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OUTLOOK FOR AIRLINE INDUSTRY: 2012



INDIA AVIATION 2012 OPENS TODAY

BY B.K. PANDEY, BANGALORE

Year 2011, the centenary of the Indian civil aviation, was a turbulent year for the airline industry. Despite annual growth in passenger traffic at 17 per cent; due to escalation in the cost of aviation turbine fuel (ATF), depressed air fares, high taxes/airport charges and heavy interest burden; most of the airlines sank deeper into the red. There was no help forthcoming from the government for the struggling private carriers either by way of funding, respite from high tax rates or industry friendly policies. While there is optimism that the airline industry in India should see a reversal of fortunes in 2012, the time ahead could well bring fresh challenges and even more daunting.

THE INDIAN ECONOMY

The aviation industry is a catalyst for economic growth. While 2011 was indeed a bad year for the Indian economy, the long-term projections by the Planning Commission are encouraging for the airline industry. But there are difficulties in the short term. Growth rate in the current fiscal year is expected to be lower than seven per cent as against 8.5 per cent forecast earlier. The uncertainties in the Indian economy last year did impinge on the fortunes of the airline industry. Besides, the Indian economy could not remain immune to the economic turmoil in Europe and the US. However, with some of the economic indicators turning favourable, it appears that the worst is over. Overall, there may be an upturn

in the economy in the next fiscal albeit with a slightly lower growth rate.

SHOCKER IN THE NEW YEAR!

Instead of cheer, the New Year delivered a shocker to the airlines by way of a disconcerting report on the audit of airlines by the Directorate General of Civil Aviation (DGCA). Altogether, the airlines have a collective debt of ₹1,06,000 crore and the cumulative losses exceed ₹30,000 crore. The audit reports indicate that the financial position of most of the airlines is in a precarious state affecting maintenance standards with serious implications for air safety. The malaise is serious enough

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- REGIONAL AVIATION
- LIMITING EMISSIONS



'The total firm CFM56 orders currently stand at more than 28,850 engines'

INTERVIEW WITH JEAN-PAUL EBANGA, PRESIDENT, CFM INTERNATIONAL

SP's ShowNews: Can you briefly outline the profile of CFM International and the range of its products?

Jean-Paul Ebanga (Ebanga): The CFM56 product line includes six engine models spanning the thrust range from 18,500 to 34,000 pounds (82 to 151 kN) thrust powering 30 commercial and military applications.

Commercial applications include Airbus A318, A319, A320, and A321 single-aisle aircraft, the long-range, four-engine A340-200 and -300, and the A318 Elite and A319 Corporate Jet; the Boeing Classic 737-300/-400/-500, and 737-600/-700/-800/-900/-900ER and Boeing Business Jet; and re-engined DC-8 Super 70 series aircraft.

The total firm CFM56 orders currently stand at more than 28,850 engines from more than 500 customers/operators, of which more than 23,000 have been delivered. These orders represent more than 55 per cent of the 100+ passenger aircraft ordered over the past decade. The in-service fleet, which includes more than 8,000 commercial and military aircraft, has logged more than 575 million flight hours as the most reliable engines in the air.

The CFM56-5B for the Airbus A320 family and CFM56-7 for the Boeing Next-Generation 737 incorporate most advanced technology while building on the inherent simplicity of CFM's proven architecture and unequalled experience base. These engines are now the clear customer choice for powering single-aisle aircraft in the world marketplace. CFM was able to achieve this status by listening to customer requirements and developing the right balance of technology to meet them.

In 2008, CFM formally launched the LEAP engine family to power the next generation of single-aisle aircraft. This product line has been chosen for three applications and CFM has received orders for more than 34,000 engines.

SP's: What is the market share that CFM International commands on the global scene?

Ebanga: The CFM56-7B is the sole power plant for the Boeing Next-Generation 737 family and nearly 6,100 airplanes have been ordered till date. In addition, the CFM56-5B is an option on the Airbus A320 family and has been selected to power nearly 3,100 airplanes, which represents nearly 60 per cent of the A320 family aircraft currently in service or on order.

SP's: The Leap-X engine project was initiated three-and-a-half years ago. What is the state of its development and what are the features that make it unique?

Ebanga: LEAP engines incorporate revolutionary technologies never seen before in the single-aisle aircraft segment. The new engine combines advanced aerodynamic design techniques, lighter, more durable materials, and leading-edge environmental technologies, making it a major breakthrough in engine technology. As a result, the operators will achieve double-digit improvements in fuel burn, emissions, and noise while maintaining the benefits of CFM International's legendary reliability and low maintenance costs.

In 2011, CFM completed testing of the advanced eCore Demonstrator 2, which includes a 10-stage compressor, lower emission TAPS 2 combustor, and two-stage high-pressure turbine, is the configuration for the LEAP engine schedule to enter service on the Airbus A320neo and COMAC C919 in 2016 and in 2017 on the new Boeing 737 MAX.

CFM has completed more than 150 test hours on the core, including conducting performance and operability tests such as low-speed stalls. The company also passed a major milestone recently with the completion of its internal Tollgate 3 process which, in effect, freezes the engine configuration. The next milestone will come in mid-2012 with the full engine design freeze.

The heavily instrumented hardware is tested approximately 2,000 different engine parameters. This unique test facility allows CFM to put the hardware through its paces by simulating both ground and altitude conditions over a much greater operating range than could be conducted with a full

engine test. It allows engineers to see how the core behaves outside standard operating conditions at extremes the engine would never encounter in typical commercial airline service.

In early 2012, CFM has started the build up eCore Demo 3 to incorporate lessons learned on the two previous core tests, leading to the first full LEAP engine to test in 2013.

At the same time, testing of the advanced 3-D Woven Resin Transfer Molding (3-DW RTM) fan has yielded outstanding results. In May 2011, CFM completed a full-scale fan blade out rig test, simulating certification requirements for the proprietary 3-DW RTM technology. The company has also completed extensive full-scale component tests, including bird ingestion testing with the same very positive results. In August 2011, CFM completed endurance testing of the fan, with the hardware logging more than 5,000 cycles. The demanding



CFM56-7B ENGINE GETTING TESTED WITH BIOFUEL

test was designed to evaluate fan behaviour within a real thermal and vibratory environment. The preliminary results have been outstanding, meeting or exceeding all pre-test predictions.

