by the main airlines," he explained.

Rex is Australia's largest independent regional airline operating a fleet of 37 Saab 340 aircraft on 1,300 flights weekly to 24 destinations from Sydney, Melbourne and Adelaide. The Rex Group comprises Regional Express, air freight and charter operator Pel-Air Aviation and Dubbo based regional airline, Air Link.

Lim was speaking to the media on the sidelines of the Singapore Airshow 2008, where details of REX's agreement with Saab Aircraft Leasing to enter into a long-term lease for 25 latest generation Saab 340Bplus aircraft was revealed.

The Saab 340Bplus aircraft features a redesigned extended wing which increases flight performance capabilities as well as improves on fuel efficiency. Passenger comfort is also greatly enhanced in the cabin which comes equipped with state-of-the-art active noise canceling system, larger stow away compartments and modern interiors and lighting.

Michael Magnusson and Lim Kim Hai

-Nazir Keshvani

SDV on a Contract Signing Spree

SDV International Logistics, part of the Bollore Group, the French company has signed an agreement with the company GAMECO, for transportation of aircraft components from Europe to China and Singapore to China.

The deal was signed between **Jerome Petit,** Regional Director Asia Pacific, **SDV International logistics** and **Yuan Zhonghe**, Deputy General Manager, **GAMECO.**

SDV International is operating in Singapore since the beginning of the 90's and has developed its activity recently in China with staff trained to address to the requirement of the companies of the aeronautics and space industry. In Singapore, the group is operating a fully dedicated warehouse for aerospace. The group has created an associated service making its specialists skills available to industry on product sites. SDV is also signing another agreement with **KLM Aerospace Logistics Company** during the Singapore Airshow.

Rolls-Royce Extends on-wing Care to Singapore

Rolls-Royce and SIA Engineering Company (SIAEC) are combining to offer extended maintenance capabilities to support the growing fleet of Trent engines.

Under the new agreement, Rolls-Royce will offer On-Wing Care services at Singapore Changi Airport, using SIAEC's extensive capabilities. A range of line maintenance support services, from boroscoping to engine change, will be available for Trent operators.

On-Wing Care provides a range of specialised line maintenance support across the globe to be at the closet point of operation to Rolls-Royce customers to maximise engine availability.

Miles Cowdry, President Services, **Rolls-Royce,** said: "Singapore is a major hub for airlines and aerospace activities. The development of On-Wing Care in Singapore extends our existing presence and our relationship with SIAEC, with which we have established a long-standing and successful relationship in our SAESL repair and overhaul joint venture. This new feature of our operational support forms part of a comprehensive, global On-Wing service which complements our plans for expanding aftermarket activities."

Willaim Tan, Chief Executive Officer, **SIAEC**, added: "The development of the On-Wing Care service extends our existing relationship with Rolls-Royce. This strong partnership between the original equipment manufacturer and maintenance, repair and overhaul provider will utilise the best resources and expertise from both parties to provide quick response on a wider range of services at the closest point, which help airline customers maximise aircraft utilisation."

On-Wing Care Service centres are already established in London, Hong Kong, New York, and Frankfurt. The centre created in Singapore will predominantly support the growing Trent engine family, including the Trent 900 for the Airbus A380, which is in service with Singapore Airlines as the launch customer.

Pg No. 5
Honeywell
AD

Goodrich Opens New Maintenance Campus in Singapore

Goodrich Corporation unveiled its new 530,000-square-foot aircraft component and systems maintenance and repair campus on the sidelines of the Singapore Air Show. The facility will serve commercial and military aerospace customers in Asia, Australia and the Pacific Rim from this location.

The new campus, located next to Changi Airport offers a full range of Maintenance Repair and Overhaul (MRO) services for components and systems for both commercial and military aerospace customers. Services will cover a broad range of aircraft including new and future models such as the Airbus A380, Boeing 787 and Lockheed Martin F-35 Lightning II. The facilities MRO capabilities include aircraft nacelle systems, flight controls, cargo systems, engine controls and components, actuation systems and aircraft evacuation systems as well as providing MRO services to the region's airlines and military fleets.

Images: Hector Hum

Images: Hector Hum

The center will be performing original equipment manufacturing as well as research and development activities. The recent projects include designing, developing and producing the fan cowl for the Geared Turbofan test engine.

The campus represents a US$ 23 million investment by Goodrich, which currently employs roughly 700 people and is the corporation's largest MRO campus.

According to Cindy Egnotovich, Segment President for Goodrich Nacelles and Interior Systems, "This is a significant event for Goodrich in the region. The new site is strategically located to serve our Asian and Pacific customers and provide a range of services which spans Goodrich's diverse original manufactured equipment. For our customer it's all about enhancing the speed and ease of doing business with us by providing the right assets in the right place at the right time."

ST Aerospace signs JV With Iberia Maintenance

Singapore Technologies Aerospace (ST Aerospace), the aerospace arm of Singapore Technologies Engineering Ltd (ST Engineering), and Iberia Maintenance, the technical division of Iberia Airlines of Spain, have signed a joint venture agreement to set up a landing gear repair and overhaul company in Madrid, Spain. The joint venture company, "Madrid Aerospace Services S.L.", will be equally owned (50:50) between Iberia and ST Aerospace, and will be an associated company of ST Aerospace. The initial investment is expected to be around Euro 6m.

Today's investment is not expected to have any material impact on the consolidated net tangible assets per share and earnings per share of ST Engineering for the current financial year.

Managed by ST Aerospace, the company will operate as an independent third party maintenance, repair and overhaul (MRO) service provider with an initial focus on Airbus A320, A330 and A340 landing gears. It will provide maintenance services for Iberia Airlines and other customers around the world, and will complement ST Aerospace's Total Aviation Support and Iberia maintenance offerings for Airbus operators. It is expected to commence operations by the second half of 2008.

Taml Showcases Its Product Power

Tata Advanced Materials Ltd (TAML), a part of the Tata Group, India's largest business conglomerate operating in 7 sectors like engineering, materials, energy, chemicals, services, information systems and communication is showcasing its latest composite aerospace products in the Singapore Airshow.

TAML commenced operations in 1993 with an export contract for lightweight bullet resistant vests to Algeria. TAML has since grown to become India's single largest manufacturer of ballistic vests and helmets holding 70 per cent market share.

TAML has since introduced a host of composite solutions right form design and development to full-scale manufacture.

The company also has the distinction of being the first in the Indian private sector to enter the field of composite aerospace products. TAML has put in place an exclusive state-of-the-art facility to design, develop and manufacture composite components for aerospace applications.

Following three basic components like innovation, scale, reliability, TAML has the ability to manufacture composite components at its world-class facility. It has the largest autoclave, 10,000-class dust free processing. Apart from this, TAML also operate in advanced solutions in armour, aerospace, transportation and infrastructure and composite transportation products.

Pg No. 7
EADS CASA
AD

Lufthansa's Unique Fuel Saving Module

An innovative new flight planning module promising fuel savings of up to two per cent and the reduction of carbon emissions was launched by Lufthansa Systems on the second day of the Singapore Airshow.

In a drive to further enhance ecological and economic efficiency, Lufthansa Systems has worked out this method for airlines to further optimise their dispatch processes.

It's an add-on to Lido Operations Centre (Lido OC), the world's leading flight planning solution which offers a module performing automated checks of a potential routing relative to current air traffic capacity and flow management rules.

These highly complex rules also known as traffic flow restrictions (TFR) are set by air traffic control authorities to ensure a smooth traffic flow while at the same time optimizing ATC capacity and security.

Airlines are required to check their routing for a particular flight against the latest ATC rules, a task usually performed manually. Automating this process with Lufthansa Systems' new Lido OC module is a big step forward and enables dispatchers to focus on other important tasks.

In addition to the time saved during route planning, Lido OC opens up a host of new route options. As an industry first, the module automatically considers even partly restricted airways, suggesting bypasses where legally permitted, for the most effective combination of airway segments.

Lufthansa Systems says analyses have shown that the TFR module of Lido OC significantly increases efficiency and reduces fuel burn and costs. The tool can generate savings of up to two percent in fuel burn. This result can help customers reduce CO2 emissions and save costs.

Meanewhile, another arm of the German carrier, Lufthansa Technik has developed in the "Cyclean Engine Wash" a new method for washing engines quickly and effectively. The new technique enhances engine efficiency and results in cost cuts-whole the environment benefits from lower CO2 emissions. The new engine washes can be performed directly in the field. On the basis of flight data, Cyclean can bring airlines savings of between US$ 18,000 and US$180,000 US per aircraft (depending on aircraft and engine type).

Pratt & Whitney's Geared Turbofan Demo on Alternative Fuel Capabilities

Pratt & Whitney's Geared Turbofan demonstrator engine has successfully operated using an alternative fuel blend during Phase I ground testing in West Palm Beach, Fla. Pratt & Whitney and engineers from the National Aeronautics program, completed the test using a synthetic fuel blend as part of a program comparing potential emissions benefits for future aircraft applications. Pratt & Whitney is a division of United Technologies Corp.

