BRIDGING SKIES

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METAMORPHOSIS

Drawn by Singapore's proximity to the booming Asia-Pacific markets and its well-connected air hub with world-class infrastructure, people and services, Singapore's aviation industry is flourishing as it celebrates its centenary this year. Bridging Skies takes a look at how Singapore has transformed to a global aviation hub and what's in store as it sets its sights on its next phase of growth.

Singapore's strategic location within a seven-hour flight radius to half of the global population in the Asia Pacific has offered investors close proximity to manufacturing bases and key markets, further augmenting Singapore's attractiveness as a business and tourism destination. Singapore's Changi Airport operates 5,492 weekly flights to 200 cities through 100 airlines. Last year, Changi Airport recorded 42 million passengers and processed 1.8 million tonnes of air freight. Singapore has moved from host to home for several carriers and has welcomed nine new airlines to Changi Airport. The aerospace sector also continues to achieve record outputs, growing at an average rate of 12 per cent annually. Today, it employs over 18,00 people.

NEW GROWTH

Singapore's aviation industry is an inter-connected ecosystem which includes home-grown and international aviation businesses, industry associations and aviation ancillary services working together to develop new capabilities that spur growth in the industry. New entrants such as Freeport and Coolport@Changi boosted Singapore's capacity to capture a bigger slice of the global market by aggressively developing capabilities, especially storage and cutting-edge technologies. Singapore now plays host to Asia's burgeoning art market by offering a space for duty-free storage of high-value artefacts and also transhipment of perishables cargo within the Free Trade Zone. With the largest and most comprehensive Maintenance, Repair and Overhaul (MRO) cluster in Asia, the presence of names like RollsRoyce, Pratt & Whitney and Eurocopter, who have anchored themselves at Seletar Aerospace Park (SAP), further strengthens Singapore's significance as a global aviation hub. Rolls-Royce, a major supplier of aircraft engines, has set up an assembly and test plant for its Trent 900 engines and an academy for apprentice. Eurocopter expanded its facilities in Singapore to support its growth in training services, MRO capabilities, research and development and design resources. These organisations can leverage SAP for the dedicated facilities to support aerospace activities and the additional space to expand their operations.

CONNECTING TO MARKET OPPORTUNITIES

Today, several Singapore-grown aviation companies have continued to make its mark in global markets. Companies such as ST Aerospace and Singapore Airlines (SIA) have helped raise Singapore's profile in the international aviation arena. ST Aerospace is the largest, third-party MRO company in the world and has opened new hangars for airframe maintenance and modifications, including passenger-to-freighter conversions. As a one-stop shop for aerospace services, it has extended its capabilities beyond military aircraft to commercial work.

SIA continues to be one of the most admired airline in the world, making the first moves (see box story) and providing best-in-class services. SIA commenced its first flights to São Paulo in March this year, extending Singapore's air network to a sixth continent.

PULLING OFF A MOMENTOUS FEAT

As one of the world's most admired airlines, SIA has established itself to be a distinguished international brand, setting the bar in the areas of flight safety and service excellence, embracing innovation and competition. When the opportunity to be the first airline in the world to operate the world's largest passenger airliner knocked on its door in 2000, SIA stepped up to the challenge. Apart from the commercial and marketing benefits of being the first to fly a superjumbo, undertaking this monumental commitment meant that every aspect of the airline's operations — engineering, catering, cargo and baggage loading and unloading, passenger embarkation and disembarkation, flight operations and customer service — had to be redesigned and revamped to accommodate the operational requirements while ensuring operational efficiency is not compromised.

To bring this landmark project to fruition, SIA, with the support of the CAAS worked steadfastly to map out the blueprint for them. CAAS spent S$68 million on airport and airfield modifications to accommodate the operations of the A380 aircraft. Works undertaken include the installation of an additional fixed gangway and a third aerobridge arm at each of the 19 A380-compatible gates at Changi Airport. The third arm enables passengers to have direct access to the upper deck of the double-decker aircraft. Airfield modifications include widening of runway shoulders and modification of taxiway bridges. Baggage carousels were also extended, new freighter and remotes stands were constructed and additional airport emergency rescue equipment were added. Apart from these enhancements, CAAS and airport agencies conducted comprehensive tests to ensure Changi Airport was fully ready to support the superjumbo's operations.

SIA documented a new milestone in aviation history when it became the first airline in the world to fly an Airbus A380 on 25 October 2007. The first flight transported about 450 passengers from Singapore to Sydney. It was a resounding success with travellers marvelling at the sheer size of the aircraft and its in-flight comforts which included SIA's luxuriously exclusive *Suite Class* and soft furnishings designed by French fashion house, Givenchy.

The success of the inaugural A380 flight demonstrated how SIA, CAAS and other airport agencies worked cohesively together to ensure the smooth implementation of this momentous feat. It underscores the industry's concerted efforts and relentless drive to remain at the forefront of their game to reinforce Singapore's status as a pioneering and vibrant global aviation hub.

REVOLUTIONISING ULTRA LONG RANGE FLIGHT PRACTICES

A first-rate air hub ensures that its airlines operate flights which are safe and comfortable for passengers. This is especially crucial today as more airlines cover greater distances and pilots and cabin crew have to operate longer flights. When Singapore Airlines (SIA) approached the Civil Aviation Authority of Singapore (CAAS) with its plan to launch non-stop flights between Singapore and Los Angeles (LA), with flight times expected to be in excess of 16 hours, Singapore saw the importance of assessing the fatigue risk for these Ultra Long Range (ULR) flights, defined as any non-stop flight with a flight time exceeding 16 hours and a flight duty period exceeding 18 hours.