In addition to fan tests, CFM has conducted extensive rig testing of its ultra-high efficiency LEAP low-pressure turbine with outstanding results. The rig, which included the full low-pressure turbine (LPT) and turbine rear frame, validated the technical innovations in the design, including the advanced three-dimensional designed airfoils and blade and vane alignment. Initial results confirmed very high efficiency levels and matched the results achieved in pre-test simulations. Testing has enabled CFM to assess acoustics and to validate corresponding LPT performance and airfoil mechanical behaviour in a real operating environment. •

Continued on SP's ShowNews Day 2

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 **BOEING**

Continued from page 1

to warrant cancellation of licence in respect of two airlines, Air India and Kingfisher Airlines where there is evidence that air safety could have been compromised. In the case of the latter, 63 per cent of the fleet is grounded.

ROLE OF THE GOVERNMENT

While the portents for the airlines appear ominous, there seems to be a silver lining in the dark clouds appearing on the horizon. Ajit Singh, Minister of Civil Aviation, has indicated that "the government would not allow any airline to close down for financial reasons". This position reflects a radical change in the position of the government towards the airline industry. While this approach certainly augurs well especially for the private carriers wallowing in deep financial crisis, the rhetoric would have to be followed up by concrete steps led by the government as also the airlines. If the struggling carriers are to have any chance of becoming profitable, to begin with, the government would have to reduce taxes on ATF and rationalise the burden of airport levies. There are encouraging signs that the government would soon permit foreign airlines to pick up stake in Indian carriers up to a limit of 49 per cent. On their part, airlines would have to restructure business models to trim operating costs without compromising air safety. Proposal to import ATF directly for their aircraft has already been approved and this should provide some relief to the airlines.

THE LOW-COST MODEL

Closing down last year of Kingfisher Red was interpreted as an indication of the demise of the low-cost concept. Nothing could be further from truth. By the end of last year, the low-cost carriers had captured nearly 50 per cent of the market share. Penetration by the low-cost carriers in the Indian market is significantly higher than the global market. The trend will not only be sustained in the current year but its market share will only grow as it is this model that offers better chances of profitability for airlines.

REGIONAL AVIATION

The year ahead may witness a fresh impetus to regional aviation with six new regional airlines having been granted no objection certificates (NoC). These are Freedom Aviation and Air Pegasus to operate in the southern region, Decan Charters for the western region and Indus Airways, Karina Airlines, Reli-

gare Aviation for the northern region. This should substantially improve connectivity to Tier-II and Tier-III cities fulfilling a long felt need of the economy. Policy for the promotion of regional airlines was laid down in 2007 but stringent conditions laid down therein, regional airlines failed to get off the ground. Hopefully, with the wisdom of hindsight, the rules will be revised this year to make them conducive to regional aviation. As per an assessment by the Centre for Asia Pacific Aviation, Indian carriers are expected to place orders for up to 200 new aircraft this year worth \$12 billion of which around 50 would be regional aircraft.

INFRASTRUCTURE

The momentum at infrastructure development related to the aviation industry is likely to be sustained through 2012. Modernisation and upgradation of the metros at Kolkata and Chennai is expected to be completed this year and work on the new airport at Navi Mumbai is also likely to commence soon. The drive by the Airports Authority of India to build heliports apart from the 35 non-metro airports and 23 additional airports in Tier-II and Tier-III cities, will continue. Overall, 2012 should see considerable improvement in the management of air traffic, better connectivity and reduced congestion. The private sector is expected to play a greater role towards infrastructure development providing bulk of the investments through joint ventures. However, growth in the infrastructure for maintenance repair and overhaul is likely to be somewhat modest.

MAKING A MARK

Today, demand is clearly outstripping supply, but in the high-cost environment where profitability is always in doubt, airlines may not be able to add capacity. Rising fuel costs, depreciating rupee and pricing below cost will make running an airline a tough proposition in the year ahead. Growth at best will be modest. The government and the industry will have to work together to draw up a strategy with a visionary roadmap, and develop profitable business models and industry-friendly regulatory framework. The government should work towards managing the environment to ensure that the aviation industry continues to be safe, profitable and competitive. It is only through concerted action jointly by the government and the industry that India can hope to make its mark on the global aviation scene. •



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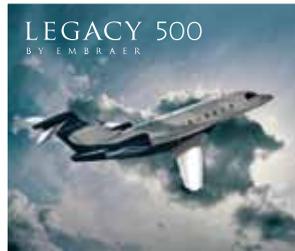
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'Dassault's Falcon 2000S is highly optimised in aerodynamic design and weight'

INTERVIEW WITH JOHN ROSANVALLON, PRESIDENT & CEO, DASSAULT FALCON JET

SP's ShowNews (SP's): Can you please trace the history of Dassault Falcon Jet and its range of products? Are there any new models under development?

John Rosanvallon (Rosanvallon): The history of Dassault can be traced back to 1915 when founder Marcel Dassault built the famous Eclair propeller for the Spad. His vision and passion for aerospace spawned hundreds of aircraft models and over 8,000 airplanes – from fighter jets to Falcons. Marcel introduced the first Falcon in 1963 winning the praise of Charles Lindbergh and launching one of the most successful business jet programmes in history. Dassault Falcon is now the global leader in the large-cabin business jet segment having delivered over 2,100 Falcons to more than 70 countries worldwide. The family of Falcon jets currently in production includes two tri-jets – the Falcon 900LX and the Falcon 7X – as well as the twin-engine Falcon 2000LX and the new Falcon 2000S unveiled last year.

In addition to setting industry standards in aircraft design, parent company Dassault Aviation has also led the industry in the development of new flight systems such as the EASY Flight Deck, and the Digital Flight Control System – the first fly-by-wire control system on a business jet (for the Falcon 7X). Falcons are widely recognised for their superior performance and efficiency and are considered to be the most economical and environmentally responsible jets in their class.

The company has always invested heavily in research and product development, even during the deep recession experienced in 2008. The result of this investment will be revealed as we continue to enhance our current Falcons and prepare entirely new ones such as the "SMS", a code name for the next generation Falcon. The SMS is well into its development programme with over 1,500 engineers from our design office and our partners working together. We expect the SMS to go into service in 2016. While the aircraft is yet to be launched publicly, its key features and design goals make us optimistic that it will be enthusiastically received in the marketplace.

SP's: What are the features of the Falcon series of executive jets that make them unique?

Rosanvallon: First of all, performance. Dassault's design process developed through decades of experience building fighter jets gives it an advantage in everything from materials to aerodynamics. By the application of this ac-

quired knowledge and advanced technology, our Falcons perform better. For instance, all our Falcons are robust enough to land at nearly a full take-off weight. This means they can fly multiple short hops picking up people along the way and then go on to the final destination without having to refuel. Their extremely agile field performance allows them to operate at London City Airport in the heart of the city. The 7X and the 900LX are only business jets in their category to meet the demanding requirements of this airport, with its steep approach and noise restrictions.