"The Geared Turbofan engine is setting new standards for environmental performance and jet propulsion efficiency," said Bob Saia, vice president, Next Generation Product Family, Pratt & Whitney. "The successful demonstration of alternative fuels on our Geared Turbofan engine validates the flexibility of this engine's design to take advantage of multiple sources of fuel and leverage the environmental and economic benefits available today."

Pratt & Whitney is aggressively researching and testing alternative fuels for the aviation industry. In addition to the Geared Turbofan demonstrator engine, the company has partnered with the U.S. Air Force to test and certify alternative fuels for the TF33-powered B-52 aircraft F117-powered C-17 transport. The C-17 recently completed its first transcontinental flight operating entirely on a blended synthetic fuel. As part of of Pratt & Whitney's overall alternative fuel research, the company will conduct additional ground and flight tests across a range of products. Current plans for testing this year include commercial, military and business jet engines.

Pratt & Whitney actively participates in several international organizations working together to bring alternative fuels into field use. These organizations include the American Society of Testing and Materials, the Coordinating Research Council, and the Commercial Aviation Alternative Fuels Initiative.

The Geared Turbofan demonstrator engine is part of Pratt & Whitney's overall technology readiness program to power the next generation of commercial aircraft. The company is actively testing key components of the Geared Turbofan engine on 15 test rigs worldwide. The Geared Turbofan engine targets double-digit reductions in fuel consumption, engine noise, environmental emissions and maintenance costs.

In a Geared Turbofan engine, a state-of-the-art gear system allows the engine's fan to operate independent of the low-pressure compressor and turbine, resulting in greater fuel efficiency and a slower fan speed for less noise. The Geared Turbofan engine builds on more than 20 years of technology development with improvements in every major module.

Pratt & Whitney is a world leader in the design, manufacture and service of aircraft engines, space propulsion systems and industrial gas turbines. United Technologies, based in Hartford, Conn., is a diversified company providing high technology products and services to the global aerospace and commercial building industries.

iFerret - Detecting Foreign Objects on Runways

Lim Kim Choo (CAAS) and Dr David Chew (Stratech)

A new intelligent system to detect foreign objects on runways will help make Singapore's Changi Airport safer. The iFerret runway surveillance system is the world's first intelligent vision-based system to ensure runway safety.

The system uses vision technology to detect and identify foreign objects on runways and pinpoint their exact location, on a 24-hour basis. It can then raise immediate alerts, enabling operators to have full visual of the object to examine the object detected.

The Civil Aviation Authority of Singapore (CAAS) awarded the tender for Changi Airport's installation of the iFerret System to Stratech Systems Limited. Under the terms of the contract, valued at over S$12 million, Stratech will customise the system to suit CAAS' specific requirements. The system will also have built-in layers of backup. Installation of the system is expected to be completed in early 2009.

The contract was inked on the sidelines of the Singapore Airshow by CAAS' director-general and CEO, **Lim Kim Choon,** and Stratech's executive chairman, **Dr David Chew.**

Foreign object related damage, or FOD, poses a danger to aircraft landings and take-offs. The development of the system was possible with funding support from the Singapore government's Enterprise Challenge.

"With iFerret, air traffic and ground operations staff can visually assess foreign objects identified on a remote screen display, without making a physical visit," said Dr Chew.

- Nazir Ksehvani

Al Ain Intl. Airport Ideal Cargo & LCC Hub

ADAC's second airport of Al Ain, which is serving the eastern region of the Emirate of Abu Dhabi, is the ideal UAE cargo and low cost and low fare carrier hub. "We are actively demonstrating this potential to carriers from the immediate region, the Indian subcontinent and to the carriers operating tech stop services to and from Europe and Asia," said Mr. Peter Hoslin, ADAC head of marketing.

The start in March 2007, of Empost Airlines the first UAE all-cargo airline, which chose Al Ain as its base, has laid the anchor network for future cargo carriers from all regions of the world, and is ideal for the increasing Indian subcontinent cargo traffic efficiently linking them to Africa and Europe."

Last month, the UAE's first all-cargo carrier, MIDEX AIRLINES, announced plans to take to the skies from Al Ain International Airport. H.E. Khalifa Al Mazrouei, Chairman and Managing Director of Abu Dhabi Airports Company (ADAC) concluded an agreement in January, the operator of Al Ain International Airport, and Dr. Issam Khairallah, President of MIDEX AIRLINES.

The airline will first start with cargo operations to six major destinations that include Orly in France, Mumbai and Kochin in India, Dhaka in Bangladesh, Istanbul in Turkey, and Beirut in Lebanon.

Addressing a special ceremony at ADAC Head Office, H.E. Khalifa Al Mazrouei said: "We are delighted that MIDEX has chosen Al Ain International Airport as their home base and main hub for their international cargo business. This operation will take advantage of Al Ain Airport's strategic location with easy road access to the entire UAE, international air and sea connections and our GCC neighbours."

"The growing interest in Al Ain Airport reflects the airlines' recognition of the Airport's strategic location within the UAE and its quality services," Al Mazrouei said.

"Our partnership with MIDEX is in line with our plans for developing Al Ain International Airport into a regional cargo hub. "MIDEX will get the most efficient airport services and support to help them extend their network and excellent service to all parts of the world," said Al Mazrouei.

- Nazir Keshvani

Pg No. 10

ENGINE ALLIANCE

CARBON AD

Pg No. 11

ENGINE ALLIANCE CARBON AD

Tatas, EADS Join Forces for Indian Army's Tact Com Systems

Tatas and EADS (DS) have unveiled plans to form a high tech team partnership to bid for the Indian Army's US$1billion advanced tactical communication system projects.

The project is expected to be announced later this year.

Ratan Tata, Chairman, **Tata Group** commented: The Tatas recognize the significance of this project of national importance and therefore with a view to leveraging the capabilities of several Tata companies, we propose to implement the project through a new umbrella company- Tata Advance Systems Limited (TASL). We believe that the above approach will synergise the groups' relevant capabilities for the project and provide a single interface for the Indian Army. The teaming arrangement with EADS (DS) would ensure that the solution proposed is cutting edge, best - in –class and meets all the requirements of the Indian Army."

According to **Stefan Zoller,** CEO of **EADS DS,** 'India holds an important place on the world's stage and this programme recognises the need for India's armed forces to have the latest available technology. EADS and Tata can design and deliver one of the most sophisticated battlefield communications systems in the world, and at the same time, will make a significant contribution to India's high tech economy.'

The proposed US$ 1 billion Indian Army Tactical Communications System is intended to replace its current AREN system and will make use of the State-of-the –art technology. The new fully mobile communications system will be contemporary when fielded and will put the Indian Army on par with the most sophisticated tactical mobile systems currently in development for deployment around the globe.

Tata Advanced Systems, as the lead on the programme, along with other Tata partners will be responsible for the project management, security, software development, production, integration and delivery, while EADS DS will act as a system design authority and be responsible for the network architectural design and integration on the programme through its chief technical officer from their systems design center. Raytheon will be responsible for radio systems design and precision electronics for support in production, ruggedisation, security and integration.

The new team partnership combines international lead systems integration, expertise with local domain knowledge of the Indian market to provide an India centric system with the latest technology and complete security.

The project will create one of the most sophisticated and contemporary tactical mobile communications systems in the world.

The Indian Army has issued a detailed request report for information to over 40 defence industry companies in 2007. Using the defence procurement policy 2006 guidelines, the Indian ministry of defence requested responses from global systems integrators experienced in delivering tactical systems and local Indian systems integrators with the financial capability and necessary technical background.

Ratan TATA Visits Singapore Airshow

Ratan Tata, *Chairman Tata Group visited TATA Advaced Materials Stall at Singapore Airshow. Tata said that its a good show*

Free Wi-Fi at Changi Airport for Five Years

Travellers to Changi Airport will have free Wi-Fi access to surf the Net and check e-mail for the next five years. StarHub won a tender to provide the service, which kicked off on Jan 1, in the public and transit areas of all of Changi's terminals. These are Terminals 1, 2 and 3 and the Budget Terminal.

The free service can be accessed by anyone who has a compatible laptop PDA (personal digital assistant). With download speeds of up to 512 kilobits per second (Kbps), it is also fast enough for users to make free or cheap Net calls using online services like Skype.

The airport's offer is an extension of the free Wireless@SG hotspot service that covers many of Singapore's shopping centres and public areas.

A tender for free access at the airport was called by the Civil Aviation Authority of Singapore (CAAS) in August last year. StarHub won the tender with partner QMax to run the free service at the airport for the next five years.

Mr Anil Nihalani, StarHub's vice-president for mobile services, said it would benefit local users as well as travellers turning up at the airport.

- Nazir Keshvani

Pg No. 13
ATR
AD

EADS, India to Jointly Develop Missile-Warning System

EADS defence & security and the Indian government are strengthening their defence co-operation in the highly sensitive field of electronic warfare. As announced by the company officials at the Singapore Airshow the joint development of a missile warning system for the Indian Air force together with the Indian Defence Avionics research Establishment (DARE) is making good progress.

