

AEROSPACE

A regional publication of the Association of Aerospace Industries (Singapore)

SINGAPORE



**ENGAGING
THE FUTURE
GENERATION**

AeroNews SG

First Roving Aero Engine
by Rolls-Royce

InFocus

F35 Lightning II
Mean Machine

InProfile

DMG Mori: Paving The
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MESSAGE



SINGAPORE AS AN AEROSPACE EDUCATION AND TRAINING HUB

On 23 March 2015, Singapore lost her founding father, Mr Lee Kuan Yew. Mr Lee was a visionary leader, laying the necessary foundations and guiding the nation into growth, prosperity and stability. The principles he embodied and espoused – education, discipline, hard work and a constant desire to improve – continue to inspire us, in our bid to achieve and maintain excellence.

Leveraging on these very foundations and riding on the global growth of the aerospace sector, the future

of the industry in Singapore looks bright. Infrastructure works for Changi Airport’s Project Jewel and Terminals 4 and 5, as well as Phase 3 of the Seletar Aerospace Park (SAP), are well underway. The SAP alone is expected to contribute S\$3.3 billion value-added activities annually and create some 10,000 new aerospace-related jobs by 2018.

As we witness this promising expansion, it is also vital to address any potential shortfall between the surging demand and projected supply of industry talents. In doing so, Institutes of Higher Learning (IHLs) and training providers form an integral part of the industry’s ecosystem, ensuring its sustainability and competitiveness. Our Institutes of Technical Education, polytechnics and universities currently produce over 1,500 aerospace graduates annually, with plans to expand intake capacities in response to greater demand for highly-skilled personnel. Companies such as Rolls-Royce are already working with these IHLs to produce a talent pool ready for the workforce.

Aerospace companies are also investing in the continuous upgrading of employees’ skills to keep up with an exceedingly fast-changing industry. With various operators establishing training facilities here, including Boeing, Airbus and SIA Engineering Company, Singapore is quickly becoming a regional training hub for the aerospace industry.

At the national level, the Singapore Workforce Development Agency (WDA) is making a concerted effort to encourage individuals to upskill through the SkillsFuture initiative. Under this scheme, WDA will collaborate with businesses on providing internships and participating in the Earn & Learn programme. At the industry level, AAIS will be working with WDA in the development of the Singapore Skills Framework for the Aerospace Sector.

As the industry’s landscape is continually reshaped with new technologies and challenges, it is imperative to capitalise on our strengths and reinforce our workforce with continuous learning to sustain the growth of the industry. In the words of the late Mr Lee in his 1980 National Day Message, “To move backwards is unthinkable. To stand still is to court ruin. We must move forward and upward. We must climb up the education ladder, up towards better technology, towards higher skills, towards better management, towards higher productivity.”

KENNETH ANG / Chief Executive, AAIS

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Remembering Mr Lee Kuan Yew (1923-2015)

A brilliant light has gone out in the world as we mourn the passing of our founding Prime Minister, Mr Lee Kuan Yew. Mr Lee was an inspirational figure of our time and a legend in life. A statesman who embodied fortitude, valour and astuteness like few others.

As our nation's economic strategist, Mr Lee's unwavering commitment, grounded insights and visionary leadership, has transformed Singapore from a sleepy colonial entrepôt to a burgeoning city of envy in just one generation. His foresight and resolve to develop Changi as the new air transport centre, paved way to one of the world's best airport and foremost aerospace hub. He, who will forever be cherished and remembered in our hearts.

On behalf of the Association of Aerospace Industries (Singapore), we wish to extend our most sincere and heartfelt condolences to the family of Mr Lee Kuan Yew during this difficult time of bereavement. Let us all find strength in sorrow to continue his legacy in building an even better future and nation for generations to come.

Kenneth Ang,
Chief Executive,
Association of Aerospace Industries (Singapore)

“

**I HAVE NEVER CEASED TO BE A STUDENT.
I HAVE NEVER CEASED TO LEARN.**

- Speech at the Seminar on "Education and Nation-building",
27 December 1988

”



DELOITTE: 2015 GLOBAL AEROSPACE AND DEFENCE INDUSTRY TO GROW AROUND 3 PERCENT

Revenue and earnings growth in the commercial aerospace sector is expected to be a bright spot and driving force behind the global aerospace and defence (A&D) industry performance in 2015.

While the rate of growth for the overall industry has been slowing over the last two years as a result of declines in defence sector spending, the commercial aerospace sector is likely to enjoy close to an 8 percent growth rate according to the Deloitte Touche Tohmatsu Limited (Deloitte Global) Manufacturing Industry group 2015 Global Aerospace and Defense Industry Outlook.

