



Changing the way we travel

Innovation is propelling us into the future, from jet speed to hypersonic speed. Supersonic combustion scramjets are airbreathing engines that can power hypersonic flight, and this scramjet technology is applicable to hypersonic airplanes and missiles and reusable single-or two-stage-to-orbit launch vehicles.

Creating value for customers with Total Aviation Support

ST Aerospace provides total support services to its customers, especially LCCs, under its Total Aviation Support programme.

The Group's aerospace arm, ST Aerospace, started in 1975 as the maintenance depot of the Republic of Singapore Air Force (RSAF). Today, ST Aerospace is a leading third party provider of Maintenance, Repair and Overhaul (MRO) services for a wide range of military and commercial aircraft. It was ranked the world's largest airframe MRO service provider in independent surveys by *Overhaul & Maintenance* magazine in 2003 and 2005 with an annual commercial airframe capacity of more than six million manhours.

Headquartered in Singapore, with operations located in Asia Pacific, Europe and the US, ST Aerospace is capable of supporting engines, components, engineering and materials services requirements for its worldwide and diverse customer base. This includes some of the world's largest passenger and freight airlines, as well as low cost carriers (LCC). ST Aerospace provides total support services to its customers, especially LCCs, under its Total Aviation Support programme. It is also the strategic partner of the RSAF and provides support to its operations in Singapore and overseas.

Maintaining its mission of 'Keeping Aircraft Flying Safely', ST Aerospace ensures its operations conform to the exacting standards of its quality system and safety standards. The ST Aerospace



(previous page) ST Aerospace, a leading third party provider of airframe, engine and components MRO, offers aerospace maintenance and engineering solutions for a spectrum of military and commercial aircraft

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quality system is regularly audited and approved by major airworthiness authorities such as the Civil Aviation Authority of China, the European Joint Aviation Authority, the Japan Civil Aviation Bureau, the Singapore Civil Aviation Authority, the UK Civil Aviation Authority and the US Federal Aviation Administration, as well as by all its customers.

ST Aerospace is organised into three business groups:

Aircraft Maintenance & Modification (AMM)

In 2005, ST Aerospace's AMM group continued to perform well. ST Aerospace's subsidiary, ST Aviation Services Co. (SASCO), received recognition from Boeing as its Supplier of the Year for the Aerospace Support category. SASCO is the first company in Singapore to be given this recognition for its quality output, quick turnaround, effective costing and responsive customer service in the MD-11 Passenger To Freighter (PTF) aircraft conversion programme.

The AMM group saw its first B777 induction for heavy maintenance and modifications in 2005, when SASCO received All Nippon Airways' (ANA) B777 aircraft, the first in ANA's fleet.

Continuing to strengthen its service network, ST Aerospace was inducted as one of the pioneering members of the Airbus MRO Network, through which ST Aerospace's global network of facilities provides services to Airbus aircraft operators anywhere in the world.

AMM continued to make headway with its customer programmes

and it added new customers, both large and small. It secured more work with key customers such as FedEx, UPS, Japan Airlines, ANA, Northwest Airlines and others, including the increasing number of China's emerging airlines and LCCs in Indonesia and Singapore. This further affirmed the company's positioning as a global service provider.

Building upon its capability for line maintenance, the AMM group established a fully equipped Maintenance Operations Control centre at the Singapore Changi Airport to provide round the clock aircraft fleet maintenance services and operations control for a customer's fleet of aircraft.

For military customers, the group continued to extend its services and support. It completed its delivery of 20 UH-1H helicopters to the Philippine Air Force and it successfully completed the depot maintenance of the KC-135 for the RSAF.

In spite of the worldwide shortage of skilled labour in the aviation industry, ST Aerospace continued to increase its capacity in response to growing customer demand. It added a new narrow-body hangar at its Seletar Airport facility for ST Aerospace Engineering, which became operational in March 2005.

ST Aerospace's global footprint of facilities includes locations at Changi, Paya Lebar and Seletar airports in Singapore; Stansted and Bournemouth in the UK; and Mobile and San Antonio in the US. A new addition is Shanghai Technologies Aerospace Company

The investment in SASC consolidates ST Aerospace's European components repair and overhaul operations under one roof, adding breadth and depth to ST Aerospace's capabilities, which in turn strengthen its market position and yield economies of scale.

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Since its launch, STARCO successfully completed major works on 58 aircraft. These included the completion of a heavy check on China Eastern Airlines' (CEA) A300 and MD-11 aircraft and an Aircraft On Ground (AOG) recovery of CEA's A340, which both achieved record turnaround time.

In the span of one year, STARCO enhanced its aircraft ratings approved by the Civil Aviation Authority of China to include the A300, A310, A320, A340, MD-11, MD-80 and MD-90. In 2005, CEA and other airlines in China were customers of STARCO. STARCO obtained FAA certification in November.

Component/Engine Repair & Overhaul (CERO)

During 2005, the CERO group further developed its repair and overhaul capabilities for engines and components for the narrow-body B737CG and B737NG as well as the A320. It also developed required component capabilities in other narrow-body and wide-body aircraft types.

In engine support, the group made strides on maintenance capabilities for the CFM56-7B, CFM56-3 and JT8D engines that power narrow-body aircraft. It also added the T55 and F100 engine types to its military engine repair capability.

For non-engine components, it added some 600 new repair capabilities, primarily for pneumatic, hydraulic and electrical components (and their sub-assemblies) for commercial and military aircraft. These investments in new capabilities helped the group to grow its support for the A320 and B737.

