

# Introduction to ST Aerospace

For US exhibitors  
15 Feb 2016

# ST Engineering



## Aerospace

**USD 1.52B**

**~ 7,800 staff**

- ▶ Airframe Maintenance & Modification
- ▶ Component Total Support
- ▶ Engine Total Support
- ▶ Aviation & Training Services
- ▶ Aerospace Engineering & Manufacturing



## Electronics

**USD 1.19B**

**~ 5,800 staff**

- ▶ Rail & Transport Systems
- ▶ Satellite Communications
- ▶ e-Government Solutions
- ▶ Software Systems & Solutions



## Land Systems

**USD 1.03B**

**~ 7,000 staff**

- ▶ Armoured Vehicles
- ▶ Munitions and Weapons
- ▶ Specialty Vehicles
- ▶ Homeland Security
- ▶ Assets Total Support
- ▶ Automotive Repairs



## Marine

**USD 0.99B**

**~ 1,900 staff**

- ▶ Shipbuilding
- ▶ Engine Servicing
- ▶ Ship Repair
- ▶ Ship Conversions
- ▶ Design & Engineering
- ▶ Environmental Engineering

# ST Aerospace



## **2014**

Revenues: USD 1.52B (SGD 2.07B)

PBT: USD 208M (SGD 283M)

Employees: ~ 7,800 globally

- ▶ Started in 1975 as a military MRO service provider in Singapore
- ▶ Ventured into commercial MRO in 1990s
- ▶ Started globalisation in the mid-90s (facilities in US, Europe, China, Australia and Singapore)
- ▶ Today, 3 main areas of business:
  - ▶ Airframe Maintenance & Modification (AMM)
  - ▶ Components, Engines Repair & Overhaul (CERO)
  - ▶ Engineering, Materials & Services (EMS)

# Businesses (1/2)

## AMM AIRCRAFT MAINTENANCE & MODIFICATION



### Airframe Maintenance

- Line Maintenance
- Light Checks
- Heavy Maintenance

### Modifications

- Passenger to freighter (PTF) conversions (727, 757, 767, DC10, MD11)
- Ageing aircraft modification
- Interior reconfiguration and refurbishment and completions
- VIP Completions

### Fleet Technical Management

- Maintenance planning & scheduling
- Technical records
- Maintenance control
- Maintenance design engineering

## CTS COMPONENT TOTAL SUPPORT



### Component MRO Services

- Capabilities for >25,000 mechanical and avionics component types
- Approved repair station by 15 Airworthiness Authorities
- Service centre for 30 leading OEMs

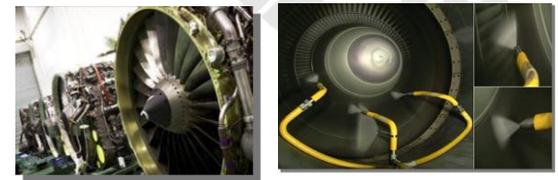
### Maintenance-By-the-Hour (MBH)™ Programme

- MBH - Airframe maintenance, component/engine repair and overhaul, or inventory management, the MBH programme supports on a fixed fee per flight hour basis
- Rotable asset management

### Warehousing & Distribution

- 24x7 AOG services
- Global Logistics and Distribution Network

## ETS ENGINE TOTAL SUPPORT



### Engine Repair & Overhaul

- Extensive support for narrow-body aircraft engines (F110, T700, T55, Ariel, CFM56-3, -5B, -7B)
- Engine parts repair

### Engine Leasing

- Joint Venture with Marubeni
- Engine financing, operational lease and sale & lease back

### Aviation Services

- Engine wash (EcoPower) – JV with Pratt & Whitney
- On-wing services - License for GENx Engines
- Asset management – Part down and trading

