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DESPAIR AND HOPE



BY R. CHANDRAKANTH

The Telangana agitation almost grounded the fourth edition of India Aviation which thankfully gets underway at the Begumpet airport from today. Then there is the other dampener for the event – the upcoming general election. The exhibitor numbers are down substantially. The third factor impacting the event has been the economic climate, specifically affecting aviation – most airlines and operators are going through severe turbulence.

Almost all airlines are adversely affected by debt and the overall debt of Indian airlines is estimated at \$14.5 billion as per consulting firm Centre for Asia-Pacific Aviation (CAPA). This is humongous.

ALL IS NOT WELL

It is just not possible to brush this under the carpet and say all is well with the Indian aviation. It is not.

The fact that none of the scheduled airlines is exhibiting is testimony to the state they are in. Kingfisher Airlines, which sponsored the first two editions, has wound up, a result of mismanagement and government policies which, to say the least, is not at all encouraging. Aviation turbine fuel (ATF) is prohibitive in India and it is weighing down all of them, accounting for nearly 45 per cent of the operational cost, compared to the global average of 30 per cent. "The high cost of ATF is destroying the competitiveness of Indian airlines," said Tony Tyler, CEO of the International Air Transport Association (IATA). Domestic ATF taxes are as high as 30 per cent,

on top of an 8.2 per cent excise duty.

There are other issues that are also weighing down the civil aviation sector such as regulatory; inadequate airport infrastructure or high cost of operations at some of the major metro airports; access to overseas funds; low priority to air cargo, maintenance, repair and overhaul (MRO), ground handling; talent availability, etc.

OPTIMISM PREVAILS

Despite the trials and tribulations of the civil aviation sector, there is a certain sense of optimism that the course will change for the better. Passenger and cargo growth are promising, as it is going to piggyback on a nation which is emerging as an economic powerhouse, although economic growth is sluggish. From 4.9 per cent GDP, the levels are expected to grow past 5 per cent and hopefully it should reach its earlier levels of over 8 per cent.

NUMBERS GAME

The script of the Indian aviation story is going to change soon. As per the Directorate General of Civil Aviation (DGCA) passenger growth figures are driving the civil aviation business. From April to December 2013, about 126 million passengers flew on Indian and other carriers. The projections are that airlines would carry nearly 180 million passengers by 2020, particularly with the growth of regional aviation. The International Air Transport Association (IATA) has forecast that India's domestic air travel market would be among the top five globally, experiencing the sec-



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and highest growth rate. Considering this, the airlines are restructuring themselves, either going for overseas equity or getting funds from the government (Air India) and there are new ventures coming up such as the Tata-Singapore Airlines and the Tata-AirAsia. And with a new regional aviation policy in place, India is going to witness the proliferation of regional airlines and the first one to get off the block has been Air Costa from Vijayawada.

AIRCRAFT REQUIRED

Boeing, Airbus, Honeywell, CAPA and others have all forecast that there would be robust growth in passenger and cargo movement in the years to come. This would entail requirement of substantial aircraft inventory. Boeing has predicted that demand for commercial jets in India will increase more than 4.5 times of the world market by 2031. "India will need 1,450 new planes through 2031 worth a total of up to \$175 billion," states Dinesh A. Keskar, Senior Vice President (Sales, Asia-Pacific and India), Boeing.

There would be more demand for narrow-body aircraft in the domestic segment as the low-cost carrier (LCC) market-share would continue to dominate through their route-enhancements of hitherto untapped or underserved regions. The LCC market in India has had phenomenal success and it has grown from just one per cent in 2004 to a whopping 70 per cent a decade later.

The growing aircraft inventory and expanding operations obviously calls for massive funding. For Air India, the government is making the necessary allocations (though it is coming in spurts), while financially strapped Jet Airways is being supported by Etihad Airways. So also SpiceJet and GoAir are looking at foreign equity. With the government liberalising policies (including relaxing international route requirements) these airlines expect better revenue yields.

IndiGo, which is doing well, had placed an order for 100 A320 aircraft in 2005. In addition IndiGo was the first Indian airline to order the 'NEO' with a contract for 150 A320neo and 30 A320s placed in 2011. "With high fuel prices and with a four per cent fuel burn reduction, IndiGo's investment in the Sharklet will pay handsome dividends, said John Leahy, Chief Operating Officer – Customers. "We are delighted with IndiGo's choice to grow their airline with Airbus."

IndiGo is an all Airbus operator and the largest low-cost airline in India today. It began operations in 2006 and has a fleet of 62 A320s today. So far IndiGo's cumulative order for Airbus aircraft is for 280 A320 Family aircraft including 130 A320neo. The deliveries are expected to begin from 2016 and continue till 2025. IndiGo currently has a fleet of 34 Airbus A320s. It flies to 24 destinations and has 221 daily flights.

Similarly, low-cost carrier, GoAir plans to acquire 72 new aircraft (Airbus A320neo) by 2020 for approximately \$7.2 billion, taking the total strength of the fleet to 92. As per a CAPA report, SpiceJet has confirmed an order for 42 Boeing B737 MAX aircraft in order to secure slots for the period beyond 2016.

Air Costa announced at the recently concluded Singapore Airshow that it would pick up additional 50 Embraer E-Jets, with options of another 50 over the next five to 10 years. Ramesh Lingamaneni, Chairman of Air Costa, said: "Regional air services have enormous potential in India, especially the ones connecting Tier-I, II and III cities. Our initial experience with our current E-Jets has been very positive. Our passengers have complimented the aircraft on its comfort and point-to-point convenience. The E2s will give us right-sized seat capacity for us to cater to the future target markets and unit costs that are competitive with larger re-engined single aisle aircraft."