Another important feature gained by technology transfer is our use of advanced flight systems. The Heads Up Guidance System and the EASY Flight Deck, the most advanced 'man-machine interface' were both inherited from our fighter jets. The Falcon 7X is also the first (and still the only) business jet available that is equipped with a fully-digital flight control system. Incorporating such technology has greatly increased flight precision, safety and comfort.

Still another key feature welcomed by our operators is the superior fuel efficiency delivered by every Falcon. This means both lower operational costs and a lighter emissions footprint.

Dassault offers a wide range of aircraft that can meet a variety of aviation needs. Currently, Dassault Falcon has three large-series models—the 7X, the Falcon 900LX and the Falcon 2000S and 2000LX. The Falcon 7X, Dassault's flagship business jet, features a bundle of advanced technologies. Above all, the 7X is a comfortable aircraft for passengers, featuring an exceptionally quiet and comfortable cabin and a range of 5,950 nm, which makes it capable of

meeting the demands of more than 90 per cent of city trips done by the typical business aviation traveller.

The new Falcon 2000S, the latest addition to the Falcon fleet, is positioned in the super mid-size category, offering an aggressive acquisition price along with the lowest operating costs in its class. Its short field and low speed performance offer unparalleled airport access thanks to an optimised wing and all-new inboard slats. As with all Falcon business jets, the Falcon 2000S is also highly optimised in terms of aerodynamic design and weight, which also means much lower fuel consumption and the greenest footprint in its class. ●

Continued on SP's ShowNews Day 3



SPACIOUS INTERIORS OF FALCON 7X

Dassault Falcon focuses on growing Indian market

Dassault Falcon will present its Falcon fleet of large cabin, long-range business jets at the third India Aviation air show. Dassault has built its reputation for advanced high-performance fighter jets operated in India for more than 60 years now. Today, the reputation for design excellence is also driven by advanced business aviation aircraft like the Falcon 7X, the Falcon 900LX and the Falcon 2000 series. According to the company, the Falcon family of business jets offer unparalleled performance, comfort and fuel economy.

About 20 Falcons are currently operating from airports in Delhi, Mumbai, Bangalore, Chennai, Pune and Hyderabad. Several additional aircraft are on order for delivery to Indian customers over the next two years. Almost half of the new aircraft orders are for Dassault's flagship Falcon 7X, the first business jet certified with a fully-digital flight control system.

"We remain encouraged by the potential for long-term growth in business aviation in India," said John Rosanvallon, President and CEO of Das-

sault Falcon. "Business jets are now seen in the region as a powerful tool to enable quick and convenient access to customers within the country and worldwide. The dramatic growth of the economy and the experience of travelling on commercial airlines have all contributed to the expansion of the market over the last few years."

The performance of the Falcon fleet is especially valued in the Indian subcontinent, where short airfields, elevated runways and high temperatures are common. Falcon aircraft are also more economical to operate and more environment friendly than any other large cabin aircraft. Their efficient design and advanced technology means less weight, 20-40 per cent better fuel burn and lower emissions than other airplanes in their class.

In addition, Dassault aircraft are very well suited to the long-range requirements of Indian customers. The Falcon 7X can connect Mumbai to Cape Town, for example, or Bangalore to the challenging London City Airport, in the heart of London. The 7X, like the Falcon 900, is the only jet in its category to meet the demanding performance requirements of London city, with its steep approach and noise restrictions.

"With their exceptional performance and fuel efficiency, I have no doubt that the Falcon fleet is positioned for long-term success in the region and that we will maintain a high level of market share," concluded Rosanvallon. ●



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CAE continues to grow training capabilities in India

Recently, global simulation and training leader CAE, broke ground with InterGlobe Enterprises, on a new airline pilot type-rating training centre in the NCR. CAE has also signed a long-term agreement with IndiGo to provide pilots through the CAE Global Academy flight school.

INTERVIEW WITH JEFF ROBERTS, GROUP PRESIDENT, CIVIL SIMULATION PRODUCTS, TRAINING & SERVICES, CAE

SP's ShowNews (SP's): CAE continues to increase its civil aviation training presence in India. You obviously view India as an important market.

Jeff Roberts (Roberts): Yes, we certainly do. India is a vibrant aviation market, and there is great demand for pilots, maintenance technicians and other aviation professionals. We expect that demand will keep on growing over the next decade.

CAE is well positioned to be the training partner for India's airlines through our two CAE Global Academy campuses in Gondia (the National Flying Training Institute - NFTI) and Rae Bareli (Indira Gandhi RashtriyaU-ranAkademi - IGRUA) plus our current type-rating training centre in Bangalore and the new centre in Delhi. Also, through our joint venture HATSOFF, a Bangalore-based helicopter training centre with the Hindustan Aeronautics Limited (HAL), we are serving rotorcraft operators in the region as well.

SP's: CAE signed a five-year contract with IndiGo Airlines to train ab initio pilot candidates. How will this programme work?

Roberts: The IndiGo Cadet Pilot Programme is through CAE's Pilot Sourcing service by which we provide highly qualified candidates to airline customers with flight crew needs. This service helps streamline an airline's recruiting, selection and training process, and the pilot candidates can be at whatever experience levels the airline requires. In the case of IndiGo, aspiring young pilot candidates will receive their ab initio training at the CAE Global Academy, then proceed to earn their aircraft type rating at a CAE training centre such as Bangalore or Delhi. They will graduate from the programme, ready to fly as A320 First Officers.



SP's: CAE has also entered the helicopter training market in India. What are you offering to civil operators?

Roberts: We have been steadily building training resources in Bangalore at the Helicopter Academy to Train by Simulation of Flying (HATSOFF), our joint venture with HAL. We began in 2010 with a Bell 412 full-flight simulator, the first helicopter simulator certified to Level D by India's Directorate General Civil Aviation (DGCA) as well as the European Aviation Safety Agency (EASA). Since then we have also installed FFSS for the Eurocopter AS365 Dauphin and the civil variant of HAL's Dhruv. •

Indocopters: The Helicopter Specialists

BY SP'S CORRESPONDENT

Indocopters (ICPL), a part of the Vectra Group, is a specialist helicopter service provider with bases in Mumbai, New Delhi, Bangalore, Bhubaneswar, Katra, Chandigarh and Bhopal, Indocopters supports a variety of helicopter customers across a range of industries.

The company supports customers to start up aviation companies, purchase the right helicopter, acquire and develop the suitable facilities, and train and staff the customer's flight and quality departments. ICPL will also refurbish helicopter interiors, paint the exteriors in the company's environmentally controlled paint shop, and retrofit optional and utility equipment, such as sand filters, air conditioners, under-belly cargo swings, and auxiliary fuel tanks.