Says Bernd Wenzler, CEO of the Defence Electronics, an integrated business unit of EADS Defence Security (DS),' India is a major player in defence and several Indian companies are co-operating since many years with EADS'. He adds, 'India is a priority country for EADS as it offers market potential and solid aerospace and defence competence. This project is a clear signal of our commitment to India, not only as a market but also as an industrial partner.'

EADS (DS) in 2006 has signed an agreement with the Indian DARE which captialises on longstanding experience in electronic warfare and avionics. The partners are developing jointly a missile warning system based on the DS' warning sensor MILDS AN/AAR-60 and integrated into the existing Multi-Sensor warning system of the Indian armed forces.

As part of the agreement, DS in the first phase is delivering 36 sensors for further integration and development. The deliveries have been

completed and the integration tests in DARE's multi-sensor self-protection suite have been conducted in October 2007 and will be tested on several platforms. The tests will be finally be terminated by mid-year.

MILDS AN/AAR-60 is an advanced, passive imaging sensor which detects and tracks the UV of approaching missiles including the most prevalent threat of heat seeking shoulder launched Man Portable Air Defence Systems (MANPADS). The system provides full coverage, low false alarm rate and maximum warning time to enable the deployment of countermeasures such as Chaff/flares.

With a very low false alarm rate and fast detection combined with automatic initiation of countermeasures, MILDS AN/AAR-60 relieves the pilot's workload in time-critical situations and ensures the safe return of both the crew and aircraft. The sensor has been sold in more than 5,600 units and is in service abroad a huge variety of rotary wing and wide body aircraft; **a version for fighter aircraft is under development.**

In the field of electronic self-protection and missile warning, DS is involved in the defensive aids systems of the Eurofighter, the A400M transport aircraft and the Tiger and NH90 helicopters.

The MILDS missile warning sensor from the EADS (DS) - -here seen in the NH90 configuration- will be part of the Indian Armed Forces' self-protection suit.

ATR and Air Vanuatu Sign Pact For One ATR 72-500

On the occasion of the Singapore Airshow, ATR and Air Vanuatu announced the the contract for the purchase of the first ATR 72-500 for the airline. This contract signature follows the MoU already announced late in 2007.

This 70-seat aircraft will be equipped with 120-minute ETOPS (Extended Range Twin-engine Operations) capability, the "Elegance" cabin, higher rated PW 127M engines, as well as state-of-the-art technological innovations in passenger comfort, communications and navigation aid tools. The aircraft will be delivered in 2009.

Since 2004, the airline has operated an ATR 42-300 for its principal domestic routes, linking the capital city Port Vila to the islands of Santo and Tanna, as well as regular flights to Noumea, New Caledonia. With its new ATR 72-500, Air Vanuatu will be able to face the increasing demand on its regional network. Furthermore, the unique ETOPS 120 capability offered with the ATR 72-500 will enable Air Vanuatu to develop its international network with flights to the surrounding Islands such as Fiji and Solomon Islands.

Commenting on the contract, Hollingsworth Ngwele, Air Vanuatu CEO, stated: "Following the successful service of our ATR 42-300, the purchase of this ATR 72-500 will allow us to increase the capacity of our fleet and to face the growth of the demand. Because of its economics, performance, comfort and ETOPS 120 minutes, the '-500 series' ATRs are the optimal aircraft for the development of our domestic and international operations".

Stephane Mayer, ATR CEO, declared: "The ETOPS 120-rated ATRs enable the airlines to expand their networks while reducing the length of the flights, the fuel burn and the CO2 emissions. We are honoured with the renewal of the confidence of Air Vanuatu, while pleased to introduce the '-500 series' in a new country of the South Pacific, which represents a key market of the ATR success".

ATR reached in 2007 a record year with orders for 113 new aircraft. Since the beginning of the programme, ATR has sold 953 aircraft (417 ATR 42s and 536 ATR 72s) and has delivered 757 (397 ATR 42s and 360 ATR 72s), thus posting a current backlog of 196 aircraft.

Indian Navy set to Launch Supersonic VLS *BrahMos*

Gear up defence folks. More recently Indian Navy's *INS Ranvir* D 54 of the Kashin class has been fitted out with the first indigenous VLS 8 missile ***BrahMos*** nestle during its long refit at the Naval Dockyard in Vishakapatnam. When the firings are proved in the next few months, it will be a true red letter day achievement for India's DRDO and defence industry and the Navy, as all future Naval platforms are slated to be fitted out with the ***BrahMos*** missiles.

Indian defence display at the Singapore Airshow has not been large this year and no aircraft were fielded as **Defexpo 08,** India's sea and land exhibition, began on 16th February in New Delhi and the dates of these maga events clashed. With the result, most senior defence personnel were required to be in New Delhi for business and many large exhibitors had to choose between the two. Defexpo attracted over 400 companies and half were foreign from 30 countries, while the rest were from India with DRDO leading the way. Defence PSUs like Bharat Electronics Ltd which makes sonars, radars, communications and most systems, missile maker Bharat Dynamics, Hindustan Aeronautics Ltd, Shipyards, Bharat Earth Movers which assembles ARVs in collaboration with Bumar of Poland and assists in tank manufacture of 1347 T-90s on order from Russia and MBT Arjun.

L-R: Dr. S. Pillai, HE. V. Putin & P. Mukherjee

BrahMos attracted a lot of visitors at Defexpo and ***BrahMos*** Aerospace Ltd, a Indo-Russian joint venture had a stall in the Indian Pavilion at the show and was worth a visit. Dr Sivathanu Pillai CEO delivered a talk at the Air Show conference. All three Armed Forces in India have reposed faith in this supersonic cruise missiles that flies with waypoints and has excellent guidance and EW protection with a range of 290km.

The Navy was the first customer who has the BrahMos fitted on *INS Rajput,* which visited South East Asia, and now *INS Ranvir* has been fitted out.

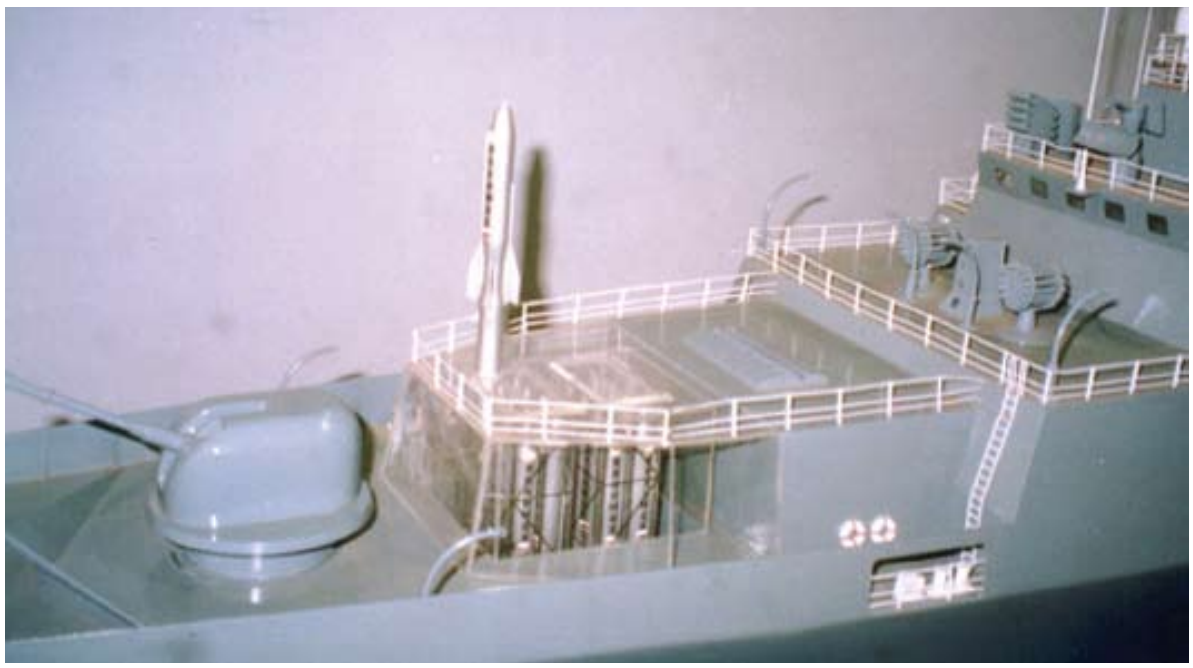
The Army has accepted batteries and the Air Force lighter version has been developed but will have to be interfaced with the SU-30MKI and TU-142 and the newly received Il-38s.

The Indian Navy has always been 'missile savvy' and 'pro missilery' since both its historic attacks on Karachi on 4th *(Op Trident)* and 8th December 1971*(Op Python)* were path breakers in missile warfare for the world to emulate. The trend to fit anti -ship SSMs, and ship to land missiles on ships was incorporated even by smaller navies on their platforms.