CAAS, with representatives from SIA and the Airline Pilot Association of Singapore (ALPA-S) then set up a tripartite task force in 1998 to develop provisional rules for ULR flights. The task force examined scientific studies on flight crew fatigue and studied the history and practice of flight time limitations. The task force also worked with the Joint Aviation Authority to develop a set of provisional rules with the assistance of scientists carrying out computer modelling of the flights to assess alertness levels across the flights. The computer models had earlier been validated on SIA's existing long range flights to London and the west coast of the USA.

SIA launched its A340-500 ULR flight from Singapore to LA in February 2004, and CAAS proceeded to comprehensively validate the fatigue mitigation measures that had been put in place to ensure equitable alertness across the flights. The alertness and performance of the Singapore pilots were monitored through a variety of equipment like an Actiwatch, an activity monitoring device, as well as polysomnography, which measures sleep quantity and quality particularly during the periods when the pilots were resting (and sleeping) in their inflight bunks. These studies were conducted by the European Committee for Aircrew Scheduling and Safety (ECASS) led by Qinetiq and Massey University in New Zealand.

Singapore pioneered the approach to managing fatigue risk in ULR operations. This effectively was the precursor to the Fatigue Risk Management System that is being adopted worldwide.

FRAMEWORK FOR GROWTH

As a global aviation hub, the vibrancy and sustainability of the Singapore aviation industry is driven by the implementation of robust industry safety standards, pro-enterprise policies, ongoing investments and initiatives taken to develop the Singapore aviation ecosystem.

Regulations and procedures govern almost every aspect of civil aviation, including aircraft airworthiness and flight operations, airport operations, the provision of air navigation services, aircraft maintenance and the training and licensing of aviation personnel. The commitment to ensure that aviation activities achieve the highest and most practical level of safety in Singapore has resulted in a strong safety culture that permeates through the industry. This mindset has been a mainstay and proponent of the Singapore aviation industry.

Working closely with the industry, the Civil Aviation Authority of Singapore (CAAS) promotes the adoption of a robust safety framework. This framework is both comprehensive and flexible to respond to market opportunities. CAAS ensures that the safety regulations and procedures

comply with the standards and recommended practices set by the International Civil Aviation Organization (ICAO). This safety framework was validated recently when Singapore was audited under the ICAO Universal Safety Oversight Audit Programme and was found to be effective in all aspects of its safety oversight functions.

The e-freight@Singapore initiative, championed by CAAS, Infocomm Development Authority of Singapore, International Aviation Transport Authority (IATA) and trade associations like Singapore Aircargp Agents Association (SAAA), Singapore Land Authority (SLA) and Singapore National Shippers Council (SNSC) is a good example of this. e-Freight@Singapore pushes the industry to adopt paperless freight documentation by improving industry capabilities through enhancement of data accuracy with reduced manual data entry. In the push for greater productivity and efficiency, the initiative seeks to produce productivity gains such as quicker processing of shipment information and clearance time, thus enabling faster movement of cargo goods. To further drive the adoption of e-freight, CAAS and Changi Airport Group (CAG) signed an memorandum of understanding (MOU) with Schipol Nederland B.V. to drive the adoption of e-frieght and to cement the air cargo hub collaboration between the two airports.

To ensure the continued relevance and competitiveness of the Singapore aviation industry globally, CAAS provided the added boost through the S$100 million Aviation Development Fund (ADF). One of the programmes under the ADF is the Aviation Innovation Programme (AIP). The AIP helps companies to innovate and develop new or enhanced capabilities in niches of excellence in the aviation industry through provision of as much as 70 per cent financial assistance. Since its launch, CAAS has awarded the first grant to Singapore JAMCO Pte Ltd for the setting up of a flammability test laboratory in Singapore, adding a new capability in the Singapore aviation industry. Combustor Airmotive Services Pte Ltd and MAJ Aviation Pte Ltd were also recent recipients of the grant for their respective programmes.

The Aviation Partnership Programme (APP) on the other hand, allows for initiatives to be identified and then implemented through collaborative efforts between CAAS and industry partners for its adoption industry-wide. One example is the partnership with the Association of Aerospace Industries (AAIS) on the Aerospace Standards (AS) Adoption Programme. Focused primarily on the development of common standards, processes and platforms, the AS Adoption Pogramme, through the AIP, promotes the adoption of Aerospace Standards, more commonly known as AS9100, throughout the aerospace cluster in Singapore. This yields positive results in a system that effectively addresses quality concerns and improves productivity for Singapore’s aviation industry.

Most recently, the Aviation Manpower Programme (AMP) was launched. Manpower development efforts in the Singapore aviation industry will be given a boost. New initiatives such as the Aviation Learning Journey (ALJ) promote the aviation industry as a compelling

career choice and attract talent to the industry. Other initiatives help develop, upgrade the aviation talent pool and workforce and retain the talent and human resource within the aviation industry.

Industry stakeholders are merely laying the groundwork for the future. With opportunities that abound in niche areas for growth, the next phase for Singapore's aviation industry will indeed be an exciting one, enabling it to soar even higher.