AIR CARGO SET TO GROW

The air cargo segment of aviation has been languishing and it is only now that there is a realisation that it is a critical enabler in economic development. The better the country's multi-modal transportation network, the better the trade would be. Efforts are now on to create adequate infrastructure – exclusive zones for air cargo; warehouses; cold storage units etc – and this would facilitate growth of air cargo. In 2013 (April to December), the total air-cargo volume handled by all Indian airports was 17,02,000 tonnes, compared to the top airport Hong Kong (39,76,768 tonnes) is ridiculously low. However, the Ministry of Civil Aviation is hoping that exports would touch \$500 billion this year. In 2010-11 India crossed the \$200 billion mark for the first time in its export history. The financial year 2011-12 registered a growth of 21 per cent in exports which reached \$303.7 billion. Based on these encouraging numbers, the country has set an ambitious merchandise export target of \$500 billion for 2013-14.

FOCUS ON AIRPORTS

In quick succession, India has had some major makeover of its airports – the Indira Gandhi International Airport in Delhi; Rajiv Gandhi International Airport in Hyderabad; Kempegowda International Airport in Bengaluru; and now the swankiest of them all the Chatrapathi Shivaji International Airport in Mumbai. While these airports showcase to the world that Indian airports have arrived, there are concerted efforts by the Airports Authority of India (AAI) to upgrade and modernise several airports in the country as to connect the regions. AAI has under its control 125 airports. In addition to these, there are six joint venture (JV) airports under the public-private partnership (PPP) framework and these are: Mumbai, Delhi, Hyderabad, Bengaluru, Nagpur and Cochin airports. Along with private sector initiatives, India needs about \$40 billion in airport projects by 2025, states CAPA.

MRO FOOTPRINT

Presently, MRO footprint in India is inadequate, but we expect radical changes in the segment as both the aircraft manufacturers and operators see cost-benefits in having major MRO operations within the country. The Boeing-Air India MRO project in Nagpur is expected to go operational this year. As of now most scheduled and non-scheduled operators take their aircraft either to Dubai or Singapore for major aircraft repairs. The reasons for this are twofold – no adequate MRO ecosystem and high taxation, however, it is hoped that the government will look into the demands of the industry, if the MRO segment has to reach \$2.6 billion by 2020.

2014, THE YEAR OF CHANGE

As elections due soon, there is a general awakening that a strong government should come at the centre with accelerated development on its agenda and in a transparent manner. There is emphasis on good governance. The industry, specifically aviation, is waiting with bated breath for infusion of policies which will help the sector to achieve its true potential. •

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Beechcraft aircraft for special missions

When government, military and commercial customers want airborne solutions for critical missions, they turn to Beechcraft which provides aircraft that are high on performance and flight characteristics required to address the unique challenges of special mission operations.

With unparalleled performance, versatility and low operating costs, Beechcraft products are preferred for pilot and crew coordination training, military liaison, priority transportation, air ambulance, surveillance, maritime patrol, cargo hauling, flight inspection, high-capacity/airline shuttles and numerous other time-dependent operations.

Aerial surveying: The Beechcraft King Air C90GTx, 250, and 350 are ideal for aerial surveying. From pipeline patrol to oil spill detection to disaster documentation to mapping and data collection, there's an ideal aircraft for the mission.

Virtually every King Air model has been fitted for aerial survey, leveraging the aircraft's large, pressurised cabin and fuel-efficient turboprop powerplants. Aerial survey sensors often include digital mapping products, LIDAR and multi- and hyper-spectral cameras.

Air ambulance: The Beechcraft King Air C90GTx, 250, and 350 provide speed, comfort and versatility are especially critical when there are lives at stake. King Air aircraft feature large, pressurised, environmentally controlled cabins and the high dash speeds and range required to expeditiously transport critical-care patients. Additionally, the King Air series is capable of operating from short, unimproved runways, providing additional flexibility during life-and-death situations in remote areas. Cabins may be fitted with dual medical sleds and cabinetry from all major equipment suppliers. Interior installations are either permanent (medical floor covering and easily cleaned sidewalls) or temporary (easy transition from air ambulance to VIP transport).

Beechcraft has built more air ambulances than any other manufacturer.

Flight inspection: A stable platform with outstanding range and excellent handling characteristics, the King Air series are the preferred flight inspection aircraft. And with 100+ aircraft delivered to flight inspection programmes worldwide, Beechcraft stands ready to provide the right aircraft for the customer – whether the mission requires the extended range of border-to-border flight calibration, the payload capacity for extensive onboard test equipment, or even the speed and comfort of a combined flight inspection/executive transportation configuration.

Beechcraft also organises the installation of flight inspection mission equipment from any major manufacturer the customer requires to provide a customised solution.

Surveillance: The Beechcraft Baron / King Air C90GTx, 250, and 350 are the aircraft for surveillance. King Airs are ideal surveillance aircraft. Each model features a large, pressurised, environmentally controlled cabin, high dash speed and extensive endurance. The King Air 350ER offers even more endurance, performing overland surveillance with sufficient payload



BEECHCRAFT KING AIR 350ER

to operate a moving target indicator, synthetic aperture radar, EO/IR (FLIR), streaming video datalink, self-protection systems, and a wide variety of high-performance communications systems.

Imagery systems have been installed in virtually all models of the King Air. Today's data link technology allows relatively simple transmission of real-time streaming video to fixed or vehicle-mounted ground receivers for timely dissemination to tactical units.

Training: Beechcraft Bonanza / Baron / King Air C90GTx, 250, and 350 have been delivered to governments, private and commercial schools, and airline training facilities worldwide. From ab initio, basic-instrument platforms to airline training programmes to advanced military jet training solutions, Beechcraft has an aircraft to offer. Beechcraft high performance piston, turboprop and turbofan aircraft help in training pilots, no matter what the mission is.