"The commercial aerospace sector is expected to set new records for aircraft production in 2015. The accelerated replacement cycle of obsolete aircraft with next generation fuel-efficient aircraft, and growing passenger travel demand, especially in the Middle East and the Asia-Pacific region are key drivers behind this trend," said Deloitte Global Aerospace and Defense Sector Leader, Tom Captain.

"Recent lower oil prices will not likely have a dramatic lasting impact on production rate increases for commercial aircraft, given the nine-year backlog the industry enjoys," explained Captain. "Supply chain capacity and capability remain the critical risks that need to be managed in order to maintain

production commitments."

Global revenues in the defence sector will likely continue to decrease in 2015 at an estimated 1.3 percent. Yet, defence spending is increasing in several areas of the globe, especially in the United Arab Emirates (UAE), Saudi Arabia, India, South Korea, Japan, China and Russia, as these countries equip their militaries with modern defence platforms and technologies. The report noted that escalating tensions between nations and damaging cyber-attacks may have an impact on future spending in the sector.

Over the next few years, the defence sector will be challenged in two major ways: how to grow profitably in a declining market and what actions are necessary to cut costs to maintain acceptable financial performance. Successful defence companies are addressing these challenges by branching out into adjacent markets, focusing on foreign military sales, and investing in next generation product development in cyber security, defence electronics, precision strike, unmanned systems, and advanced analytics.

HONEYWELL'S INNOVATIVE SERVICE PROVIDES LIVE WEATHER CONDITION UPDATES FROM TAKEOFF TO LANDING

Honeywell Aerospace has released version 1 of a new online weather service that will provide pilots with continuously updated, in-flight weather information. The Weather Information Service, which is delivered through a mobile app and tablet, will alert pilots to potentially hazardous weather along their flight path.

The app gives pilots a comprehensive, up-to-date view of the weather along the planned flight route, which makes it easier to plan for weather-related diversions. Currently, pilots often refer to outdated printouts or occasional radio dispatches, some hours old, for weather information. The service can save time for pilots, reduce fuel costs for airlines and increase safety and comfort for passengers.

Honeywell's Weather Information Service is simple and fast for pilots to use; it was designed by studying their tablet usage, habits and preferences. The app will be regularly updated to provide the latest features to pilots; the next release will be available in late 2015. The service builds on the success of its currently graphical weather product and will also complement the company's IntuVue 3-D Weather Radar.

SITA REPORTS MORE THAN 60% DROP IN THE RATE OF LOST LUGGAGE WORLDWIDE

SITA, an aviation communications and technology company that tracks baggage performance each year, has revealed that the air transport industry has cut the rate of mishandled bags by 61.3 percent globally since 2007. With modernised baggage systems, the rate of mishandled bags dropped from 19 bags per 1000 passengers in 2007 to seven bags per 1000 in 2014. This has led the airline industry to save an estimated US\$18 billion (S\$23.94 billion) in total cost of reuniting lost bags with passengers.


"This improvement in baggage handling over the past seven years is largely a result of strong technology investment and innovation in baggage system automation and processes. However, rising passenger numbers will continue to place pressure on baggage infrastructure and processes, so the industry cannot afford to become complacent. With the International Air Transport Association (IATA) forecasting continued passenger growth of around 7 percent in 2015, all industry partners will need to continue to invest, collaborate and focus on baggage management," said CEO of SITA Francesco Violante.

HONDAJET AWARDED PROVISIONAL TYPE CERTIFICATE

Following decades of preparation on the ground, the HondaJet is finally set to takeoff after receiving its Federal Aviation Administration (FAA) provisional type certification.

"Provisional type certification for the HondaJet is a tremendous milestone for the program, and we are pleased to reach this significant step toward customer deliveries and entry into service," said Honda Aircraft Co. President and CEO Michimasa Fujino. The provisional type certification is a common design approval awarded by the United States FAA to aircraft manufacturers en route to full type certification which allows the production line to continue moving smoothly. During the flight test programme in Greensboro, North Carolina, USA – the site of the state-of-the-art Honda Aircraft factory and headquarters, four HondaJet prototypes were flown in excess of 2,500 hours at more than 70 locations.



With its unique over-the-wing engine mount, natural laminar flow and sleek composite fuselage, the configuration makes the HondaJet the fastest, most spacious and most fuel-efficient jet in its class. It is touted to be the world's most advanced light jet yet. The company has reportedly spent over 20 years to research and develop the jet's advanced technologies and innovations. Presently, the factory assembly line is at full capacity with 12 of the US\$4.5 million (S\$5.99 million) jets in various stages of completion, with five more in the production workflow. Honda Aircraft expects to begin first deliveries this year after the full FAA type certification is achieved. 