In the Indian Navy a band of officers nicknamed 'The Killers' who were initially trained in Vladivostok in the late 60s set the trend. In a unique experiment in the 80s two British supplied Type 12s INS Talwar and *INS Trishul* had their forward 4.5 inch guns removed in Naval Dockyard Mumbai and four Styx P-15 missile launchers were successfully fitted, adding range capability to the fleet for missile warfare.

The Navy's technical teams that supported the preparation and loading of P-15 Styx missiles in Osa Class in the 1971 war and later P-20 liquid fuelled missiles in the *INS Rajput* Kashin class achieved a high degree of capability and *INS Agnibahu* which had a mobile Technical Position TP, and Naval Armament Depot Karanjia off Mumbai, became synonymous with 100 per cent missile serviceability. The fitment of the various variants and upgrades of French Exocet and US Harpoon missiles has been recorded in 18 navies and the Russian equivalents were the Styx P-15(30nm), Styx P-20(50nm) and Zvezda Kh-35 sea skimming Uran(100nm) which were inducted on most Indian Navy front line platforms with angled launchers and met with success in most exercises and trials against battle Practice Targets BPTs and decommissioned ships. All these were straight flying missiles with radar homing, and a preset 'Radar Gate' opened at a particular range to seek lock on to the target to ensure that friendly ships in the vicinity or en route were not engaged. In late 90s Rosboronexport signed a $ 1b contract for the three Krivack Talwar class missile stealth frigates which were built by the Admiralty Yard and Russia offered to fit the vertical launch 8 Novator Klub (3M-54E1) missiles in a VLS nestle. The first ship of class INS Talwar was commissioned in May 2002 at Northern Yard at St Petersburg. Speeds of the missile are also varied as it cruises at .7 Mach and in final attack achieves Mach 2 speed. Buoyed with success the Indian Navy decided to progressively fit out its Kilo class submarines during refit in Russia with the tube launched Klubs after the 9th Kilo EKM 877 INS Sindhushastra S64 joined the fleet in end 2000 from Sudomek Yard in St Petersburg.

-Cmde(Retd) Ranjit B Rai



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SUPER Team
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T-50 Golden Eagle

Trainer for Future Fighter Pilots

Training for future generations of fighter pilots takled promising as the T-50 Golden Eagle looks forward to graduating additional classes of Korean air force student pilots this year.

Twelve officers graduated in late 2007 from the freshman class of the T-50's total advanced training system, as announced by **J.R. Wildridge,** director of T-50 business development for Lockheed Martin, during a briefing at the Singapore Aerospace. The second class of students began their T-50 training in July 2007 and will graduate next month.

The T-50, co-developed by Korea Aerospace Industries (KAI) and Lockheed Martin is Korea's first indigenous supersonic aircraft and the world's only high performance, supersonic trainer in production today. The T-50 is exceeding the expectations of operational pilots with its technological advances and capabilities.

Said Wildridge, 'the T-50 provides a cost-effective bridge for air forces around the world, from primary training to high performance fighters and it is relatively easy to fly these machines in terms of airframe design, digital flight controls, onboard systems, It includes embedded training features, a mission planning and debriefing systems, as well as a comprehensive ground-based training systems.'

The supersonic T-50 with its manoeuvrability, endurance and systems integration provides an excellent capability and functions as a lead in fighter trainer (LIFT) for the republic of Korea Air Force.

The main difference from the advanced jet trainer (AJT) is the addition of armament and multi-mode fire control radar. Development of a light combat variant of the T-50 called the FA-50 is expected to begin soon.

Embraer Upbeat About Asia Pacific Region and China

Empresa Brasileira de Aeronautica SA or Embraer predicted "major opportunities" for sales in the Asia-Pacific region in the next two decades, projecting that demand for aircraft will grow by 7.5 per cent in China alone and by 5.3 per cent region wide.

Speaking to reporters at the Singapore Airshow 2008, **Orlando José Ferreira Neto,** managing director, Embraer Asia Pacific, said: "Embraer's production, training and service investments show its deep involvement in the Asia Pacific region, where the company has three decades of experience. The burgeoning and highly competitive aviation markets of the region pose a challenge that we take very seriously and sharpens the focus of our strategic planning."

Orlando José Ferreira Neto,
Managing Director,
Embraer Asia Pacific,

Embraer, which specialises in passenger jets for short- and medium-range routes, "foresees a demand for 1,270 jets in the 30- to 120-seat segment over the next 20 years."

According to the company, Asia Pacific will grow at an annual rate of 5.3 percent and, particularly, China at 7.5 per cent, well above the projected world average of 4.9 per cent. This is based on a positive economic environment and more accessibility to the market by new carriers.

Increasing openness in some countries of the region encourages more airline expansion and start-ups, which are resulting in stronger air transportation growth.

However, the Asian fleet still concentrates on high-capacity narrowbody aircraft, preventing the implementation of adequate air transportation services to medium-sized cities. Embraer expects that this fact, in conjunction with an ever-growing need to integrate secondary cities, plus new public policies, will motivate the development of regional transportation, thus creating major opportunities for regional aviation in the coming years. In China, the economy is growing at a fast pace and, together with the heavy infrastructure investments, is stimulating the creation of privately-owned airlines, resulting in greater competition. But the fleets are centered, mainly, on high-capacity aircraft, which are unable to efficiently serve most medium-demand secondary markets.

Embraer foresees a demand for 1,270 jets in the 30 to 120-seat segment, over the next 20 years, in the Asia Pacific region and China, or an estimated total market value of US$42 billion. The forecast, broken down into ten-year periods, shows the delivery of 610 aircraft in 2008-2017 and 660 in 2018-2027.

- Nazir Keshvani

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M-346 Flies High In The South Asian Sky

C.Cosentino,

AleniaAermacchi, a Finmeccanica company, is displaying M-346, the advanced military trainer aircraft at the Singapore Airshow 2008. M-346, the fifth generation advanced lead in fighter trainer aircraft is the latest offing by the company.

It provides a complete range of products covering every phase from initial flight screening to lead-in fighter training, including the classic SF-260 screener, the new M-311 turbofan basic advanced trainer, the MB-339 turbojet used by the Italian Air Force (ITAF) "Frecce Tricolori" display team and the Advanced and Lead-In Fighter Trainer M-346.

In Asia Pacific region, the company focuses on homeland protection, helicopters, integrated defense systems, air traffic management and tactical air lifter.

Addressing the press conference, **C.Cosentino,** the Chief Executive Officer of AleniaAermacchi said, " This trainer aircraft is the only twin-engine trainer existing today in the world. The specialty of this aircraft is the high teaching effectiveness offered at a low cost."

The M-346 is the new generation advanced trainer conceived from the outset to prepare pilots to fly the fourth and fifth generation combat aircraft now entering service with Air Forces worldwide. The first customer is the Italian Air Force (ITAF), which has asked for first batch of 15 aircraft.

This trainer aircraft fully represents the latest fighters and can also be used for currency training, "downloading" hours from much more expensive front-line aircraft.

Already being marketed in countries like Greece-37

aircraft and integrated training system, Chile and Canada with 12-14 aircraft each, the company has also been short listed in UAE and Singapore for the air force. AleniaAermacchi is going to sign a contract in Malaysia soon.

LRIP00 is the latest aircraft, which is getting developed, and officially going to be rolled out by end of March. The first flight will be ready by early June 2008, he said.

Speaking of the company's performance, Mr. Cosentino said, " In 2008, the revenue has gone upto 14.0-14.7 billion euros with a rise in orders to 17 per cent. Aermacchi is the only company in the market for which training is the real core business.

The latest area of interest for the company is in Unmanned Aerial Vehicles (UAV), he added.

- Rojita Padhy

Pushing Tech Boundaries Way Beyond

CAAS, Thales Deal on Nextgen ATCs

The Civil Aviation Authority of Singapore (CAAS) and Thales have signed the LORADS III contract for the supply of a new Air Traffic Control System replacing the current LORADS II system supplied by Thales in 1995.

Under the terms of this contract, valued at over 145 million Euros, Thales will design, manufacture, supply, deliver, install, test and commission the next generation EUROCAT system on a turnkey basis.

Thales will also provide a comprehensive full life support after commissioning, including operational maintenance and support services on both hardware and software from its recently established Singapore Customer Support Centre.

Alexandre de Juniac, Senior Vice President of **Thales's Air Systems business,** stated: 'Thales is honoured that CAAS is renewing its confidence in the Group with the award of the most significant ATM system contract in recent history. LORADS III will be the first integration of the world's most advanced ATM functionalities, leveraging off Thales' major R&D investments in next generation systems. Thales is pleased to ensure the continuous of CAAS impeccable safety record and reputation for service excellence'.

Air traffic growth worldwide poses a range of technical and technological challenges for national civil aviation authorities as well as for equipment and service providers. Designed specifically to respond to these critical issues, LORADS III will help CAAS rise to the daily challenge of providing its air traffic services in an efficient way, guiding aircraft safety through Singapore's airspace.