Multi-mission aircraft solutions: Beechcraft offers aircraft to transport important personnel and cargo – no matter where they fly. Operators prefer Beechcraft for their durability, performance, range, payload and low operating costs.

The King Air series has earned a reputation for mission readiness. The King Air can operate on short, unimproved runways and offers a large cargo door option. The King Air series offers flexible, reconfigurable interiors, making them equally adept at accommodating passengers, cargo, air ambulance or other missions. •

Beechcraft consolidating in India

Beechcraft Corporation, a world-leading manufacturer of business, special mission, light attack and trainer aircraft, has identified India as one of the most attractive markets in the world for business aviation, and it is making major investments in the country to support this fast-growing sector. The company recently celebrates the opening of a new office in New Delhi, India.

Recent analysis by the company of the latest available market data reveals that 65 business aircraft were delivered to India between 2008 and 2012, representing an increase of 38 per cent compared to the 47 business aircraft delivered during the previous five-year period (2003-07).

Beechcraft's analysis also reveals that there are currently more than 254 business aircraft in India, the largest business aviation base in the region. Beechcraft anticipates that the fleet could continue to grow in parallel with India's increasing international trade, particularly as the country's leading entrepreneurs develop foreign trading partners. This sector is expected to grow dramatically, with the number of wealthy entrepreneurs forecast to double between 2012 and 2022 (individuals with net assets of more than \$10 million increasing from 8,481 to 17,032).

In addition to the new sales office, Beechcraft recently announced the ap-

pointment of Arrow Aircraft Sales and Charters Private Limited (ARROW) as the company's exclusive sales representative for India. Founded in 2009, ARROW has developed into a significant provider of business aviation services, including sales, charter and operation management, supporting customers from its headquarters in New Dehli, as well as offices in Mumbai and Kolkata.

"Having served customers in India for more than 50 years, the country continues to be an exciting market for us," said Richard Emery, Beechcraft President, APAC and EMEA. "With significant growth in deliveries over the past decade, the country continues to show huge potential for future growth. This is why we have decided to make a significant investment in increasing our presence in India. Our market share in the business turboprop category currently stands at 79 per cent, and these investments will help ensure that we remain at the forefront of Indian business aviation."

Research for Beechcraft amongst global professional investors and senior business executives found that 96 per cent of them forecast growth for the Indian economy over the next five years, with 2 in 5 (41 per cent) stating that this growth will be significant. Linked to these predictions, 53 per cent believe that the business aviation sector in India will grow significantly over the coming decade. •

celebrating 100 years



On June 18th, 1914, Lawrence Sperry and his mechanic stood on the wings of a Curtiss C-2 biplane demonstrating the world's first autopilot.

Today's Honeywell Aerospace can trace its heritage back to that historic day in Paris. For a century, Honeywell and its legacy companies have been at the forefront of flight, bringing a countless number of inventions to the aerospace industry. Thousands of Honeywell products and services are found on virtually every commercial, defense and space aircraft in the world. We look forward to providing innovative aviation solutions over the next 100 years, and continuing to integrate technology that makes the possibilities of flight even safer, more efficient, comfortable, higher performing and productive.

Honeywell



To learn more about Honeywell's 100 year celebration
visit aerospace.honeywell.com
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ATR remains leader in regional aviation market

ATR ended 2013 breaking new annual records. The manufacturer increased its turnover to US\$ 1.63 billion, an increase of 13 per cent compared to the previous year 2012 which stand of \$1.44 billion.

Meanwhile, ATR continued to increase the pace of its deliveries, allowing it to achieve a new record with 74 aircraft delivered to customers during the year; an increase of 16 per cent compared with 2012 deliveries (64) and 37 per cent compared with 2011 deliveries (54). Alongside these results were sales of a total of 195 aircraft (89 firm orders and 106 options), giving ATR a backlog of 221 firm aircraft orders as of December 31, 2013.

The 89 firm sales, along with 106 options, came from 14 clients. These firm orders represent an increase of 20 per cent compared to orders from the previous year. 2013 also confirmed the growing interest of leasing companies in ATR. In 2013 ATR has also received confidence renewal from some 10 customers over the five continents. For over the past five years, ATR has accounted for nearly 85 per cent of sales of all aircraft under 90 seats in the regions of Latin America and the fastest-growing countries in South East Asia, confirming their attractiveness to regional companies for developing their short-haul networks.

In recent years ATRs have established a clear position as the best-selling aircraft with under 90 seats among all regional aircraft (35 per cent of total sales since 2010). These sales have helped position the ATR-600s as the new benchmark for regional aviation thanks to their cutting-edge technology, avant garde comfort and economical and ecological performance.

The 74 deliveries made in 2013 represent not only a new annual record, but also highlight the dramatic increase in the rate of deliveries, responding to the strong demand for ATRs worldwide. These 74 new ATR 600s in service account for nearly half of all new aircraft with up to 90 seats delivered during 2013. To date, over 130 ATRs from the 600 series are already in operation.

Since the programme began in 1981, ATR has received net orders for 1,328 aircraft (443 ATR 42s and 885 ATR 72s). As of year-end 2013, ATR has delivered 1,107 aircraft (429 ATR 42s and 678 ATR 72s).

As of December 31, 2013, ATR has a backlog of 221 aircraft. The value of these aircraft is estimated at \$5.3 billion. This backlog represents nearly three years of production and allows ATR to continue to increase its planned delivery rate for the forthcoming years.

In 2013, ATR confirmed the signing of numerous Global Maintenance Agreements (GMAs). Contracts of this type were signed with 15 airlines



ATR 72-600

worldwide, covering a total of 164 aircraft, for a total of \$330 million. To date, approximately 30 per cent of ATRs in operation worldwide are covered by GMAs between the airlines and ATR. This performance in terms of supporting the ATR fleet illustrates the strong desire of the manufacturer to develop support and service activities.