"Our strategy is straightforward," says CEO Mike Meyer. "We will support your helicopter whatever it is, wherever it is. The Indocopters slogan 'The Helicopter Specialists' has never been more apt."

In fulfilling this commitment, Indocopters strives to deliver the highest quality, the safest and most cost-effective helicopter maintenance and operations services to the customers we serve. As a responsible member of the helicopter fraternity and also as a member of numerous professional bodies, the company is continually contributing to the development of safe and hazard-free operations and maintenance procedures. Indocopters is currently working with an international OEM for the installation of a low-cost but effective flight data monitoring device that will contribute immensely to the safety of helicopter operations.

As Sanjeev Choudhary, who leads the Business Development and Customer Support team, puts it: "At Indocopters, customer responsiveness is not just a matter of giving customers what they are contracted to receive. The mantra is customer focus wherein we understand the customers' needs and provide the most appropriate solutions." •



SNIPPETS

EMBRAER LEGACY 650 AT INDIA AVIATION

Embraer Legacy 650 executive jet will make its Indian debut during India Aviation. It features refinements to its interior, a state-of-the-art cabin management system and offers increased efficiency and safety, significantly raising the bar for jets in its class. Also on static display will be the Phenom 100 and Phenom 300 executive jets, introduced in 2009 and 2010, respectively. More than 300 of the entry-level and light aircraft have since been delivered. The Phenom 100 also recently achieved more than 1,00,000 flight hours.



CIVIL AVIATION AUTHORITY TO BE SET UP

The Indian Government has announced that it would set up a Civil Aviation Authority to make air travel safe and secure and take steps to modernise more airports and air traffic management services. It would also set up an independent air accident probe panel and initiate measures to protect the interests of air travellers. This was declared by President Pratibha Patil during the joint sitting of Parliament.

NOVAK DJOKOVIC IS BOMBARDIER LEARJET'S BRAND AMBASSADOR

Bombardier Aerospace has expanded its range to the elite tennis racquet set naming top-ranked champion Novak Djokovic as a Learjet Brand Ambassador. He joins an exclusive list of Bombardier Business Aircraft brand ambassadors including actor and pilot John Travolta, architect Frank Gehry, maestro Valery Gergiev, and classical pianist Lang Lang. •



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Hawker Beechcraft to display three aircraft at India Aviation

BY SP'S CORRESPONDENT

As Hawker Beechcraft Corporation (HBC) prepares for the India Aviation exhibit from March 14-18 in Hyderabad, the company stated that it continues to lead the market for aircraft delivered into India over the last decade. Industry data shows that more than 60 per cent of all business aircraft from turboprops to super-midsize business jets delivered into India in the past decade have been Hawker Beechcraft products. According to JETNET research of these segments, 58 per cent of the total business aircraft registered in India are HBC products.

"In the segments in which we compete, Hawker Beechcraft is proud of its market share leadership in India," said Dan Keady, Vice President, Asia, Australia and India. "For years, the family of HBC business turboprops and jets has been in-country and proving that they are an excellent fit for this region."

The HBC fleet in India includes aircraft from across its product line, with the most popular models being the Hawker 125 series, King Air B200/250 and King Air C90.



HBC will showcase three of its products from March 14-18 at the India Aviation exhibit and conference. Chalet #4 at Hyderabad Airport/Begumpet Airport (VOHS) will include a Hawker 4000, Hawker 900XP and King Air C90Gtx.

- **Hawker 4000:** The flagship of the Hawker line, the composite fuselage Hawker 4000 sets the standard for quality, performance and value in the super mid-size business jet class. With a 3,280 nautical mile non-stop range and cruise speeds up to Mach 0.84, it features a sophisticated composite fuselage, all metal supercritical wing, powerful Pratt & Whitney Canada FADEC-controlled engines and state-of-the-art Honeywell Primus EPIC avionics.
- **Hawker 900XP:** From the best-selling mid-sized business jet lineage (the Hawker 800 series), the Hawker 900XP has combined new Honeywell engines with enhanced winglets and a large cabin for increased performance, range, efficiency, comfort and unprecedented value.
- **King Air C90Gtx:** Key enhancements to the King Air C90Gtx include an increase in gross weight and the addition of composite winglets, which improve climb performance and further increase fuel efficiency. •

Go Airlines selects Pratt & Whitney PurePower PW1100G-JM engines for Airbus A320neo aircraft

BY SP'S CORRESPONDENT

Go Airlines (GoAir) has selected Pratt & Whitney PurePower PW1100G-JM engines for its order of 72 firm A320neo aircraft. The agreement represents 144 firm PW1100G-JM engines and is anticipated to include a PureSolutionSM maintenance package. Deliveries are scheduled to start in 2016.

"We selected the Pratt & Whitney PurePower engine because we are confident that its performance advantage will deliver significant savings in operating costs, as well as considerable reductions in emissions and noise," said Jeh Wadia, Managing Director, GoAir. "The PurePower engine is the best long-term solution for GoAir's growing fleet."

Each Airbus A320neo family aircraft purchased by GoAir will be powered by two PurePower PW1100G-JM engines with benefits including double-digit reductions in fuel burn, environmental emissions, engine noise and operating costs when compared with today's engines.

"All of us at Pratt & Whitney are delighted that GoAir has selected the PurePower engine to power its Airbus A320neo fleet and we look forward to providing GoAir with the benefits of this game changing technology," said Todd Kallman, Pratt & Whitney Commercial Engines & Global Services President. "Being chosen by another key low-cost carrier in India—one of the fastest growing markets—is another testament to the game-changing benefits our Geared Turbofan technology delivers."

The PurePower engine uses an advanced gear system allowing the engine's fan to operate at a different speed than the low-pressure compressor and turbine. The combination of the gear system and an all-new advanced core delivers fuel efficiency and environmental benefits. •



Boeing 787 Dreamliner at India Aviation



BY SP'S CORRESPONDENT

The super-efficient Boeing Dreamliner is making its debut at Hyderabad as part of Boeing's commercial products showcase at the India Aviation Air Show 2012.

"The 787 Dreamliner is a game changer and we are proud to bring it to India Aviation 2012, which is a perfect place to showcase the world's most advanced commercial airplane," said Dinesh Keskar, Senior Vice President, Sales Asia-Pacific and India for Boeing Commercial Airplanes.

The 787 Dreamliner is featuring the distinctive 'red and white' colours depicting the flying swan with the 'Konark Chakra.' The airplane is outfitted with Air India's beautifully designed interior with warm colours, a luxurious business-class cabin, overhead crew rest compartments and an economy-class section.