CAAS' air traffic controllers will benefit from a unique combination of the most advanced ATM functionalities for area, approach and tower control, enhancing CAAS' ability to fulfil its mission with safety and operational efficiency over the next decades, while coping with soaring traffic volumes in the Asia-Pacific region. LOARDS III will ensure unprecedented levels of safety, improve reliability, promote green approaches through shorter routing and maximum use of optimum flight level and reduce costs of operations.

The Hurricane Hunters

That's what they're called-and their mission is to beat the weather at its own game. They fly into Hurricane zones in their special WC-170 J Hercules; monitor build-ups-equipped with high-tech radar and allied equipment.

These are the men of the US Air Force's 53rd WRS based in Biloxi, Mississippi under the Air Force Reserve Command. The WC 130 J Hercules is a special weather reconnaissance version of the C 130 J cargo Hercules and its on display at the Singapore air show.

An eye for hurricanes

Its mission is to fly into the eye of hurricanes to retrieve critical information about active storms. The air force reserve command's 53rd Weather Reconnaissance squadron is the only unit in the Defence Department which flies these missions.

Although satellite data has revolutionized weather forecasters' ability to spot tropical cyclones before they form, there are still many important tasks for which it is not suited. Satellite imagery cannot determine the interior barometric pressure of a hurricane, nor can it provide accurate information about wind speeds. These data are needed by forecasters to accurately predict a hurricane's development and movement.

Because satellites cannot collect the data and ships are both too slow and too vulnerable to large storm-generated waves, the only way to collect this data is with aircraft.

Storm chasers

So, what's it like to be a hurricane hunter? Well, we spoke to **Major JD Haig,** who's an instructor pilot and has flown countless missions with 3000 flying hours on the WC 170 J Hercules. "Once the Hurricane gathers strength-it's a round-the-clock routine. At times I've been up in the air for up to 14 hours", he says-but he takes the tough parts in his stride like a real airman. Well, JD, you may make it sound like no big deal-but for those who jump out of their skins due to even the slightest turbulence on commercial flights-flying into the eye of a hurricane doesn't exactly come across as a meditative experience.

And he's seen action during 'the storm of the century' Hurricane Katrina. In fact, the landfall of Katrina on 29 August 2005 caused devastating damage to Kessler air force base, where the 53rd WRS is based.

The Hurricane Hunters even have their own association (comprising the 53rd WRS and another associated squadron), and run a website. They trace their roots back to a dare in the middle of World War II, when Lt Col Joe Duckworth took an AT-6 Texan training aircraft into the eye of a hurricane.

And back to the future-for 41-year-old Major Haig-it's now a full time job. Over 18 years in the air force, the Hurricane Hunter remains happily unmarried!

'Hurricane Hunter' Major ***J D Haig***

Hercules man

But talk to him about the Hercules and his eyes light up. It can land on dirt strips and unimproved surfaces. Needs about 3000 feet runway length in peace time-which can be cut by half during action time. Haig has also served in the first Gulf war, in Panama and in repatriation missions over Japan. Tense moments for him include one time when flying in formation over the US, the plane's radar packed up and he headed straight into a thunderstorm. A shaky experience, to say the least.

But that's consigned to memory. For now, he's here at the Singapore Air Show and enjoying every bit of it.

TheTheWC-130J Hercules is a special weather reconnaissance version of the new Lockheed Martin C-130J cargo plane. Its mission is to fly into the eye of hurricanes to retrieve critical information about active storms. The Air Force Reserve Command's 53rd Weather Reconnaissance Squadron at Keesler Air Force Base, MS, a component of the 403rd Wing, is the only unit in the Department of Defence that flies this mission.

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- Amitabh Joshi

Elbit Systems Unveils New Engine for Hermes 450 UAV

New engine increases UAV's performance envelope for all prominent operational parameters (weight ratio and extended flight duration) allowing Hermes 450 operators improved performance by simply upgrading the engine

Elbit Systems Ltd. unveiled its new R902 (W) engine designed to further improve the operation of the Hermes 450 UAV at the ongoing Singapore Airshow.

Elbit Systems, a world leading developer and manufacturer of UAV platforms, based its innovative R902 engine, also known as "W" (for "wide") engine, on the "Wankel" technology, as it determined the "Wankel's" performance characteristics, in particular, its outstanding power-to-size and weight ratio, were ideal for tactical unmanned aircrafts.

The "W" engine includes a larger combustion compartment than its predecessors, derived from an increase in the width of the Wankel Engine Block in a manner that allows for an engine weighing in at approximately 40 kg. to deliver over 70 BHP. The power-to-weight ratio of this engine is considered the best among internal combustion engines (Piston and Wankel engines), thus setting a new standard for UAV engines. The only other engines with high power-to-weight ratios are turbo (jet) engines. However, these engines consume vast amounts of fuel – in contrast to the fuel-economical R902, which can power Elbit Systems' Hermes 450 UAV in the air for more than 20 consecutive hours. Moreover, Elbit Systems' new engine is equipped with electronic fuel control and a "starter-alternator" option for aerial ignition.

The engine's advanced features position it at the forefront of UAV engines worldwide, a fact that further strengthens the position of the Hermes 450 UAV as a leading platform capable of effectively performing its security missions and war against terror at high levels of reliability.

Rolls-Royce Opens 'Facility of the Future' in Singapore

Rolls-Royce has taken its first step towards its S$320 million (US$225 million) Trent aero engine facility in Singapore with a groundbreaking ceremony at the new Seletar Aerospace Park.

Sir John Rose, Rolls-Royce Chief Executive, commented: "Our world-class Facility of the Future at Seletar Aerospace Park will break boundaries in terms of operational and environmental efficiency and be our distinctive showcase in Asia."

A tree was planted to signify the commitment of Rolls-Royce to the environment. The event was attended by **John Horsburgh,** Chief Operating Officer (Aerospace Singapore), Rolls-Royce and was presided over by Minister for Trade and Industry, **Lim Hng Kiang.**

"I am delighted that Rolls-Royce has selected Singapore for this significant project, which is not only a first for Singapore but also a first for Asia. This is the first time ever that large civil aero-engines will be manufactured in Asia," said Minister for Trade and Industry **Lim Hng Kiang.** "This is therefore a landmark project for Singapore and marks a major breakthrough for our aerospace industry."

The Facility of the Future will be the most modern Rolls-Royce production engine assembly and test facility for large commercial aero engines, and its first in Asia.

The facility will operate on lean assembly and flowline operating principles developed by Rolls-Royce over the last decade. This will result in significant operational efficiencies and improved service quality.

In addition to its technological advances, the facility will be built according to the 'Green Mark' standard, the benchmark set by Singapore's Building and Construction Authority to recognise best practices in environmental design and performance, reducing potential environmental impact and improving sustainability.

The facility will be a breakthrough for the aerospace industry in Asia. Engines for large commercial aircraft will be assembled and tested in Singapore before being sent to Boeing and Airbus for installation on aircraft.

Scheduled for completion in 2009, the 'Facility of the Future' will produce engines in the Trent series, the Trent 1000 for the Boeing 787 and the Trent XWB for the Airbus A350 XWB. The facility, the development of which was announced in November 2007, also enables Rolls-Royce to be closer to its long-term partner Singapore Airlines, whose fleet will now include engines assembled in Singapore.

Critical Software is currently developing a revolutionary Health & Usage Monitoring System (HUMS) Ground Station software application under contract to AgustaWestland, one of the world's leading helicopter manufacturers. Scheduled for release in the first half of 2008 this innovative system, built from the ground up, will deliver an autonomous web based HUMS download, processing and analysis system capable of interacting with virtually any maintenance management system in use by operators currently.

The system will acquire, analyse, communicate and store data gathered from sensors and accelerometers that monitor essential components for safe flight (Engine, Transmission and Structural Health & Usage, as well as Failure Analysis). After analysis, the data allows operators to: Detect abnormal airframe and component vibration, manoeuvres and stress; Monitor flying hours and airframe and component cycles and failures: Generate feedback where training and maintenance procedures should be reviewed; Support a flight operations and quality assurance program; Monitor fleet-wide trends in aircraft operations and component usage.