Filippo Bagnato, Chief Executive Officer of ATR, said he was very satisfied "with the company's new record results. Once again, this year we continued to expand our presence worldwide and consolidate the attractiveness of our products and our services to some 190 operating companies. We are very proud to have the largest portfolio of operators out of all the manufacturers of regional aircraft." Mr Bagnato added: "We will continue to improve our aircraft and to further expand our production capacity, and we are going to further develop the support offer we provide to operators. These are key pillars of the success of ATR today." •

Boeing to focus on aerospace ecosystem

Boeing is highlighting its family of efficient commercial airplanes in both the single and twin-aisle market segments. Strengthened alliances with Indian partners, high-level customer engagement and a strong display of latest product technologies are going to be the feature at the show.

"Boeing is delighted to support this air show. For the past seven decades, we have been a steadfast partner to development of aviation in India and the air show offers another opportunity to demonstrate our commitment," said Pratyush Kumar, President, Boeing India. "In addition to serving our customers, we are sharpening our focus on building an entire ecosystem for aerospace – maintenance, repair, engineering, front line skill-building and component manufacturing."

The Boeing exhibits include the 737-8 MAX, the new 777-9X, the 777-300ER (Extended Range) and the 787-8.

Boeing is the world's leading aerospace company and the largest manufacturer of commercial jetliners and military aircraft combined. Boeing has been active in India for 70 years with its commercial airplanes providing the mainstay of India's civil aviation sector. More recently Boeing military aircraft have started to play an important role in the modernisation and mission-readiness of India's defence forces. Boeing is focused on delivering value to its Indian customers with its advanced technologies and performance driven aircraft. Concurrently, Boeing is committed to creating sustainable value in the Indian aerospace sector – developing local suppliers, pursuing business partnerships and shaping technical collaborations with Indian companies and institutions. •



Reducing the threat of runway accidents

BY SASI KANCHARLA, CUSTOMER BUSINESS LEADER,
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RUNWAY SAFETY AS A CONTINUED CONCERN

Air traffic around the globe is increasing, with India anticipated to be the second largest air traffic market in the next decade. Simultaneous to the increase in air traffic, at least two runway excursions, such as veer-offs and overruns, take place each week worldwide. According to a January 2013 report by the International Civil Aviation Organisation (ICAO), runway excursions are a persistent problem and their numbers have not decreased in more than 20 years.

Globally in 2012, there were 106 runway excursions, many of them causing planes to be destroyed and lives to be lost. In addition to runway excursions, runway incursions, or when there is a loss of safe distance between a plane and another object (including other planes, people, vehicles, etc.), are a major cause for concern globally. Runway excursions have impacted India in a significant way and along with two high profile runway incursions in 2009 and 2011 the focus has turned to runway safety.

Runway accidents are the most common type of aviation accident, with nearly 20 per cent of reported accidents happening in the form of a runway excursion, according to a report by the International Air Transport Association (IATA). This is driving a global demand from the aviation industry to reduce and prevent runway accidents.

THE DANGERS OF RUNWAY ACCIDENTS

Given the importance of runway safety, there is a need to look at some of the reasons for runway mishaps. Aircrafts and their respective flight crew operate in very complex airport environments, often flying in adverse weather conditions where there is extremely low visibility. Apart from bad weather, some other causes for runway excursions and incursions include a loss of situational awareness, lack of proper signage along the taxiway, airport congestion on that day as well as poor flight crew execution.

Since 2008, there have been about three incidents a day in the US alone where a plane or a vehicle goes onto an active runway by mistake, which has resulted in an average of 1,000 incidents a year. Apart from this, what's more startling is the fact that this number has held steady for the past four years. In a small number of these cases, a catastrophic collision has only been nar-



rowly avoided, sometimes only due to sheer luck.

MAKING RUNWAYS SAFER

The key to reducing runway accidents lies in a combination of technology that increases safety during approach, landing, taxi and take-off as well as training for pilots using realistic scenarios that will prepare them to make the right decisions and execute the correct manoeuvres.

Newer technologies exist that focus on breaking the chain of events leading to a runway incursion or excursion. Two such technologies are Honeywell Aerospace's SmartRunway and SmartLanding.

Both products offer an expanded number of available alerts and added visual messaging to support both "heads-up" and "quiet cockpit" operations. A simple software load, only requiring a minimal amount of aircraft downtime and pilot training, makes it a cost-effective simple install on the flight deck. SmartRunway and SmartLanding are available now for airlines and business aviation aircraft currently equipped with

Honeywell's MK V or MK VII Enhanced Ground Proximity Warning System (EGPWS).

Honeywell's SmartRunway is the next-generation upgrade to the Honeywell Runway Awareness and Advisory System (RAAS). SmartRunway improves situational awareness by providing timely aural advisories – with new advisories and now graphical alerts to the flight crew and advises them of their position during taxi, take-off, final approach, landing and rollout.

SmartLanding is designed to help reduce the risk of a runway excursion by providing timely alerts to crew members when the aircraft is approaching the runway too high, too fast or is not configured properly – common components of an unstable approach. SmartLanding features callouts for long landing if the aircraft extends beyond a predetermined touch down zone, together with callouts of runway distance remaining during landing and rollout.