In 2005, the CERO group boosted its reputation as a centre of excellence when ST Aerospace subsidiary, ST Aerospace Systems (STA Systems), received the SAC-SINGLAS accreditation (Singapore Accreditation Council – Singapore Laboratory Accreditation Scheme) for its Calibration & Measurement Services for pressure, dimensional metrology, force measurement and electrical calibration.

Having established a track record with major customers such as Aloha Airlines, Adam Sky Connection Airlines (AdamAir), Safair, several Chinese airlines, the Bangladesh Air Force and the Peru Air Force through total engine and component support, the CERO group continues to set up MRO service centres through collaboration with major airlines and Original Equipment Manufacturers, namely Boeing, Liebherr and Parker.

Engineering & Materials Services (EMS)

Maintaining its leadership position in MRO services among LCCs, the EMS group renewed contracts with Asian LCCs such as AirAsia, while gaining new ground with customers such as AdamAir and other startup airlines.



(top) ST Aerospace completed 12 PTF conversions for the MD-11 in 2005

(middle) ANA placed its first B777 with ST Aerospace, which also saw its first induction of this aircraft type in 2005

(bottom) ST Aerospace strengthened its engine repair capabilities for the B737 with the commissioning of its CFM 56-7 capability

In China, four emerging airlines contracted with ST Aerospace subsidiary, ST Aerospace Supplies (STA Supplies), for Maintenance By the Hour (MBH™) support for a comprehensive range of components. These new customers include Okay Airways, Spring Airlines, United Eagle Airlines and China United Airlines, which are newly established following the deregulation of China's airline industry.

Having enhanced its technical support services to civil aircraft operators, especially LLCs, ST Aerospace is now able to provide a full suite of engineering services in support of commercial airlines, ranging from Maintenance and Reliability Engineering to Maintenance Planning and Fleet Data Management. Through these programmes, ST Aerospace adds value to customers by maximising aircraft airworthiness, improving performance reliability and reducing overall maintenance costs.

In 2005, ST Aerospace further enhanced its capabilities at ST Mobile Aerospace Engineering (MAE) with the introduction of a customised configuration for the B757 freight conversion. A contract with the Royal New Zealand Air Force was secured in late 2005 and the customer's aircraft will be inducted in 2006.

On the military engineering front, ST Aerospace progressed on development work for its indigenous FanTail and Skyblade II mini Unmanned Aerial Vehicles (UAV) for use in homeland defence and other military applications. In 2005, the engineering and development arm of ST Aerospace filed more than nine patents.

Performance of the Aerospace Sector

Half Yearly Performance

The turnover of the Aerospace sector in 2H2005 at \$665m was \$95m higher compared to that of 1H2005. All the three business groups, namely AMM, CERO and EMS, contributed to the increased turnover.

PBT for 2H2005 at \$141.1m was \$26.9m higher compared to that of 1H2005. All the business groups registered higher profits due to the higher turnover.

Full Year Performance

Aerospace sector's FY2005 turnover at \$1,236m was higher than that of FY2004 by 11% or \$118m. Higher turnover was recorded by all three business groups. Higher turnover of the AMM business group was due to higher redeliveries in all the AMM companies, while higher sales in the engines division contributed to the increase in turnover in the CERO business group. In the EMS business group, the higher turnover mainly came from increased components management and maintenance support sales.

Compared to FY2004, Aerospace sector's FY2005 PBT of \$255.4m was higher by 9% or \$20.0m. Higher PBT was recorded in the AMM and CERO business groups, while the EMS business group had lower PBT. The higher PBT in the AMM and CERO business groups was in line with the higher turnover. In the EMS business group, the lower

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PBT was largely attributable to the absence of contribution from the Asian Aerospace air show as well as lower investment income.

Major Projects

Despite increased competition, ST Aerospace maintained a healthy order book in 2005, which included PTF aircraft conversions, maintenance activities and engineering programmes.

ST Aerospace continued to pursue more work within its broad customer base of major and regional airlines, as well as seeking new customers. Major external military projects acquired during the year included the C-130 depot maintenance programme for the US Pacific Air Force and avionics development work for foreign defence forces.

In the engineering and PTF conversions segment, ST Aerospace began development of variants to the B757 PTF, including a new 15 pallet configuration, and marketed its 14½ pallet configuration on an approved Boeing Supplemental Type Certificate. Conversions for the MD-11 progressed steadily in 2005 and, in addition to UPS, additional PTF contracts for customers such as Central Air Leasing and FedEx Express were added. During the year, the Aerospace sector completed a further 12 MD-11 aircraft, bringing the MD-11 PTF aircraft redeliveries at year end to 30, out of its total of 48 MD-11 PTF aircraft contracts awarded.

In the LCC and emerging airline market, ST Aerospace's MBH™ and Total Aviation Support service offerings continued to attract new customers. Contracts were clinched with the newly established airlines in China. ST Aerospace has quickly gained a foothold in the newly established Chinese LCC market. The various contracts, worth a total of about US\$51m (\$87m), cover components management and support for the airlines' fleets.

Exploring new markets in Europe and the Middle East, ST Aerospace signed a memorandum of understanding with Turkish Airlines in June 2005 to study the possibility of establishing a joint venture partnership to set up an MRO facility in Turkey.

In late 2005, ST Aerospace acquired a 67% stake in SAS Component A/S (SASC) for about €80.4m (\$161m). With about 1,100 employees, Copenhagen-based SASC provides components repair services and material supply to airline operators.

The investment in SASC will allow ST Aerospace to expand its presence in Europe. SASC will merge with ST Aerospace's aircraft components supplier, Airline Rotables Limited. This move will consolidate ST Aerospace's European component repair and overhaul operations under one roof, adding breadth and depth to ST Aerospace's capabilities, which in turn strengthen its market position and yield economies of scale.