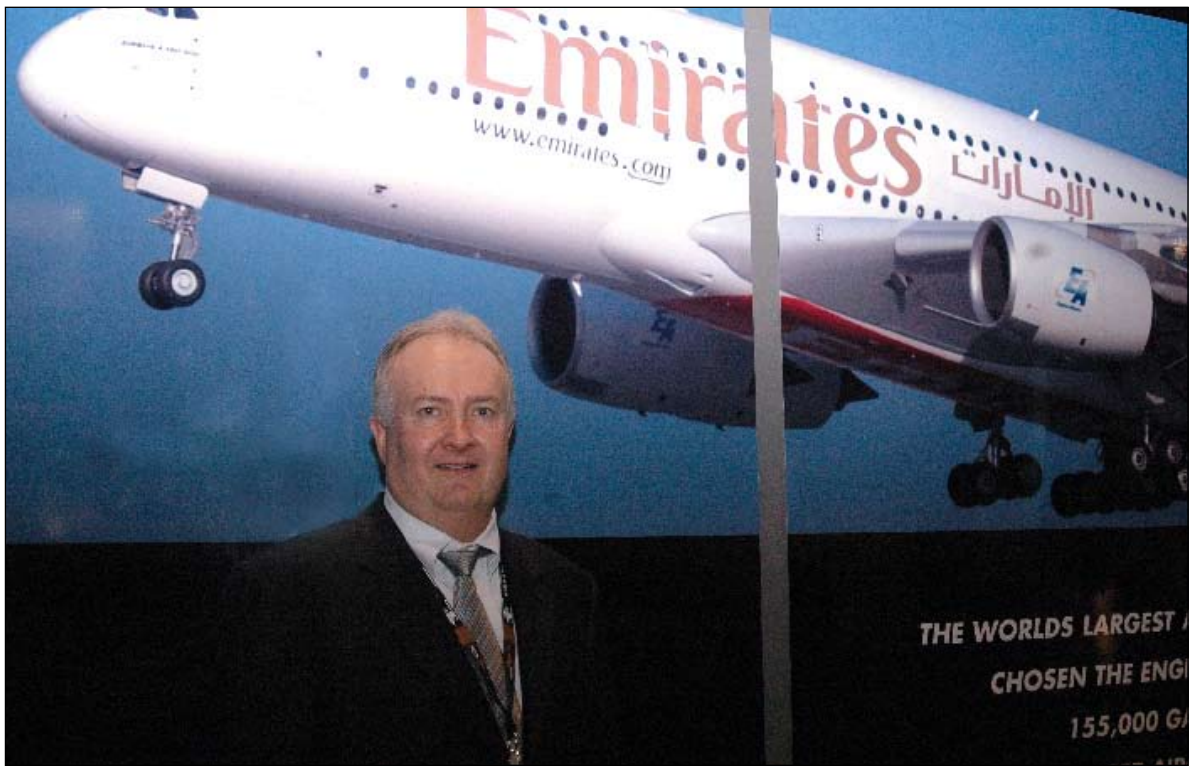
The new application software is built upon open standards, utilising Critical Software's own experience to maximise application performance, portability, and security. With more than 30 dedicated project personnel, this represents one of Critical Software's largest current projects.

"We are very proud of the relationship and trust that has been established between us and AgustaWestland. This stems from many years of investment in the aerospace domain and our dedicated drive to create positive business relationships with key players in the field", says Nuno Almeida, Business Development Director for the Aeronautics, Space and Defence Markets.

Critical Software and AgustaWestland share a common goal of fostering innovation. By providing users with an enhanced level of scalability, the new system will accelerate the pace at which HUMS processing outputs are made available and give a far better user experience, whilst also delivering improved HUMS processing capabilities. This will result in better data quality, faster operational turnaround times, more accurate data trending and reporting and enhanced flight safety.

This all-new web driven application provides Intuitive, user-centric human interface and a run-anywhere, installation-free platform, as well as an ultimate flexibility in fleet maintenance and operation. The system provides new data gathering mechanisms that permit non-sequential and concurrent aircraft processing with unprecedented platform flexibility that will enable operators and manufacturers to give a better, faster and more responsive HUMS analysis capability. Furthermore the new system provides unprecedented configuration functionality capable of accepting on-aircraft software and data changes without the need to update and re-load a new version of the HUMS application.

Technology At Its Best



Al Creque, Marketing Director, Engine Alliance, LLC

Emirates chose the GP7200 engine to power its fleet of 58 Airbus A380s. **Al Creque, Marketing Director, Engine Alliance, LLC** spoke to ***Bhavya Desai*** about the dynamics of the engine and why the GP7200 is the right partner for the A380 partner.

With the variable increase in the fuel prices since the last few years, engine economics and fuel efficiency have become a very critical factor for engines today. "It is very important that the High bypass turbofan engines powering the aircraft continue to incorporate technical advancements that contribute to further reductions in aircraft operating cost, lessen the noise and air pollution impact on our environment, and improve dispatch reliability," says Creque.

The engine has been essentially designed and manufactured by the experience of both the partner companies, which includes GE and Pratt and Whitney. The GP7200 engine has been derived from the PW4000 and GE90 engines.

Capable of producing 70,000 pounds of thrust, which was originally designed to produce 81,500 pounds. The engines architecture has been designed on the two-shaft high bypass turbofan architecture to provide mechanical simplicity, modular construction, and a compact, rigid high-pressure core rotor that enhances performance retention and increases engine time on wing.

Core technology

Pratt & Whitney (P&W) has designed and undertaken the manufacturing responsibility for the low-pressure (LP) rotor (i.e., fan, LP compressor and LP turbine) and accessory gearbox. "The low-pressure rotor features a swept hollow titanium fan based, which has allowed the reduction on the overall weight of the engine but maintained the rotor blade thickness for increased efficiency." While GE has designed and manufactured the high-pressure (HP) core rotor (i.e., HP compressor, combustor and HP turbine) and control systems.

Noise Reduction Technology

Creque says that the biggest challenge was to meet the stringent noise regulations, which involved the company investing US$ 40 million on the technology and component tests even before the engine was designed to meet this levels.

The main technology in relation to the noise includes the revolutionary design of the fan, which uses 3D aerodynamics to reduce the strength of the shock waves while passing through the blades. "The biggest challenge was the size of the fan, which in this case is much bigger than it should have been. The engine would have been ideally optimized for fuel efficiency if the fans diameter would have been 110-inches instead of 116-inches, however this was necessary to get the optimal bypass ratio."

Cooling Technology

The company took few things into consideration in this case, especially the hot environment in the Middle-East. The GP7200 has been added with additional cooling agent into the fans, but since the engine was designed to produce 81,500 pounds of thrust out of which only 70,000 pounds, have been used, the overall survivability of the engine has optimized. "The engine can easily be operated for atleast 6 to 7 years before it has to come in for performance restoration overhaul."

The manufacturer also changed the temperature profile of the engine, which makes the engine much cooler at the tip than the previous engines. In addition, the blade tips have been provided with cooling air on the tips to keep them from oxidizing.

Besides Emirates, the other manufacturers that have chosen the GP7200 powered A380s include 12 aircraft from Air France and 8 from Korean Airlines. Out of these 2 or 3 aircraft will be delivered to Emirates this year and Air France will begin taking its delivery next year as well. "I think the first Air France aircraft has already been assembled in Toulouse and 8 engines have already been delivered out of which 4 have already been installed in the aircraft that has been assembled."

The company has also started its production again after the delay's in the A380 program. "We will be making 200 engines out of the 300 ordered for Emirates and the production line will continue until 2011."

From the India Pavilion

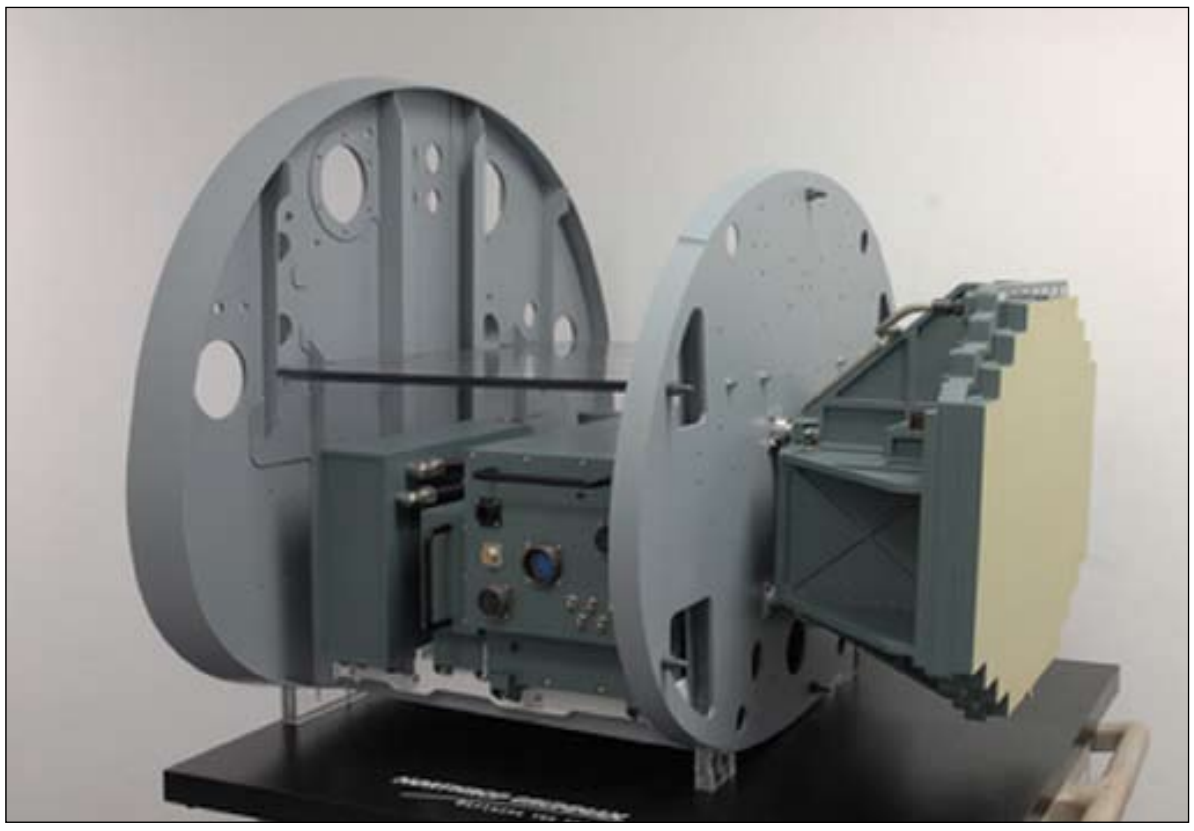
We are delighted to be here participating in the Singapore Air show, with a number of Indian Aerospace Industries and R&D Organisations. India is emerging as a global economic power. This together with the advanced technology, research and development Labs, availability of highly skilled and qualified manpower and knowledge workers and the Government's industry friendly pro-active policies, the Offset Clause in the defense and Aircraft procurement , India is an excellent destination over partnership in Airspace and Defense Research and Production. SIATI is the 'Gateway 'for such partnership. Growth through partnership is over goal. India Pavilion at Singapore Air Show illustrates this WILL and showcases our strength in Aerospace and Defense R&D and Industry.