Honeywell Aerospace has showcased the benefits of safety technologies such as SmartRunway and SmartLanding, which would enable airports around the globe to become hazard free through the reduction in incidents of runway excursions and incursions. With continued growth of air traffic and challenges that are attached to it, we are only going to see increased demand from airlines for systems such as SmartLanding and SmartRunway that can cost-effectively contribute to the safety of people both on-the-ground as well as in the air. •

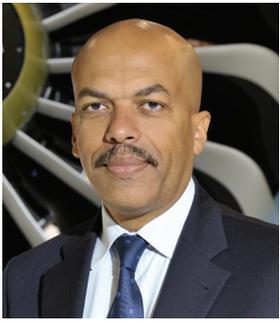
A380 takes centre stage

A380 as well as models of its full civil aircraft product range will be at the heart of Airbus' presence at India Aviation 2014 airshow. An Emirates Airline A380 will be on static display for the first three days of the Airshow to demonstrate the readiness of India and airports like Hyderabad International for A380 operations. Today, four major Indian international airports (New Delhi, Mumbai, Hyderabad and Bengaluru) are ready to commence A380 operations.

Airbus is India's aircraft of choice, operated by all major Indian carriers and with over 60 per cent market share of new orders. Models of Airbus' full aircraft product range (including India's most popular single aisle, the A320, and Airbus' market leading wide-body aircraft: the A330, the A350 XWB and the A380) are on display on stand 24.1 in Hall A.

India is one of the fastest growing aviation markets in the world. Airbus has fostered partnerships with India's aviation sector for over 40 years, and supports its continued sustainable growth. Today, Airbus employs over 350 engineers at the Airbus India Engineering Centre in Bengaluru and Delhi. Overall, Indian engineering and manufacturing companies nationwide, including more than 5,000 people, contribute to all Airbus aircraft programmes across the supply chain, making Airbus the largest overseas aircraft company in India. •





LEAP engine speaks for itself: Jean-Paul Ebanga

CFM International has made enormous strides in engine technology and now is banking on its futuristic product – LEAP engine. In an exhaustive interview, the President and CEO of CFM International, **Jean-Paul Ebanga**, spells out the company's overall strategy.

BY R. CHANDRAKANTH

SP's ShowNews (SP's): CFMI has begun 2014 with a bang, getting substantial bookings. What is the outlook for your engines for the rest of the year?

CFM: We generally don't make predictions about engine orders. 2013 was a record year for CFM. We logged orders for a total of 2,723 engines, including 1,330 CFM56 engines (commercial, military and spares) and 1,393 LEAP engines (including spares). These orders—the highest level in the company's 40-year history—are valued at more than \$31 billion at list price. We have also have a very good start to 2014 and, while we think it will be a very good year for us, we don't really anticipate the same level as we received in 2013.

SP's: What are the main factors driving the impressive sales? Are they aggressive marketing or the products speak for themselves?

CFM: We tend to be a pretty conservative company and only speak when we have something to say. As a result, the industry tends to take notice when CFM says the LEAP engine will deliver 15 per cent better fuel-efficiency compared to today's engines; will achieve double-digit improvements in noise and emissions; and will maintain the same maintenance cost and reliability of the legendary CFM56 family. Our reputation for always delivering on our commitments has been a big factor in our success, but now that we have started the most extensive development and certification test program in our history, the LEAP engine is starting to speak for itself. And we really like what it is saying.

SP's: The emphasis of customers is on engine performance and low maintenance costs, could you give comparable details of your engine on these two counts?

CFM: The LEAP engine will provide a 15 per cent improvement in fuel efficiency versions today's best engines. The thousands of hours of testing we have completed to date verify that the engine will meet that target. CFM has been known for having the lowest maintenance costs in the industry and we have committed to maintaining those levels for the LEAP engine.

SP's: Could you update on the LEAP engines testing and delivery schedule?

CFM: We took the first full LEAP engine to test on September 4, 2013, two days ahead of the schedule we set in early 2010. The engine completed more than 300 hours and we are thrilled with the results. 2014 is a big year for us. We completed early icing test in January and are preparing for early endurance testing. By the end of March, we will have a total of nine engines on test; we will have 20 by year end. Testing this year includes flight testing the LEAP-1C and LEAP-1A on our own flying testbed; completing certification endurance testing; and a whole array of other tests. We will also begin ground testing the first LEAP-1B engine around mid-year. The LEAP-1A is on track for engine certification in 2015 and entry into service on the A320neo in 2016. The LEAP-1B will follow a few months later.

SP's: It is mentioned that the LEAP engine family can effect a saving of nearly \$3 million per plane, could you explain how?

CFM: We actually talk about the LEAP engines providing approximately \$3.5 better 15-year NPV (net present value) over the completion. We believe the LEAP engine fuel efficiency will result in 40 fewer fill-ups per year; 10 fewer delayed departures per year; two

fewer overhauls over the life of the engine; and 50 fewer line maintenance hours per year.

SP's: The LEAP engine is preferred by Airbus, Boeing and Comac, what about the other jet manufacturers?

CFM: The airplane applications that the LEAP engine is on now are the result of a successfully executed strategy the company set when it launched the engine in 2008. From the beginning, we had hoped to be sole-source with Boeing and Comac and one of the options with Airbus. If you look at orders to date, you will see that these three applications represent about 90 per cent of all single-aisle aircraft orders. While we have been approached to provide an engine for other applications, we felt that the business case simply did not justify the strain on financial and human resources.

SP's: Is there a trend towards having just one engine option per plane? How will this affect the engine manufacturers?

CFM: That is an interesting question. A lot will depend on the expected market for the particular airplane. If the anticipated market is relatively small, then it isn't really profitable to have two or more engine manufacturers. That seems to be the case with the many of the newer wide-body applications. That said, Boeing did maintain the 30-year sole-source agreement with CFM, it that was a position we had to earn by showing that we would bring the best product for their airplane. Conversely, the A320neo is selling very well and the market is evenly split between CFM and Pratt.

SP's: What will be the final cost of developing a LEAP engine?