The Boeing 787 Dreamliner is the first airplane to provide both long distance capabilities with mid-size capacity, allowing airlines to open new, non-stop routes preferred by the travelling public. The airplane is 20 per cent more fuel-efficient than similarly sized airplanes. Sixty customers have 868 Dreamliners on order, making the 787 the fastest-selling wide-body airplane in commercial aviation history. •

The Game Changer



AW609 *TiltRotor*

The AW609 TiltRotor transforms flying, combining the vertical flight features typical of a helicopter with the high speed and long range capabilities of a turboprop aircraft. Cruising at up to 25,000ft, the TiltRotor has the added advantage of a pressurised cabin. As the first Transport Category tiltrotor in the world, the AW609 further demonstrates AgustaWestland's continued commitment to innovation and technological excellence.

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'Embraer Executive Jets offer outstanding performance'

INTERVIEW WITH JOSE EDUARDO COSTAS, VICE-PRESIDENT, MARKETING AND SALES, ASIA PACIFIC, EMBRAER EXECUTIVE JETS

SP's ShowNews (SP's): Could you briefly outline the history and track record of Embraer's Executive Jet Division as also the models currently operational and under development?

Jose Eduardo Costas (Costas): Embraer

entered the business aviation market with the aim of becoming a major player in the segment by 2015 through innovative and differentiating product and service solutions, with added value to customers and shareholders.

Since its entry in the executive aviation market, Embraer has introduced a range of aircraft that span from entry level to ultra-large jets, each one offering more exquisite luxury with unprecedented space and ergonomically designed interiors. Positioned at the top of their categories, Embraer Executive Jets offer ultimate comfort, outstanding performance and low operational cost.

Indeed, with a solid background in designing and developing aircraft for commercial use—what we like to call our 'Embraer DNA'—we've delivered more than 500 business jets in the first 10 years since entering the market.

In short, the company has:

- Progressively expanded its product offerings—with seven jets on offer, five of which are in production today and two more expected to come on-stream in the next two years. Its portfolio is one of the most robust, with a jet for almost every segment in the market today.
- Steadily increased its market share by deliveries end 2010, almost one in every five jets delivered was an Embraer executive jet, with the Phenom 100 the most delivered jet type in the entire industry, with 100 units delivered.

Closer home, India has also embraced Embraer's Executive Jets; today a deed, a third of the 40 Embraer Executive Jets in service in Asia-Pacific are based in India.

India is also home to the very first Lineage 1000 ultra-large jet to be placed in service in the region (Asia-Pacific) and where the only entry-level jets in the country are Embraer jets.

SP's: What is the extent of penetration by the Executive Jet Division and market share in the Asia-Pacific region?

Costas: Since the first delivery of an Embraer Executive Jet in Asia-Pacific in 2004, there are more than 40 Embraer Executive Jets in service in the region; and a third of these are based in India.

Looking forward, with a growing number of Embraer Executive Jets in the country, coupled with the introduction of the first Lineage 1000 ultra-large, sublime jet in India, as well as the only type of aircraft in the entry-level jet segment in the country (six Phenom 100 jets), plus orders for 13 Legacy 650 as well as three Lineage 1000 jets from customers in China, these two countries are only the tip of the iceberg and reflect the confidence in appetite and willingness by customers and prospects in Asia-Pacific, for Executive Jets.

According to CAPA, there are 132 business jets registered in India, of which the organisation expects 127 to be active in service. Compared to this



number, Embraer's Executive Jets comprise over 10 per cent of the fleet in service in India; the first aircraft of which was only delivered in 2005—only six years ago.

SP's: How do you see the business aviation market developing in India over the next 15 to 20 years and who are the major players in this region?

Costas: Our expectations are robust in terms of sales and deliveries, and naturally we aim to play a large part in that equation.

However, some things remain in need of enhancement, such as the infrastructure supporting the development of the industry e.g. FBO's airport facilities, and even some of the processes relating to flight permits, etc, as well as greater appreciation and understanding by prospects of the utility of the jets, i.e. they are not mere toys but tools, veritable time machines that can contribute to the productivity of their businesses, and ultimately, in their lives.

Nevertheless, we are confident that this will get better as more and more jets are used and enter service.

As regulation and infrastructure develops/improves, we will see the charter market gain more momentum in India. Today, with few exceptions, we see large corporations and HNWI acquiring private jets for their own use. •

Continued on SP's ShowNews Day 2

2012 version of Embraer Legacy 650 at India Aviation

Embraer's Legacy 650 executive jet will make its Indian debut during the show. It features refinements to its interior, a state-of-the-art cabin management system and offers increased efficiency and safety, significantly raising the bar for jets in its class.

Also on static display will be the Phenom 100 and Phenom 300 executive jets, introduced in 2009 and 2010, respectively. More than 300 of the entry-level and light aircraft have since been delivered. The Phenom 100

also recently achieved more than 1,00,000 flight hours.

"India is key to our growth strategy in Asia-Pacific," said Jose Eduardo Costas, Vice President, Marketing and Sales, Asia Pacific – Embraer Executive Jets. "With a growing, active business jet fleet, of which more than 60 per cent is less than 10 years old, India is a prime market for the development of the business jet industry and we expect it to be largest market in this region, outside of China. A third of the active Embraer Executive Jet fleet in service in the Asia-Pacific region is based in India."

Embraer has also invested in developing a customer service network across Asia-Pacific. In India, Embraer has appointed Airworks and Indam-er Pvt Ltd as Embraer Authorised Service Centres (EASC) to provide maintenance services for the Phenom 100, Legacy 600/650 as well as Lineage 1000 jets. •



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'We are making good progress with our joint venture with Indian Rotorcraft'

INTERVIEW WITH BRUNO SPAGNOLINI,
CEO, AGUSTAWESTLAND

SP's ShowNews (SP's): Can you briefly trace the history of AgustaWestland, the company's track record of engagement with India and its range of products?

Bruno Spagnolini (Spagnolini): AgustaWestland has been present in India since the 1930s when the Westland Wapiti was the very first aircraft flown by the Indian Air Force, and then over 40 years ago, AgustaWestland commenced the supply and support of the Indian Navy's Sea King fleet. More recently, we have achieved significant success with our commercial helicopter range for VIP and corporate transport, offshore oil and gas support and general charter operations. We have sold about 50 commercial helicopters in India in the last six years including almost 20 AW139 medium twins and so it is an important and growing market for us.