# Businesses (2/2)

**AEM**

AEROSPACE  
ENGINEERING  
& MANUFACTURING



## **Avionics & Systems Upgrade**

- Mission Avionics & Operations capability upgrades

## **Unmanned Aerial Systems (UAS)**

- Family of UAVs for wide range of applications

## **Passenger to Freighter Conversions**

### *Boeing 757-200 PTF Conversion*

- ST Aerospace performs full development engineering (Holder of 2 FAA STCs and 1 EASA VSTC)
- 14-Pallet, 14 ½ -Pallet, 8-Pallet Combi and 15-Pallet

### *Airbus A330 P2F Conversion*

- ST Aerospace is the technical and programme lead with full responsibility to develop the STCs

## **Turnkey Cabin Interiors Support**

- Integrated cabin interiors modification services for both VIP and commercial aircraft
- Cabin & product design, programme management, engineering, certification, kits development

**ATS**

AVIATION &  
TRAINING  
SERVICES



## **Pilot Training**

- RWC, TWC
- First and proven 3<sup>rd</sup> Party Multi-Crew Pilot License (MPL) training provider
- CPL training

## **Charter Services**

- Aircraft charter for executive, leisure and aero-medevac services, target towing
- Aircraft fleet: Gulfstream G550 & G150, Learjet 35A, 45 & 60, King Air C90, Eurocopter EC120

## **Aircraft Leasing**

- Focus on mid-life and end-of-life aircraft
- Acquire aircraft for lease, conversion or part-out

## **Technical Training**

- Provides basic & type course training
- EASA & CAAS 147 approved MTO

# A Focus on Total Aviation Support

## ASSET MANAGEMENT

- ▶ Aircraft leasing, Mid Life & End of Life Solutions – Parting & Conversions

## TRAINING

- ▶ Commercial Pilot License, ATPL and Multi-Crew Pilot License
- ▶ Technical Crew training
- ▶ Military Pilot Training



## AIRLINE SERVICES

- ▶ Maintenance Operations Control
- ▶ Fleet Technical Mgmt
- ▶ Line Maintenance

## AIRFRAME MAINTENANCE & MODIFICATION

- ▶ Light & Heavy Maintenance
- ▶ Transit/Turnaround Servicing & Checks
- ▶ PTF Conversions
- ▶ Cabin Interior Upgrades
- ▶ VIP Completions
- ▶ Military Aircraft Upgrades

## ENGINEERING & DEVELOPMENT

- ▶ Cabin Interior Reconfiguration
- ▶ Interior Products
- ▶ Avionics Upgrades
- ▶ ODA and STCs
- ▶ UAV development

## COMPONENT TOTAL SUPPORT

- ▶ Maintenance by the Hour (MBH)
- ▶ Aircraft Parting
- ▶ Parts Trading and Exchange
- ▶ Repair & Overhaul

## ENGINE TOTAL SUPPORT

- ▶ Maintenance by the Hour (MBH)
- ▶ Leasing
- ▶ Part Down
- ▶ On Wing Support
- ▶ Engine Wash
- ▶ Engines Repair & Overhaul/ Parts Repair
- ▶ Engines Health Monitoring & Maintenance Planning

# Global Footprint & Workforce

**Total Workforce**  
7,800 (Subsidiaries and Affiliates)  
2,200 (Associated Companies)

**Americas Workforce**  
2,000

**Hondo**  
Hondo Aerospace  
Aviation Academy of America

**Burlington**  
VT Volant Aerospace

**Wethersfield**  
EcoServices – 50.1%

**Mobile**  
VT Mobile Aerospace Engineering

**San Antonio**  
VT San Antonio Aerospace  
VT DRB Aviation Consultants  
AERIA Luxury Interiors  
Turbo Mach

**Miami**  
ST Aerospace Rotables  
(Americas office)

**London**  
**Cazaux**

**Europe Workforce**  
1,400

**Copenhagen/Stockholm**

**Dresden**

Shanghai Technologies Aerospace Company  
– 49%

**Dubai**

**China Workforce**  
1,150

**Shanghai**

**Tokyo office**

**Xiamen**

**Guangzhou**

**Singapore**

**Singapore Workforce**  
5,400

**Australia Workforce**  
50

**Sydney**  
**Ballarat**

# Our Customers\*



**Legend**

- Air Freight Operators
- Commercial Airline Operators
- Lessors
- Military Aircraft Operators
- MROs
- OEM
- Regional GA/BA Helicopters Operators