CFM: We never divulge those numbers. However, I can tell you that the two parent companies invest approximately \$2 billion annually in research and development for potential new products, as well as sustaining the mature product lines.

SP's: Which markets (region-wise) are promising for CFM and what is your marketing strategy?

CFM: CFM has more than 530 customers around the globe, so it would be hard for us to target a specific region. We do understand the dynamics of the growth regions around the world, but we intend to maintain our leadership position in the single-aisle market. Our strategy is quite simple: do what we say we are going to do—keep our promises and deliver the most reliability, cost effective engine in the industry.

SP's: How many CFM engines are in India and what targets have you set for India? How do you intend to grow in the Indian market?

CFM: There are approximately 210 CFM56 engines in service in India today. There are several campaigns underway with airlines there and we are absolutely competing to win.

SP's: Partnerships are the way forward in India. Could you explain your strategy with regard to partnerships?

CFM: The very foundation of CFM is the partnership between GE and Snecma. Our approach as always been one of "share to gain", looking at what strengths and assets each can bring to the table. CFM is unique in that it is a true 50:50 joint company. Each partner must convince the other that the decisions been taken, whether be it about technology or long-term strategy, are best for CFM. We are celebrat-



CFM56-7 BOEING 737NG

Dassault Aviation bullish about Indian business jet market

Dassault Aviation is presenting its Falcon fleet of large cabin, long range business jets at India Aviation, India's biggest civilian air show. The fourth edition of India Aviation will feature Dassault's 5,950 nm (11,000 km) range Falcon 7X trijet, the first business jet certified with a fully-digital flight control system.

Dassault is the Indian market leader for large cabin, long range aircraft, with 22 aircraft currently in service and several more on order. Most of the new aircraft orders are for the longest range Falcon models, capable of flying non-stop to London City Airport from anywhere in India.

The Falcon 2000 twinjet is also popular among Indian customers. Two newly introduced versions, the 3,350 nm (6,200 km) 2000S and the 4,000 nm (7,000 km) 2000LXS, will offer take-off and landing performance unparalleled among wide body jets – comparable to much smaller midsize and super midsize models. Like the 7X and the long range Falcon 900LX, the 2000S and LXS were recently approved for operation at London City.

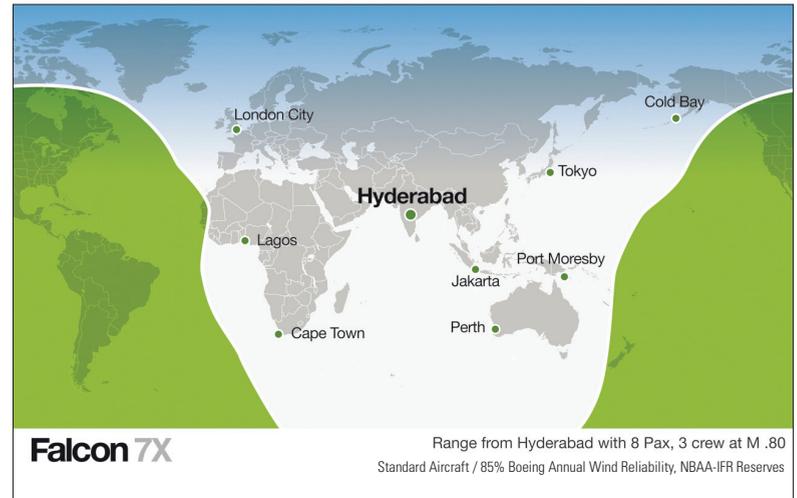
Dassault also anticipates a warm reception in India for its brand new 5,200 nm (9,630 km) Falcon 5X which will offer the largest cabin cross-section of any business jet and the lowest ownership and operating costs in its class. Initial Indian orders for the large body twinjet are expected this year. The 5X is expected to make its first flight in the first quarter of next year with certification planned at the end of 2016.

"We see improving signs of the Indian market which has been slow recently" remarked Gilles Gautier, Vice President Falcon Sales for Europe, the Middle East and Africa. "India has a real need for expanding business aviation, and we remain bullish about future market prospects."

Because of their exceptional efficiency and flexibility, Falcons are very popular with Indian operators, particularly in the corporate and charter markets. Their unparalleled operating economy and their ability to combine short and long haul flights and fly out of short hard-to-reach airstrips with full range performance – even at high altitudes and high temperature conditions – make them perfect for local conditions. Lower operating expenses and traditional higher resale values make Falcon ownership costs a real competitive advantage.

The flagship 7X, with its large cabin and advanced systems, largely derived from military aircraft, is particularly prized by Indian customers. Its ultra quiet roomy interior, available with a shower option, allows passengers to disembark fresh and relaxed after a 13-hour flight. And its London City Airport rating can shave two hours off a typical London business trip.

The first Indian Falcon 7X was acquired by Ligare, the biggest Indian



Falcon operator. The aircraft has been used since 2010 for Ligare's charter operations.

"Dassault has been part of the Indian aviation market for more than 60 years, initially in the military domain," notes Gautier. Our customers understand the benefits that fighter technology brings to business aviation. Soon we will celebrate the 20th anniversary of our first Falcon delivery in India, a Falcon 200 to the Tata group in 1995."

Indian Falcon operators can also rely on a growing regional servicing and spares network. After beefing up its local representation and support office in Delhi, Dassault recently added a second authorised support facility in Mumbai, in cooperation with Tata affiliate Taj Air, and further partnerships are contemplated. The Taj Air shop services Falcon 2000 and 2000DX/EX/LXS models. Dassault's other Indian authorised support facility, Mumbai-based Air Works India, handles 900EX/LX aircraft.