We have set up service centres with our partners (OSS Air Management and Air Works) in India to support these commercial helicopters locally and we have a long working relationship with HAL, particularly on Sea King repair and overhaul work. We are also making good progress with our joint venture with Tata Sons, known as Indian Rotorcraft, to assemble AgustaWestland light helicopters in India for the worldwide market.

SP's: In what time frame is the AgustaWestland AW189 that completed its maiden flight end of last year expected to be certified and enter service? Who are the launch customers for this machine?

Spagnolini: We are on schedule to obtain civil certification of the AW189 in 2013 with deliveries starting in early 2014. We now have several major operators who have signed contracts for the AW189, primarily for offshore oil and gas support activities but also potentially for search and rescue. The customers include Bristow Helicopters, Gulf Helicopters, Bel Air, Weststar Aviation Services and Bond Helicopters. The initial market response to the AW189 has been very positive. The eight-tonne AW189 is part of our new family of helicopters covering the four- to eight-tonne market with the new 4.5-tonne AW169 and 6.4-tonne AW139. Several operators have already placed orders for all three models.

SP's: What are the unique features of the VVIP version of the AW101 ordered by the Indian Air Force and in what time frame are the 12 helicopters on order for Air Headquarters Communication Squadron to be delivered?

Spagnolini: Two key advantages the AW101 has over the competition and which are relevant to the VVIP market in general are its large cabin and the additional



safety provided by its three engine design in the event of an engine failure. The cabin is almost 50 per cent bigger than its nearest rival and it is equipped with an active vibration control system that provides passengers with a quiet and smooth ride. India is now one of the several customers that have selected the AW101 for VVIP transport and we see the opportunity for additional sales in Asia and the Middle East. The first Indian Air Force AW101 will be delivered late this year with deliveries continuing through the first half of 2013.

SP's: What is the progress in the development of the AW609 tilt rotor multi-role helicopter? What are the roles envisaged for this machine?

Spagnolini: AgustaWestland took full ownership of the 609 programme in November last year. So we have now set out a programme schedule that will see the aircraft certified in early 2016 and deliveries commencing soon after that. At the moment we have flown over 650 hours on two test aircraft and we are building two more to help complete the certification test programme and develop a new avionics system which will incorporate the latest developments in satellite based navigation systems.

Now that we have acquired ownership of the programme, we are focused on both the commercial and public service markets where we see the AW609's performance benefits delivering real value to the operators. Additionally, the AW609 is ideal for national security roles where it can be operated for SAR, VIP transport, and command and control missions. Commercial markets we see as important including long-range offshore oil and gas support, corporate transport, search and rescue, coast guard and law enforcement. We expect to sell 450 aircraft over a 20-year period and India could prove to be a good market for the AW609.

Importantly, the AW609 will be the world's first high speed rotorcraft to go into production that will be certified to the most demanding standards for public transport operations. With a cruise speed twice that of a typical helicopter, twice the range of a helicopter, and the ability to cruise at altitudes of 20,000 ft above the weather; it will bring a whole new capability to the market.

SP's: What are the options that AgustaWestland can offer for replacement of the Sea King fleet of helicopters currently with the Indian Navy?

Spagnolini: We are competing to perform a mid-life upgrade on the Indian Navy Sea King fleet and as the original equipment manufacturer we believe we are best placed to undertake this work. The Indian Navy Sea King fleet still has many years of operation ahead of it and we hope we are able to support the aircraft until it's planned out of service date – 2023.

We are also offering the NH90 to the Indian Navy for multi-role helicopter (MRH) programme. The NH90 is the only new generation naval helicopter in its class and is now in service with several European nations. The mission system we are offering with the NH90 will have significant commonality with that being proposed for the Sea King mid-life upgrade which will provide significant savings in terms of support and training.

We are convinced that the NH90 is the only helicopter to be compliant with the Indian Navy's requirements and can perform the entire range of required missions.

SP's: What is scope of activities under the joint venture the company has entered into with Tata Sons?

Spagnolini: Following the signing of a MoU, we progressed to establishing a joint venture company known as Indian rotorcraft. The JV is now starting construction of a brand new helicopter assembly, completion and flight test facility in Hyderabad for AgustaWestland eight-seat light helicopters. This factory will then produce helicopters for the market worldwide, not just for India. This JV marks a new era in the history of Indian aviation and is something we are proud to have achieved with Tata Sons. •



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'Dreamliner will be a very powerful tool in the fleets of Air India and Jet Airways'

INTERVIEW WITH DINESH KESKAR, PRESIDENT, BOEING INDIA

SP's ShowNews (SP's): What are the plans for delivery of the Boeing 787 Dreamliner to Indian customers?

Dinesh Keskar (Keskar): To demonstrate the readiness of the Boeing 787 Dreamliner for Air India, we are bringing the Dreamliner to India Aviation 2012 at Hyderabad in full Air India livery, interior, and IFE. We have completed all the flight tests for the GEnX powered 787 Dreamliner.

The initial Boeing 787 Dreamliner delivery to Air India is planned for the second quarter of 2012. The deliveries of the 787 to Jet Airways are scheduled to begin in 2014.

We believe that the 787 Dreamliner will be a very powerful tool in the fleets of Air India and Jet Airways and will provide them with the flexibility they will need to implement their network and fleet plans.

SP's: What specific reforms would you recommend to the government in respect of the policy to revitalise the Indian airline industry?

Keskar: Boeing has been working with many stakeholders in India for seven decades. Airlines in India such as Air India, Jet Airways, SpiceJet, and Blue Dart have ordered or operated Boeing airplanes like the Boeing 707, 747, 757, 737, 777, and the 787 Dreamliners. The Indian Air Force has also chosen the Boeing BBJ for their VVIP operations for the President and the Prime Minister of India and other VVIPs. Liberalisation in India started in the 1990s by the then Finance Minister, Dr. Manmohan Singh. India has continued the path of liberalisation, thereby making itself part of the BRIC nations. All this is helping all companies, including Boeing, to conduct business in India. The new relationship between the Government of India and the United States is also opening the defence markets.

SP's: What steps has Boeing taken in respect of technological innovations to meet the growing environmental concerns?

Keskar: Boeing recognises the serious challenges facing our environment and is committed to improving the environmental performance of our products, services and operations. Boeing's greatest contribution to meeting these challenges is to pioneer new technologies and to design, develop, and build our products in an environmentally progressive manner.