ROLLS-ROYCE AND PARTNERS SUCCESSFULLY COMPLETE SINGAPORE'S FIRST ROVING AERO ENGINE EXHIBITION TO SCHOOLS

A Rolls-Royce Trent 1000 engine – an engine designed and optimised for the Boeing 787 Dreamliner – has spent two weeks in April travelling 173 kilometres on a nationwide tour to expose students to Singapore's thriving aerospace industry.

Over 4,800 students from 19 secondary schools, junior colleges and higher learning institutes took part in the interactive exhibition that showcased how the best and most innovative Science, Technology, Engineering and Maths (STEM) ideas and principles find application in all areas of the aerospace industry. Titled 'Generation Aerospace', the exhibition held from 13 to 24 April took students on an interactive journey through key areas of Singapore's aerospace industry – the build, flight and servicing of complex aero engines.

The exhibition, which moved overnight to a new location every day, for two weeks, was brought together by Rolls-Royce and its partners; Singapore Airlines (SIA), Singapore Airlines Engineering Company (SIAEC), Singapore Aero Engine Services (SAESL), International Engine Component Overhaul (IECO) and Kuehne + Nagel. Over 100 employee volunteers from the various companies were also available on-site to share their own experience, allowing students to gain a deeper understanding of what a career in the aerospace industry entails.



ABOVE:
Hands-on learning for students

AIRBUS AND SIA ENGINEERING COMPANY LIMITED (SIAEC) PARTNER UP TO OFFER TRAINING

Airbus and SIAEC have reached an agreement to provide maintenance and engineering training services for Airbus aircraft in Singapore. Through this collaboration, SIAEC will deploy Airbus standards, dynamic tools and teaching techniques to provide aircraft maintenance training to its own personnel and to third-party personnel in the region.

In addition, SIAEC Training Academy will be equipped with Airbus maintenance training devices and courseware for the A320, A330, A350 and A380 aircraft. As an Airbus Maintenance Training Centre, the SIAEC Training Academy will also be able to undertake contractual training for Airbus customers.

William Tan, CEO of SIAEC said, "Driven by our commitment to service excellence, SIAEC has developed a bench strength of a thousand engineers licensed to handle the latest aircraft types. As a trusted partner to our customers, it is our aim to support them with total engineering solutions, including best in-class training services. The appointment of SIAEC's Training Academy as an Airbus Maintenance Training Centre further strengthens our comprehensive service offerings to airlines in the region."

JET AVIATION SINGAPORE RECEIVES FAA APPROVAL FOR THE GULFSTREAM G650

Jet Aviation Singapore recently received approval from the Federal Aviation Administration (FAA) to provide line and base maintenance to Gulfstream G650 aircraft. The company also received approval from the Thai Department of Civil Aviation to perform off-site maintenance and support.



As a Factory Authorized Service Center and Warranty Repair Facility for the Gulfstream series, the FAA approval permits Jet Aviation Singapore to extend warranty line and base maintenance support to owners and operators of G650 aircraft registered in the US.

"We are consistently seeing more operational activity of long-range, large cabin aircraft across Asia, the Pacific and Australasia, and several new aircraft deliveries are expected in the region over the next few years," said John Riggir, vice president and general manager of Jet Aviation Singapore. "With approximately two-thirds of the aircraft we service in Singapore representing Gulfstream, I've no

doubt that our extended support capabilities for the G650 will be well-received by the market."

Since opening its doors last year, Jet Aviation Singapore has performed a 96-month inspection on a Bombardier Challenger, two 4C inspections on Global Express and a 96-month inspection on a GIV, including painting and refurbishing the interior. The company is currently gearing up for multiple 8C inspections of Global Express aircraft later this year.

The 7,500m² hangar at Jet Aviation Singapore permits up to eight Gulfstream G650, eight Bombardier Global Express 7000 aircraft or three Boeing Business Jets or Airbus Corporate Jets.



VECTOR AEROSPACE OPENS NEW MRO FACILITY IN SINGAPORE

Operating with the strong belief that customers are best served by a local presence, Vector Aerospace is delighted to announce the grand opening of its Singapore facility on 14 May as another example of its global expansion. Concurrently, the company also announced a three-year MOU with the Republic Polytechnic (RP) of Singapore.

The new 5,200m² Vector Aerospace state of the art facility will be a Pratt & Whitney Canada PW150 Designated Overhaul Facility equipped with full engine overhaul and test capability.