The network, which includes spares warehouses in Mumbai and Chennai, is backed up by offshore facilities in Dubai, Singapore and Paris. Pilot training is available at CAE in Dubai and technical training may soon be offered there as well. •

ing our 40th anniversary this year and continue to be the best example of a very successful joint venture. We must be doing something right.

SP's: Is India part of your global supply chain. If yes, could you indicate the contribution?

CFM: CFM parent company Snecma (Safran) has a 50:50 joint venture with the Hindustan Aeronautics Limited (HAL), which supplies tubes and pipes for CFM56 engines. Additionally, both companies have extensive research and development capabilities in the country: GE Aviation's John F. Welch Technology Center and Safran Aerospace India Pvt Ltd both located in Bengaluru.

SP's: Could you tell us about your CFM56 Maintenance Training Center in India? How many engineers has it trained and what are the plans for the centre?

CFM: The centre open in Hyderabad in 2007 to provide line maintenance training for CFM56-7B and CFM56-5B engines. I need to check the number of engineers trained to date, but the facility has the capacity to train 500 students annually.

SP's: Could you indicate to us your customer support and services network, particularly in the region?

CFM: We are very proud of our customer support network. We have the largest commercial fleet in the air and it is our job to keep them flying. To achieve that, we have hundreds of field service engineers on the ground with airlines worldwide to provide day-to-day support for everything from line maintenance to complete overhauls. We operate three 24-hour call centres that put airlines in touch with our experts immediately. We have four world-class line

maintenance training centres, including the one that we opened in Hyderabad in 2007. Our parent companies have on-wing support organisations which can reach the customer in a matter of hours. We also have spare parts distribution centres. CFM as an open approach to the aftermarket, so there are 40 shops around the world licensed to do CFM56 overhauls, including facilities owned by our parent companies, GE and Snecma (Safran).

SP's: Has there been any progress on use of biofuels on your engines or will it remain experimental only?

CFM: CFM has done extensive testing of biofuels in its CFM56 and been very successful. We have proven that our engines can efficiently burn alternate fuels. However, the next step is to industrialise these alternative fuels to make them more widely available. It will take time, but it is coming.

SP's: As per ACARE 2020, aircraft are to burn 50 per cent less fuel, emit 50 per cent less carbon dioxide and 80 per cent less oxides of nitrogen and reduce noise levels by 50 per cent. Is it realistic? And what is CFM's work in this direction?

CFM: We do believe these are realistic goals. CFM was a signatory on the document that set these goals and continue to work the technology that will help achieve them. For example, the innovative TAPS (Twin-Annular, Pre-Mixing Swirler) combustor is reducing NOx (oxides of nitrogen) emissions by 75 per cent compared to current engines; the 15 per cent reduction in fuel burn bring with the same reduction in CO₂ emissions; and the noise signature of the LEAP engine represents a 75 per cent reduction versus today's engines. This means that, in most cases, aircraft noise will be confined with the airport itself. •

Gulfstream G650, cynosure of all eyes

Gulfstream Aerospace Corp. is to attract major attention as it is displaying for the first time in India, the ultra high-speed, ultra-long-range Gulfstream G650 and the midsize G150. The aircraft is on static display.

Several members of the company's sales team are on hand for the five-day air show, including Roger Sperry, Regional Senior Vice President International Sales, and Jason Akovenko, Regional Vice President, Asia-Pacific.

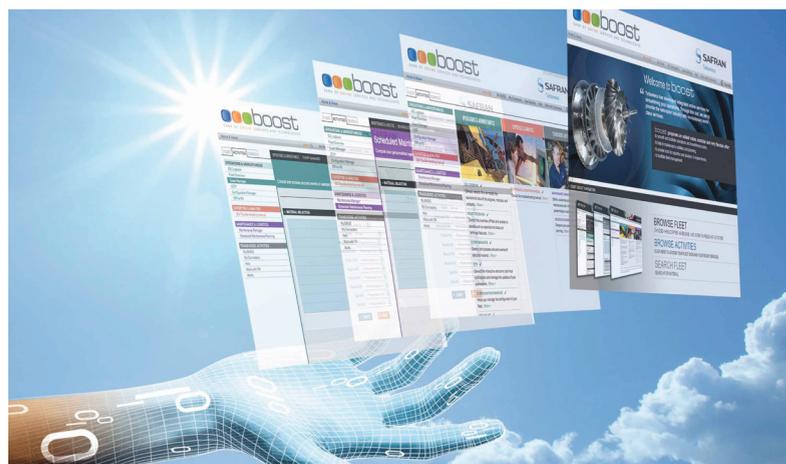
"Our fleet in Asia-Pacific has grown dramatically over the past decade," said Sperry. "That is especially true in India, where the number of aircraft has grown from five in 2001 to nearly 20 in 2013. India Aviation provides an opportunity for our customers to learn more about the advanced technology, superior craftsmanship and outstanding performance of our aircraft."

The Gulfstream G650 is, quite simply, the gold standard in business aviation. The flagship of the Gulfstream fleet flies faster, farther, and more comfortably than any other business aircraft in its class. Introduced in 2008, the G650 will carry eight passengers and a crew of four on non-stop legs of 7,000 nautical miles (12,964 km). With its powerful Rolls-Royce BR725 engines, the G650 will cover shorter distances at a speed of Mach 0.925. No traditional business jet will take you closer to the speed of sound.

The G150 is quickly becoming a favourite in the midsize market. With the longest range at the fastest speed, an advanced avionics suite, and the most comfortable cabin, the G150 provides the most value in its class. •



Ramco Systems-Turbomeca pact



Aviation services provider Ramco Systems has signed a memorandum of understanding (MoU) with the European helicopter engine manufacturer Turbomeca. The MoU was signed at the recently concluded Heli-Expo 2014. The MoU entails developing compatibility solutions between the latter's bank of online services and technologies and Ramco's maintenance and engineering/maintenance repair and overhaul (MRO) solution.