As a leader in the industry, Boeing Commercial Airplanes continues to invest a significant amount of its R&D towards advanced technologies that

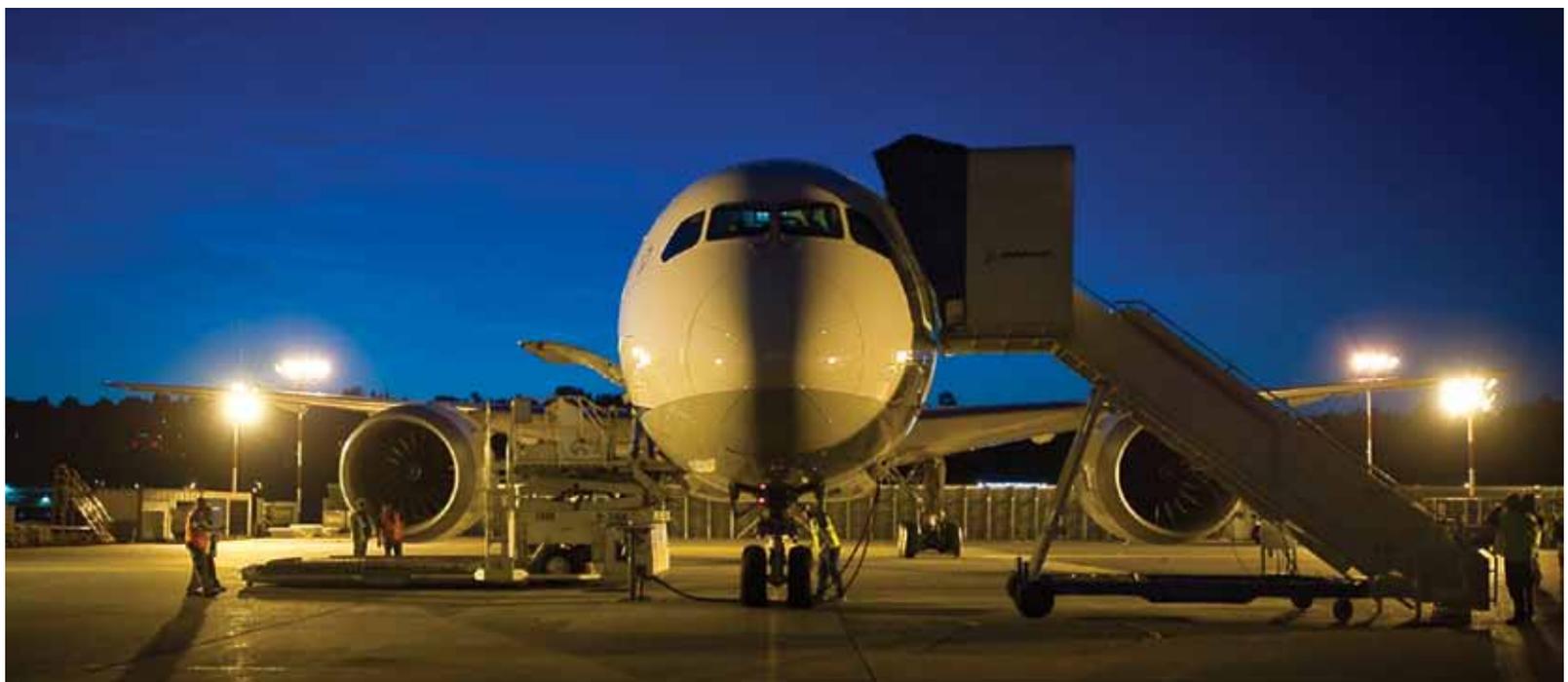


directly benefits the environment. From helping to demonstrate the technical feasibility of using sustainable biofuels and other renewable energy sources to incorporating new technologies to reduce noise and emissions and increasing the efficiency of the air traffic control systems, Boeing is continuously working to help reduce the industry's environmental footprint.

In India, Boeing is actively participating in initiatives to explore how airlines can reduce their impact on the environment and is also working with leading scientific and academic communities on initiatives to look at all renewable fuel sources that can help reduce carbon emissions.

SP's: Do you foresee serious challenge from the new players emerging on the scene in the regional aircraft market in India as well as globally?

Keskar: We will focus on our product line to meet the requirements of our airline customers and their passengers. The Boeing 787 Dreamliner and the continuous improvements we are making in the Boeing 737 such as the Boeing Sky Interior are excellent examples of this. •



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'PowerJet delivers a complete propulsion system, comprising both engine and nacelle'

SP's ShowNews (SP's): What is the work-share arrangement between Snecma and NPO Saturn in respect of the development and manufacture of the SaM146 aero engine?

PowerJet: Snecma and NPO Saturn began to work together in 1997, when Snecma subcontracted the production of CFM56 engine parts to NPO Saturn. PowerJet, founded in July 2004, is a joint venture of Snecma, Safran Group of France and NPO Saturn of Russia. The company is in charge of all SaM146 programme management tasks, encompassing design, production, marketing, sales and support. PowerJet delivers a complete propulsion system, comprising both engine and nacelle. This implies the involvement of two other Safran group companies—Hispano-Suiza, in charge of the engine control system; and Aircelle, in charge of nacelle production. PowerJet is also the single point of contact for all customers, which means operators can count on a "one-stop shop" for all their propulsion system and support needs.

Snecma is in charge of the core engine, control system, accessory drive (accessory gearbox, transfer gearbox), overall propulsion system design integration and flight testing. NPO Saturn is responsible for the components of the low-pressure section, engine assembly and ground testing.

SP's: What are the unique features of the SaM146 aero engine from PowerJet that powers the SuperJet 100? Does this engine meet the emission standards required for modern day aero engines?

PowerJet: The SaM146 is the only engine designed and developed from the ground up for the regional aircraft market. Its performance is tailored to the specific needs of regional airlines.

The SaM146 is a complete propulsion system, comprising engine, nacelle and equipment. Developing 13,500 to 17,800 lb of thrust, a single SaM146 engine covers an entire family of 70- to 120-seat aircraft. Airlines will reap the benefits of commonality and economies of scale. Operators can adjust the SaM146 thrust level by simply replacing a plug in the control system and changing the nameplate. This engine commonality for a family of regional aircraft means reduced cost of ownership, with savings in terms of spare parts, tools, mechanic and pilot training, and of course spare engine inventories.

The SaM146 engine is also designed to be kinder to the environment, by reducing fuel consumption and optimising the combustion cycle to significantly reduce CO₂ and all other emissions, in particularly NOx.

SaM146 offers 10 per cent lower fuel burn than the competition, low direct maintenance costs, low cost of ownership, longer life on-wing and meets or exceeds the most stringent upcoming noise and emissions standards (including CO₂ and NOx). The engine features a margin of 20 per cent on NOx emission compared to current CAEP/6 regulations.