"By locating in the Asia Pacific region, we are able to provide the owners of the PW150 engines and operators of the popular Bombardier Q400 regional turboprop with a cost-effective, viable and easily accessible MRO solution, while at the same time significantly strengthening our presence in the area. Engine owners and operators will benefit in terms of faster turn times, minimised shipping costs and superior customer service," stated Declan O'Shea, President and CEO of Vector Aerospace.

Vector Aerospace has invested more than S\$50 million in this facility, including tooling and equipment and when fully operation, will employ up to 140 employees in a variety of repair, test, engineering, commercial and support roles.

The partnership with RP is in line with Singapore's long-term national movement, SkillsFuture, which aims to deepen the skills of its workforce with good career progression pathways. Vector Aerospace Asia is also the first aviation MRO company in Singapore to partner with RP in the Non-Destructive Level II Certification where students serving six-month internship with the company will complete both the theoretical and practical training to acquire this industry-wide certification.



LEFT:
Located in Changi Business Park, the HAITE Singapore Aviation Training Centre is a six-storey facility of over 21,000m²

BOTTOM:
Interior of the Airbus A320 Series 7000 Full Flight Simulator



HAITE GROUP OPENS SINGAPORE'S LARGEST INDEPENDENT AVIATION TRAINING CENTRE

HAITE Aviation Training Singapore (officially 'Aviation Safety and Training Pte Ltd', hereafter referred to as HAITE Singapore), a subsidiary of Sichuan Haite High-Tech Co. Ltd. of Chengdu, China (HAITE Group), has launched its 21,000m² building and training centre in an inauguration ceremony on April 21.


RIGHT:
Mr Li Biao (second from right), Chairman of HAITE Group with Guest-of-Honour Mrs Josephine Teo (far right), Senior Minister of State for Ministry of Finance and Ministry of Transport, and other VIPs

Located in Changi Business Park, HAITE Singapore aims to serve as a training hub for pilots and aviation-related crew, and expects to attract up to a total of S\$55 million in direct and indirect revenues per annum for the Singapore economy over the next five years.

As HAITE Group's first aviation training centre outside of China, HAITE Singapore is the group's international headquarters and also the first major investment by a Chinese aerospace company in Singapore.



"The HAITE Group is always on the lookout for new ways to grow our business," said Li Biao, Chairman of HAITE Group. "Singapore was a strategic move to extend our international reach. We'll continue to cultivate steady progress in the areas of aviation MRO, R&D, and training, so as to provide our customers with excellent, well-rounded services and products that they've come to associate with HAITE."

Valued at S\$95.3 million, the six-storey HAITE facility in Singapore is equipped with state-of-the-art training devices, including the Boeing B737-800W Series 7000 Full Flight Simulator, Airbus A320 Series 7000 Full Flight Simulator, and Airbus A320 Integrated Procedure Trainer. Apart from the currently installed equipment, HAITE Singapore expects to expand its facility progressively over the next five years to its full seven-bay capacity, which would enable it to provide close to 50,000 hours of training per year. 

FEATURE

→ The amount contributed to the global economy by aviation jobs is roughly

3.5X

times higher than that contributed by other jobs

→ Singapore accounts for more than 25% share of Asia Pacific's MRO output, the most comprehensive in Asia



→ Seletar Aerospace Park is **320 acres** in size and houses over

30

aerospace companies



→ More than **58 million** people are employed worldwide in aviation and related tourism; of this **8.7 million** work directly in aviation industry

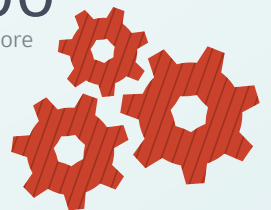


→ Singapore produces more than **1,500** aerospace graduates annually



→ The aerospace industry employs about **20,000** people in Singapore

90% of the jobs are catered to skilled workers





→ Airbus and Boeing have projected that over a third of worldwide aircraft deliveries will go to Asia in the next two decades; by 2031, the region's fleet is expected to triple to about **13,500** aircrafts

→ Singapore's aerospace industry has a compounded annual growth rate of

12%

since 1990, making it an integral economic driver



ENGAGING THE FUTURE GENERATION

What's to come for the industry as aerospace takes precedence in Asia and what will this mean for Singapore?

Since 1990, the local aerospace output has grown at a compounded annual growth rate of over 12 percent. In an effort to establish Singapore as one of the leading markets in the region and to capitalise on its rapid growth, investment has come in the form of various funding programmes, infrastructural support and training initiatives from a number of institutions including Multi-national Corporations (MNCs) and Institutes of Higher Learning (IHLs). Aerospace Singapore goes into the field to find out what's in store for the future of aerospace in the government, education and training sectors.