The partnership aims at developing interface to integrate both the solutions to help customers, engine service centres through a seamless data transfer. BOOST is Turbomeca's future range of advanced engine and maintenance management services.

"We have been strengthening our footprint to address aviation software needs of heli-operators. Our partnership would help customers maintain accurate, quality data in the system and reduce the time cycle for system implementation," said Virender Aggarwal, CEO of Ramco Systems.

Last year, Ramco entered into a strategic partnership with Airbus Helicopters to offer a cloud-based solution to reach out to small and mid-sized aviation operators. •

Russian Helicopters in UN peacekeeping operations

Over 150 Russian-made helicopters are currently involved in UN humanitarian and peacekeeping operations around the world. Speaking at the Russian Hour conference at Heli-Expo in Anaheim, California, representatives of Russian Helicopters, a subsidiary of Oboronprom, part of State Corporation Rostec, and commercial aviation firms UTair, PANH Helicopters and Ukrainian Helicopters discussed their positive experience of cooperation in this area.

"The extensive use of Russian-made helicopters in UN missions is further testimony to the unique capabilities of our technology," Russian Helicopters CEO Alexander Mikheev said. "Russian helicopters are unmatched on humanitarian and peacekeeping missions. I am confident that the new technologies we are currently working to develop will also become effective instruments for UN missions." •



Bombardier showcases its innovative mobility solutions

Attesting to the increasingly important role the Indian market holds within the greater Asia-Pacific region, and with demand for business and commercial aircraft projected to continue to grow in the area, Bombardier Aerospace is showcasing its innovative aircraft and its superior after-market services solutions.

Guests will have the opportunity to experience first-hand the luxury of the wide body Challenger 605 business jet and to learn more about Bombardier's impressive range of commercial aircraft, which are ideally suited to meet the future demands of the Indian market. Further supporting its commitment to the Asia-Pacific region, Bombardier is also presenting its customer services and integrated aftermarket portfolio.

BUSINESS AIRCRAFT

Over the next 20 years, Bombardier forecasts over 4,740 deliveries in Asia-Pacific (including Greater China and India), with specifically 1,340 business jet deliveries in India. The demand, driven by economic growth, globalisation and the increase in the number of billionaires in those markets, is expected to rise even further. With the industry's most comprehensive product portfolio and a commitment to leadership in customer satisfaction, Bombardier continues to grow its leadership position in the business aviation industry. From light jets to large, ultra long-range aircraft, Bombardier offers a solution to all customers, whatever their requirements may be.

COMMERCIAL AIRCRAFT

Currently, about 275 Bombardier Dash 8/Q- series turboprops, CRJ regional jets and CSeries airliners are in service with, or on firm order from, over 35 customers and operators in the Asia-Pacific region, excluding China. These aircraft are all optimised for the markets they are designed to serve, and Bombardier Commercial Aircraft's regional sales and marketing team is positioned both in Singapore and Mumbai to provide industry-leading solutions to current and prospective customers.

The long-term outlook for India and the Asia-Pacific region shows upward market trends will prevail. Bombardier's Commercial Aircraft Market Forecast covering aircraft from 20 to 149 seats predicts that the Asia-Pacific region, excluding China, will represent approximately 16 per cent – or 2,020 units – of the global market from 2013 to 2032.

PUTTING CUSTOMERS FIRST LOCALLY, GLOBALLY

Bombardier is committed to putting its customers first by offering them the highest level of support as close as possible to their operational bases. As part



of this commitment to customers, Bombardier operates a Regional Support Office in Mumbai. The office, permanently staffed by dedicated Bombardier Customer Services team members, serves both business and commercial aircraft operators in the region. Bombardier's support network in India also features two Authorized Services Facilities supporting business aircraft operators based in, or flying through, Mumbai and New Delhi.

BOMBARDIER AIRCRAFT ON STATIC DISPLAY

The Challenger 605 wide body business jet is designed to set new standards for all-around performance and builds on the quality and reliability of its predecessor, the acclaimed Challenger 604 jet.

The Challenger 605 jet is an impressive intercontinental jet that can whisk 12 passengers and three crew from Delhi to Athens non-stop. The Bombardier chalet is located by the static display area at Chalets 7-8. •

ADACEL: Premier supplier of automated ATM systems and ATC training solutions

Adacel, a premier supplier of air traffic control simulation solutions, has appointed SRK Aviacom (I) Pvt Ltd as its dealer in India. As AAI's (Airports Authority of India) supplier of 16 Non Radar Procedural ATC Simulators, Adacel is a world leader in ATC Simulation with customers such as FAA, or seven major ANSP in Europe and premier supplier of air traffic control simulation solutions, advance simulation and control systems for civil and defence.

Adacel operates in the global aerospace systems market including operational air traffic management, airport & air traffic control training & airborne vehicle systems. Adacel's Aurora platform supports all air traffic domains including oceanic, en route, approach and tower. The unified training solution features a comprehensive set of ATC training tools including the ICE aviation English training device.

Captain Sanjay, Executive Director of SRK Aviacom, said: "Adacel provides the world's finest ATC simulation tools that offer essential comprehensive training and development solutions. It confirms that Adacel continues to be the simulator of choice by air traffic controllers and we intend to develop and establish Adacel's brand in Asia." •





LEAP year

We're writing to confirm a date we made with our customers in 2008. The first LEAP engine began testing September 4, 2013. Right on schedule. Just like our last 21 engines.

Go to cfmaeroengines.com

CFM International is a 50/50 joint company between Snecma (Safran) and GE.

Superior performance | Lower cost of ownership | Greater reliability

LEAP

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