SaM146 MRO will be provided exclusively by PowerJet, through the global networks of Snecma and NPO Saturn, via the PowerLife organisation. PowerJet directly provides a full range of support services for the entire propulsion system (engine, equipment and nacelle).

Maintainability is designed into the SaM146 to ensure high reliability and facilitate every facet of servicing. The key to this improvement is not only a lower parts count and fewer stages, but also the incorporation of advanced technologies such as blisks, cutting-edge maintenance software, a design that supports on-wing maintenance and component changes, and an advanced FADEC. •

Continued on SP's ShowNews Day 3

Seven-year-old joint venture between Snecma of France & NPO Saturn of Russia

1997:	Snecma and NPO Saturn began to work together when Snecma subcontracted the production of CFM56 engine parts to NPO Saturn.
April 2003:	The SaM146 engine selected by Sukhoi Civil Aircraft to power its regional jet Superjet100.
July 2004:	Creation of PowerJet to develop and commercialise the SaM146 engine.
December 2005:	Aeroflot orders 30 Sukhoi Superjet 100 aircraft.
July 2006:	First engine ground test.
June 2007:	Start of engine testing on the open-air test cell.
December 2007:	Start of engine flight tests.
February 2008:	First ground test on the Sukhoi Superjet 100.
May 19, 2008	First flight test of the SaM146 on the Sukhoi Superjet 100.
December 24, 2008:	First flight of second Sukhoi Superjet 100 prototype at Komsomolsk-on-Amur.
June 2009:	The SaM146-powered Sukhoi Superjet 100 lands at Le Bourget Paris Air Show. End of the second series of tests on a flying test bed
July 25, 2009:	First flight of the third Sukhoi Superjet 100 prototype.
May 26, 2010:	With the SaM146 passing its medium bird ingestion test, PowerJet completes all tests required for certification.
June 23, 2010:	The European Aviation Safety Agency (EASA) issues the Type Certificate for the SaM146 engine.
August 9, 2010:	The Russian certification body, Interstate Aviation Commission Avia Register (IAC-AR) issues the Type Certificate for the SaM146.
August 24, 2010:	Delivery of the first production-standard engine.
September 18, 2010:	Delivery of the first production-standard propulsion system.
November 4, 2010:	First flight by a production-standard Sukhoi Superjet 100.
January 17, 2011:	Interjet places firm order for 15 Sukhoi Superjet 100 long-range jets, and takes 5 options.
January 28, 2011:	Russian certification of the Sukhoi Superjet 100
June 21, 2011:	New Business Jet version of the Sukhoi Superjet 100 regional jet, the SBJ, also powered by twin SaM146 engines. New orders for the SaM146-powered SSJ100: Blue Panorama Airlines and PT Sky Aviation.
July 2011:	Order by GazpromAvia and an agreement with JSC "VEB-Leasing" at MAKS Air Show
October 2011:	Order of two SBJ aircraft plus two additional options by Comlux.
January 17, 2012:	SaM146 1S18 engine certified by EASA
February 3, 2012:	Sukhoi Superjet 100 receives EASA Type certificate



'India still has strong and untapped potential ahead'



WITH FILIPPO BAGNATO, CEO, ATR

SP's ShowNews (SP's): What are the reasons for the success of ATR's regional aircraft in India?

Filippo Bagnato (Bagnato): The development of the Indian economy in the few last years is strongly associated with the development of transportation, and new air services are bringing substantial increase of connectivity into regions that traditionally had low transportation infrastructures. In the context of economic growth and development of air networks across the country, ATRs perfectly match the Indian carriers' requirements. ATRs have the lowest fuel, maintenance and operating costs among all regional aircraft. When compared to other turboprop aircraft on an average route of 240 nm, an ATR can help Indian carriers save about \$1.2 million. This means that ATRs bring airlines the possibility of proposing optimised rates to an increasing number of passengers and continue developing regional networks. Also, ATRs have contributed in bringing regional air connectivity to small airfields with low levels of infrastructure or to tough runways. These outstanding operational performances are combined with high levels of passenger comfort inside the cabin, which has contributed to further increase in popularity of the ATRs across India. We have set up customer support facilities in India (one office in Bangalore and several representatives on the major Indian metros), so Indian carriers can rely on ATR's knowledge and close presence.

SP's: What is the potential of the regional aviation market in India over the next 25 years?

Bagnato: India, as one of the most dynamics markets in the world, has strongly contributed to the expansion of ATR in the recent years and has still strong and untapped potential ahead. We have today 60 aircraft flying across the country and we estimate that there is room for more than 200 additional ATRs in the coming years.

SP's: What steps has ATR taken or is contemplating to take in order to retain its dominant position in India?

Bagnato: The ATR largely remains the most popular regional aircraft in India, and is highly appre-

ciated by passengers. There are 60 ATRs versus 15 Q400s in the country. Also, we have five operators across the country, while Bombardier has one. We have been the first aircraft manufacturer to have in the country, since 2006, a fully dedicated customer support centre to help the airlines operations. To retain our position in the market and even increase it, we are constantly improving our products and our services in terms of latest technology and cost-effective solutions. Our new ATR-600 series aircraft—certified and being delivered since last year—is today the most updated and technologically advanced aircraft, both from a passenger and pilot point of views. Their new standard PW127M engines bring increased performances in hot and high environments, and the aircraft continues to feature the lowest operating costs of the market. Because of these reasons, we are convinced that we are optimally positioned to keep ATR as the preferred option for Indian regional operations.

SP's: What is the economics of operating ATR aircraft for domestic air cargo segment of the airline industry?

Bagnato: ATR's success extends through several cargo operations worldwide by major companies such as DHL, FEDEX and UPS, and in India, with Deccan 360 and Quikjet, underlining the strong residual value of the ATR aircraft for cargo operations. As for passenger operations, ATRs bring substantial savings in operating and maintenance costs. And, at the same time, ATR's fuselage structure enables that no specific loader is required to



upload or download the aircraft, making it more attractive and viable for smaller airports with low levels of service and infrastructures.

SP's: What is the state of MRO facilities in India for ATR aircraft operating in India as well as in the region?

Bagnato: Since its introduction in the country, ATR has acted as a partner of the airlines. We helped a majority of them develop their own maintenance capabilities; as a result you have today in this region very experienced aircraft engineers. With ATR fleet size that doubled in the past five years and with the launch of low-cost carriers, there has also been a need to develop MRO capabilities outside the airlines. For this reason we have supported the initiative of Indian private companies that have today state-of-the-art components repair facilities and airframe MROs, approved by the Indian DGCA as well as by the European EASA. This allow airlines to greatly reduce their costs by outsourcing and performing their airframe and components maintenance locally •

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