\*In the last 3 years

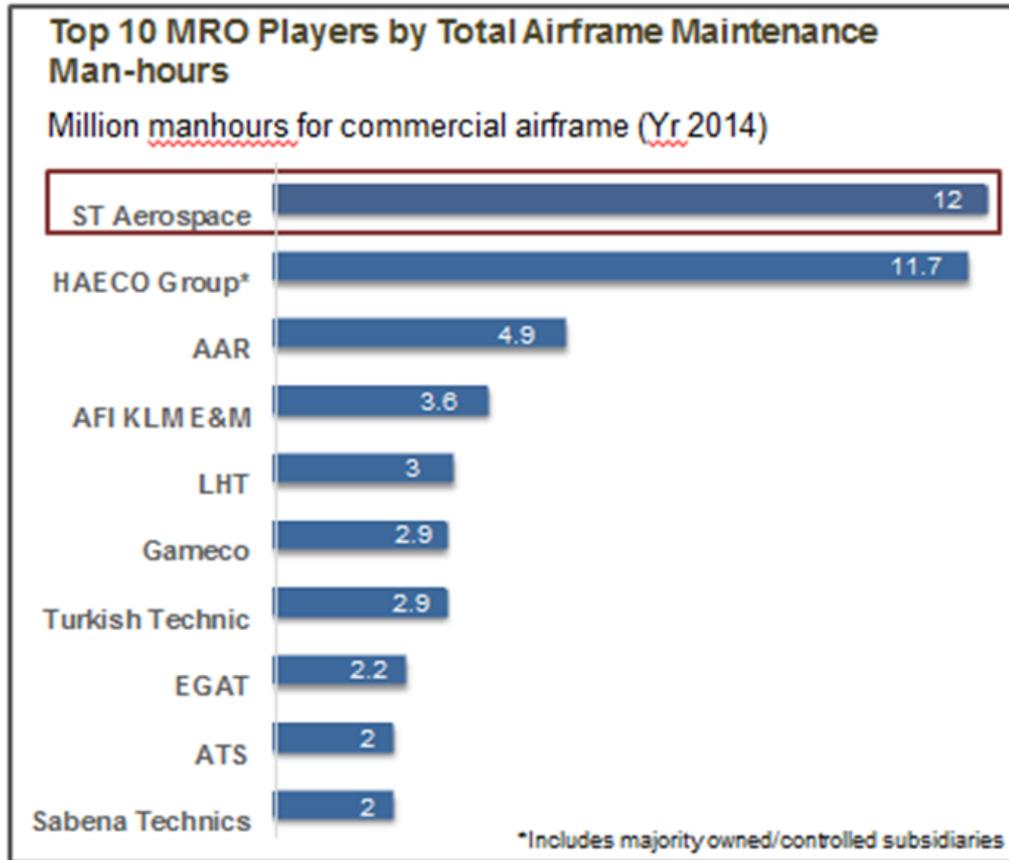


# Airframe Maintenance & Modification (AMM)

Total global capacity:  
**38WB, 26NB, 24GA bays**



# Largest Airframe MRO



Source: Aviation Week & Space Technology, MRO Edition, 25 May 2015

- ▶ Completed more than 9000 heavy maintenance for commercial aircraft
- ▶ Supported 1700 military aircraft



# Component Total Support (CTS)



## ST Aerospace Solutions (Europe) incl ARL

MBH services, Component  
Repair & Overhaul, Logistics  
Distribution

Denmark/Sweden/  
Norway/UK

## ST Aerospace Guangzhou Aero-Technologies & Engineering Company

Import and Export, Logistics Distribution

Guangzhou

Singapore



## ST Aerospace Systems

Component Repair &  
Overhaul



## ST Aerospace Supplies

MBH services, Logistics Distribution,  
Warehousing, Distributorship



## ST Aerospace Rotables

Asset Services, Trading, Loan & Exchanges

- ▶ Support 800 aircraft under component MBH
- ▶ Refurbished more than 900,000 components