-Dr. C.G. Krishnadas Nair
Former Chairman, H.A.L. &
President ,SIATI

Northrop Grumman Unveils new Active Electronically Scanned Array (AESA) for F-16 and Other Platforms

Northrop Grumman Corporation unveiled a new company funded programme to develop an Active Electronically Scanned Array (AESA) at the Singapore Air Show yesterday. The Scalable Agile Beam Radar (SABR) will be a full performance fire control AESA derived from proven AESA technology for light tactical aircraft. SABR is being designed for retrofit to existing F-16 aircraft and can be scaled to fit other platforms and mission areas.

"SABR is the most recent development in a long line of Northrop Grumman AESA airborne fire control radars," said Chris Sheppard, F-16 Sensor Systems Programme Development manager. "SABR will offer all the advantages of an active electronically scanned multi-function array, more than just a radar, but at a lower price than AESA fire control radars now available."



"We look forward to supporting the F-16 aircraft worldwide for at least 30 more years, and SABR is our investment towards maintaining the F-16's combat capability. SABR leverages investment in technologies derived from AESAs produced for the U.S. Air Force and our international partners," said Sheppard.

Northrop Grumman is designing SABR to accommodate F-16 electrical and physical interfaces without modification to the aircraft. SABR will fit within currently defined power and cooling requirements and support the existing pilot-vehicle interface.

Although currently being designed for F-16, the array is scalable and adaptable to other platforms and missions.

SABR will provide the increased multi-function performance inherent to AESA technology: improved situational awareness and detection, high-resolution synthetic aperture radar (SAR) and interleaved air-to-air and air-to-ground modes provide pilots true all-weather, day or night precision strike capability. SABR demonstration flights are planned for later this year on Northrop Grumman's Sabreliner, which emulates the F-16 avionics suite and has been used for previous F-16 radar testing.

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Executive Jet Market Makes Embraer A Global Phenom

Luis Carlos Affonso,
Executive Jet Division

Embraer's foray into the executive jet market, at a time of burgeoning demand around the world, looks like the latest in a series of smart moves by the company.

Embraer has received more than 700 orders for two new planes, lifting the backlog for its executive jet line-up to more than US$6.5 billion. Demand for the new models is growing so fast that it expects business jets to account for 25 per cent of its revenue by 2010, up from 15 per cent.

"The executive jet has gone from being viewed as a luxury to a crucial business tool in a globalised world," said Luis Carlos Affonso, who heads Embraer's executive jet division, at a special briefing at the Singapore Airshow.

Embraer is benefiting from surging demand from the oil-rich Middle East to fast-growing countries like Russia and Brazil, where wealthy individuals and corporations are lining up to buy Embraer's private planes.

At the Dubai air show alone last November, Embraer rang up US$912 million in orders for 51 business jets. The plane, the Phenom 100, is small, but roomy, with a cabin outfitted by BMW Design works that can seat up to eight people.

Still, Embraer faces hurdles putting its planes in the air. For one, its executive jet backlog has ballooned so much that new customers face waits of up to five years for a Phenom 100 and six years for a Phenom 300. Fortunately for Embraer, buyers are likely to face similar delays with other manufacturers.

"Backlogs are huge across the industry," said Affonso. "This is a reality of the industry today."

More than any other company, Embraer symbolises Brazil's transformation from an exporter of commodities like coffee and sugar into a nascent industrial power with a mastery of advanced technology. It is one of Brazil's most global companies, with almost 24,000 employees in six countries.

- Nazir Keshvani

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Eaton's Big Leap

Eaton Corporation announced dramatic leaps in its Aerospace Operations business at the Singapore Air Show.

The company's Vice-president of Customer Solutions and Services, Einar Johnson, said the firm had catapulted from a premier manufacturer and supplier of fluid power and motion control components and subsystems in 2005 with around $800 million in total sales, to one of the leading hydraulic, fuel, air and motion control systems integrators with more than $ 1.8 bn in sales projected for 2008.

This was primarily the result of a strong organic growth rate and some major acquisitions beginning in 2005.

"The expansion of our product portfolio afforded by these recent acquisitions, aligned with Eaton's long-term integrated solutions strategy, is helping us to achieve four key customer solutions and services, Johnson said. First was continued expansion and strengthening of our position on commercial and military platforms.

Secondly, a broadened customer base and global presence, followed by expanded new aircraft systems capabilities such as fuel and air, and lastly enhanced aftermarket service opportunities".

In 2007, Eaton was selected for three major sub-systems for the Sikorsky CH-53 K Heavy Lift Helicopter development programme.

Describing the company's expansion process, Johnson said, "We have moved some of our engineering and manufacturing capabilities to expanding economies in Mexico, India and Indonesia".

Eaton presently has 150 engineers in India's Pune city on its payrolls-as they're facing a shortage of engineers in the US and they find the talent in India "extremely good". When asked whether plans were afoot to spread into manufacturing ventures in India in aerospace, Johnson replied that " local manufacturing in the aerospace sector in India is planned. We already have good footprints in that area through our earlier ventures".

The company says its vision is to maintain its world-class leadership in hydraulic power generation and fluid conveyance systems, as well as its legacy in electrical distribution, controls and sensing product capabilities.

Eaton is intent to expand key supplier status with global OEMs and their portfolio includes Airbus (A 380, A 400 M), Boeing (B 787), Lockheed Martin (F 22 & F 35), Rolls-Royce (Trent 900), GE (Gen X), Pratt & Whitney (F 135) and Raytheon (Hawker 4000).

The company marked a first in producing and supplying a set of electronic fuel pumps powered from the Airbus A380's variable frequency supply. A highly efficient and sensor-less and brushless DC motor with integrated power electronics is at the heart of the Mk 101 fuel pump, whose custom hydro-mechanical design meets the demanding fuel transfer requirements of the world's largest passenger aircraft.

Eaton is currently supplying the world's largest fuel system pump for service on the Boeing 777 commercial aircraft platform. The unique state-of-the-art gear pump is operating on the newer generation GE90-112B and GE90-115B jet engines and delivers more than 157 gallons per minute of fuel flow at a pressure of 1,700 psig.

-Amitabh Joshi

Boeing Delivers First KC-767 Tanker to Japan

The Boeing Company has delivered the first Japan KC-767 Tanker to the Itochu Corp., for Japan's Air Self-Defence Force (JASDF). It is the first aerial refueling aircraft in Japan's history.

"The KC-767 will have an immediate impact and significantly increases Japan's capabilities," said **Jim Albaugh,** president and CEO of Boeing Integrated Defense Systems. "This delivery also confirms Boeing's standing as the world's leading provider of aerial refueling tankers and continues our company's proud 75-year history of producing tankers."

The 14-hour non-stop flight to Gifu, near Nagoya, originated in Wichita, Kan., near Boeing's tanker modification center, following a final review by Japan Ministry of Defense (MoD) Air Staff. Itochu will deliver the KC-767 Tanker to the MoD following in-country acceptance processes.

Japan has ordered four convertible freighter 767s, providing flexibility in carrying features Boeing's advanced aerial refueling boom and Remote Aerial Refuelling Operator (RARO II) system. Boeing will deliver the second Japan tanker immediately following acceptance of this first Japan delivery.

Additionally, Boeing is building four tankers for Italy with delivery of the first two aircraft planned in 2008. The KC-767 also is Boeing's offering in the U.S. Air Force's KC-X competition for its next-generation tanker aircraft. Since the 1930s, Boeng has built and delivered more than 2,000 tankers that feature the world's most advanced aerial refueling method with the highest fuel transfer rate available.