# Engine Total Support (ETS)

Redelivered over 8000 engines



Wethersfield

**EcoServices**  
Engine Wash

**Turbine Overhaul Services (TOS)**  
Vanes and Blades repair



**Turbine Coating Services (TCS)**  
Repair of turbine airfoils via advanced coating technologies



**STATCO**

- Engine Overhaul
- Potential for up to 300 engines/year



Xiamen

**Singapore**

**STA Engines**  
Engine Repair & Overhaul  
Parts Repair & Sale

**Total Engine Asset Management (TEAM)**  
Engine Leasing

# Aviation & Training Services (ATS)

## Pacific Flight Services

- ▶ Operation and management of executive jets for charter
- ▶ Aircraft charter for executive, leisure and aero-medevac services
- ▶ Aircraft fleet: Gulfstream G550, Gulfstream G150, Learjet 45, Learjet 35A, King Air C90

## ST Aerospace Academy

- ▶ Facilities in Australia, Singapore and the US
- ▶ First and proven 3<sup>rd</sup> Party Multi-Crew Pilot License (MPL) service provider in the region
- ▶ Airline pilot training service provider for ab-initio CPL and MPL, jet bridging and type-rating on A320 aircraft



# Aircraft Engineering and Manufacturing (AEM)



**FedEx 757-200 14P**  
**>100 Redelivered**



**A330 P2F**  
**In development**



**RNZAF 757-200 Combi**  
**2 Redelivered**

**Passenger-to-Freighter  
Conversion**



**757 15P PTF**  
**In development**



**A320 PTF**



**GAP 757-200 Combi**  
**1 Redelivered**

# Aircraft Engineering and Manufacturing (AEM)

Aftermarket Sales & Support

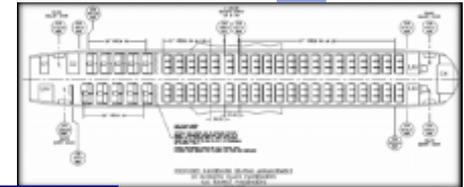


Taste and Style Design



Providing Turnkey support for Cabin Interiors

Design & Engineering



Programme Management, Integration & Execution



Product Development; Supply Chain Management



Certification



Aircraft Maintenance & Modification Network

VT Volant Aerospace

Engineering & Development Centre, VT DRB Aviation Consultants

# STA in the U.S.



## ***VT Mobile Aerospace Engineering***

Mobile, Alabama  
Wide & narrow body  
heavy maintenance  
Passenger-to-Freighter  
Conversion



## ***VT Volant Aerospace***

Burlington, Washington  
Provides new and  
refurbished interior parts  
and support services



## ***VT San Antonio Aerospace***

San Antonio, Texas  
Regional jet, wide & narrow  
body heavy maintenance  
Engineering, completions  
and refurbishment of Boeing  
and Airbus jets



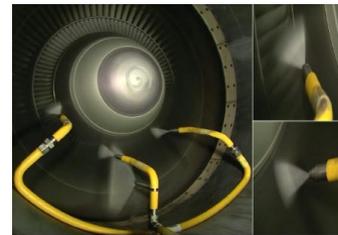
## ***Aviation Academy of America***

Hondo, Texas  
Ab-initio flight training



## ***Facility under construction***

Pensacola, Florida  
Aircraft heavy maintenance



## ***EcoServices***

Wethersfield, Connecticut  
Provider of advanced  
technology engine wash  
services to commercial and  
military aircraft operators

# Possible Areas of Collaboration/Support

- ▶ Component OEM partnership – STA as a regional service center
- ▶ Engine parts repair
- ▶ Aircraft retrofit and system upgrade
- ▶ Aircraft / system integration
- ▶ Consignment of inventory
- ▶ Strategic sourcing of consumables and expendables



**Thank You**