A unit of The Boeing Company, Boeing Integrated Defense Systems is one of the world's largest space and defense business specializing in innovative and capabilities-driven customer solutions. Headquartered in St. Louis, Boeing Integrated Defense Systems is a $32.1 billion business with 72,000 employees worldwide.

Eurocopter SE Asia Hands over Dauphin EC155 B1 to IAT

L-R: Hartono Tanoesoedibjo and Gerard Maitrepierre.

Eurocopter and its Singaporean subsidiary Eurocopter Southeast Asia (ESEA) handed over 1 Dauphin EC155 B1 to Indonesia Air Transport at the Singapore Airshow.

The EC155 B1 is in offshore configuration and will be used for IAT's offshore operations.

This is the third EC155 B1 that IAT is receiving as part of an agreement for six EC155 B1 helicopters signed in 2006 and 2007. The remaining three EC155 B1 helicopters will be delivered in 2008 and 2009.

IAT is one of Eurocopter's most loyal customers and has been operating Eurocopter helicopters for the past 20-25 years.

-Nazir Keshvani

Leki Aviation Signs Service Pact with Crane Aerospace

Leki Aviation has signed agreement with Crane Aerospace & Electronics. According to the deal Leki Aviation will be providing extended sales and marketing for Crane Aerospace in Eastern Europe and other selected areas. Furthermore, Leki Aviation will be stocking inventory of expendable and rotable at our distribution centers, this will enable our customers a continuous access to the Crane products as and when required.

"It is with great pleasure for us to announce this new strategic partnership with Crane Aerospace & Electronics. We have been working closely with Crane Aerospace & Electronics for the past two years by assisting with the sales and marketing of product upgrades and fleet modernization. With this new partnership we will be enabled to further intensify the supply chain management and ensure our customers' needs and requirements are met every single time," said Mr. Kim Kroejby, CEO, Leki Aviation.

Crane Aerospace & Electronics is a major supplier of systems and components for critical aerospace and defense applications. Product and service offerings are organized in solution sets, and include Landing System Solutions, sensing and utility solutions, fluid management solutions, power solutions, and cabin solutions. Products are manufactured under the brand names ELDEC, General Technology, Hydro-Aire, Interpoint, Keltec, Lear Romec, Olektron, P.L. Porter and Signal Technology.

Leki Aviation is a leading global distributor of aircraft spares. Specialising in spare parts distribution and inventory management to Airlines and MRO throughout the world. Leki Aviatino provides the customers a consolidation of their supply chain management. Leki Aviation has offices and stocking facilities in Denmark, United Kingdom, USA, Singapore and China.

Dassault Falcon Ends Notable 2007 With Asia-Pacific Sales

Dassault Falcon completed its strongest sales year ever in the Asia-Pacific region as well as around the world, with a sale of a Falcon 900EX EASy to a customer based in Hong Kong. Over the past three years, Dassault's sales in the region have risen steadily with particular strength in Hong Kong, China, Malaysia and Australia.

"It was a remarkable year for Dassault worldwide but particularly for the Asia-Pacific region where trade, wealth and the local economies continue to grow," Said **John Rosanvallon,** President and CEO of Dassault Falcon. "A substantial fuel efficiency advantage over the competition continues to help drive Falcon sales worldwide," Falcon business jets 20%-40% less fuel than all other large cabin competitors.

Over the past eighteen months, Dassault has added sales manager Jerome Desmazures to serve China, Hong Kong, Macau and Belinda Nasikin to serve Malaysia. In addition Jean-Michel Jacob, Vice President of International Sales, was relocated from Teterboro, New Jersey to Kuala Lumpur, Malaysia. In early 2007, Hawker-Pacific was named Dassault's sales agent in Australia and New Zealand.

Dassault's commitment to the region also extends to spare parts and customer support. In the past year field technical support has added two representatives, one each in Beijing and Macau. KC Chan joined Dassault in early 2007 and is now based in Beijing. Lam Hung Fai joined the company in early 2008 and is based in Macau. They're supported by three technical support centers that are staffed 24 hours a day, seven days a week by aircraft model and systems specialists.

Dassault will open a spares distribution center in Shanghai by the end of the first quarter of 2008. The expected inventory in Shanghai will be $2.2 U.S. million bringing the total of high-use replacement parts and tooling based in the Asia-Pacific region to $8 million U.S. This is the third spares distribution center in the region with one each in Singapore and Sydney, Australia. Nine Falcon distribution centers are in operation around the world.

Dassault Falcon is responsible for selling and supporting Falcon business jets throughout the world. It is part of Dassault Aviation, a leading aerospace company with a presence in over 70 countries across 5 continents. Dassault Aviation produces the renowned Mirage and Rafale fighter jets as well as a complete line of Falcon business jets. The company has assembly and production plants in both France and the United Sates and service facilities on both continents. It employs a total workforce of over 12,000. Since the rollout of the first Falcon 20 in 1963, over 1950 Falcon jets have been delivered to more than 65 countries worldwide.

Nishant-India's Multi Mission UAV

Nishant is a multi-mission tactical UAV developed by DRDO of India for its Indian armed services.

According to **Shivashankaran,** Project director (Nishant), **ADE,** 'the development of the aircraft system has been completed and is being evaluated by the user. The unique feature of Nishant is that it does not need any run-way for its operation. The aircraft could be launched from anywhere using a short length launcher and recovered using an aero-conical parachute. This is one of the few successful UAV of this weight class in the world adopting the launch and para-recovery technology.'

Nishant has multi-mission Day/Night capability using advanced EO payloads. It has a stabilised turret housing the payload sensors. The UAV has autonomous flight capability with advanced Navigation system. It has jam resistant command link and digital down link for payload data. The UAV could be flown in hands-off mode from launch to recovery with the facility for manual over-ride. In the event of failure of on-board systems the UAV has capability to return to the designated home point and safely recover.

The UAV could be used for: Day/Night battle field Reconnaissance; Surveillance; Target tracking and localization; Correction of artillery fire or weapon engagement; and Damage assessment.

The entire Ground system of UAV is conceived as mobile system and mounted on vehicles. It has user friendly Ground control station housing AV Controller, Commander, Payload operator and Image exploitation system. At the end of recovery the air vehicle is retrieved using a recovery crane and is prepared for subsequent launch with short turn around time. The recovery could be anywhere ie even beyond the visual range. The recovery CEP is 200 metres.

Some of the technical specifications include:

Length: 4.63 cm; Span: 6.64 m; Cruise Speed: 125-150 kmph; max speed: 185 kmph; min. speed: 110 kmph; Endurance: 4 hrs 30min; Launch : Mobile Hydro Pneumatic Lancher; Recovery: Parachute +Landing bags.

Jetstar Asia signs 3-year Deal With Pratt & Whitney

Singapore-based Jetstar Asia Airways has selected Pratt & Whitney Global Service Partner for an exclusive, intended three-year deal to maintain the airline's fleet of A320 V2500-A5 engines. Terms and conditions will be worked out over the next six months as part of an exclusive memorandum of understanding signed today at the Singapore Airshow. Pratt & Whitney is a United Technologies Corp. company.

"Jetstar Asia is pleased to have selected the Christchurch Engine Center after a stringent and detailed process over 12 months," said **Ms. Chong Phit Lian**, CEO of **Jetstar Asia.** "We believe that Christchurch Engine Center will help us meet our company's objective of great work quality at competitive and efficient cost, and yet similarly share our philosophy of high standards of safety and reliability. In this spirit, we believe it is a great stepping stone to a partnership for our airline's development."

Once a definitive agreement is reached, Jetstar Asia's engines will be serviced at the Christchurch Engine Center, which is a Pratt & Whitney Global Service Partner and Air New Zealand joint venture company. The first engine is expected to be overhauled this March.

"Winning this award from one of Singapore's most successful low cost carriers underscores the competitiveness of our maintenance offerings," said **Jim Keenan,** senior vice president & general manager, **Pratt & Whitney Global Service Partner.** "The quality and speed of our services matched with our global reach supports the maintenance needs of our customers worldwide."

The Christchurch Engine Centre was formed in 2001 as a joint venture between Pratt & Whitney and Air New Zealand. The center overhauls IAE V2500 engines, Pratt & Whitney JT8D engines and the Rolls-Royce Dart Engines.

Pratt & Whitney Global Service Partner (GSP) is total service provider for engines made by Pratt & Whitney, International Aero Engines, General Electric, Rolls-Royce and CFRMI. In addition to engine overhaul and repair services, GSP provides customers with improved engine performance and increased asset value through a portfolio of services including line maintenance, engine monitoring and diagnostics, environmentally friendly on-wing water washes, leased engines, custom engine service programs, and news and repaired parts.

Pratt & Whitney is a world leader in the design, manufacture and service of aircraft engines, space propulsion systems and industrial gas turbines. United Technologies, based in Hartford, Conn., is a diversified company providing high technology products and services to the global aerospace and commercial building industries.

Photo Gallery

Photo Gallery

Pg No. 32

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