→ By 2018 passenger capacity will increase to **69 million** per year



→ By mid-2020, Changi will double its capacity to serve **135 million** passengers annually with two new terminals

FEATURE



GOVERNMENT

SINGAPORE ECONOMIC DEVELOPMENT BOARD (EDB)

A wide variety of opportunities and rewarding career pathways are available in the aerospace industry, ranging from MRO and manufacturing to R&D and other aftermarket services such as pilot training, aircraft leasing and fleet management. The nature of the aerospace industry, being highly regulated with exacting quality standards, requires companies to provide structured and continuous training to its employees.

Initiatives

EDB will be working closely with other government agencies such as the Singapore Workforce Development Agency (WDA) and the Ministry of Education (MOE) on the SkillsFuture initiatives pertaining to the aerospace industry, which has been identified as a key sector of the future. To help Singaporeans build a future based on skills mastery, efforts will be placed to: i) Strengthen education and career guidance in schools; ii) Enhance internships to better students' learning at the workplace; and iii) Provide programmes (e.g. Earn and Learn Programme) for fresh graduates from polytechnics and Institutes of Technical Education to get a head-start in their careers.

Beyond SkillsFuture, EDB also works with companies, both existing and new, to understand their evolving needs and introduces them to relevant educational institutes to explore potential partnerships which could address their talent requirement. Aerospace companies are consulted on to ensure continuous investment in the development of their employees so that the skills and capabilities of the companies' workforce are up-to-date and relevant for the current and new generation of aircraft platforms.

While aerospace courses and specialisations offered at educational institutes are highly popular, and Singapore produces over 1,500 aerospace trained graduates annually, more awareness can be drawn



Singapore Airshow 2014

Over **400 Students**
participated in facility visits hosted by
14 Aerospace Companies

to the new job opportunities and the exciting career progression pathways available in the industry.

In the lead up to Singapore Airshow 2014, EDB embarked on a series of student outreach efforts that targeted students studying aerospace courses at the local educational institutes. Over 400 students participated in facility visits hosted by 14 aerospace companies. Building on last year's success, EDB will be looking to once again partner industry, academia and other agencies on a similar outreach programme in conjunction with the Singapore Airshow 2016. EDB is looking forward to strong support from companies to further expand the coverage of the diverse opportunities available in the thriving aerospace industry.

CIVIL AVIATION AUTHORITY OF SINGAPORE (CAAS)

With the renewed Aviation Development Fund (ADF) of S\$160 million for five years from 1 April 2015, CAAS aims to drive transformative developments to ensure Singapore continues to grow as an aviation hub and remain competitive. A total of S\$140 million from the ADF will be dedicated to raising airport productivity and innovation as well as manpower development efforts necessary to achieve the desired goals. The remaining S\$20 million will be set aside for funding other projects and ideas which have significant benefits for the Singapore aviation industry.

Initiatives

Through the SkillsFuture programme, CAAS will take a comprehensive life-cycle approach for aviation manpower development under the renewed ADF. Both youths and aviation professionals at all stages of their school life and careers respectively will benefit from the new programmes. CAAS will initiate deeper engagement efforts to raise awareness of aviation careers among the young, such as partnerships with schools and IHLs.

Aviation professionals can look forward to job redesign and enhanced career pathways. These



will be in addition to ongoing aviation programmes by CAAS including:

➔ **Aviation Learning Journeys** – students get first-hand experience in an aviation course in a IHL or an aviation company like SIA Engineering Company, Singapore Air Traffic Control Centre, etc.

➔ **Aviation Open House** – a bi-annual event that includes career talks, interactive aviation displays and live demonstrations of aviation technology, where students can interact personally with aviation professionals.

➔ **Aviation Lesson Toolkits** – an enhanced learning experience with lesson plans for secondary schools and economics for junior colleges that infuse aviation themes with subjects such as science, social studies and design & technology.

➔ **Air Scouts** – CAAS partners with Singapore Scout Association (SSA) to build passion for aviation in students through the Air Scouts CCA and the Young Aviators Badge (YAB) programme; a two-day event conducted by SSA in primary and secondary schools.

➔ **Aviation in Schools Initiative (ASI)** – schools fostered through the ASI are fully exposed to an aviation environment, to entrench interest in aviation and its career. Funding support of up to S\$150,000 is available to schools to develop its aviation plans over three years; benefits include curriculum development, aviation facilities, aeromodelling workshops, job shadowing stints, overseas exchange programmes, etc.

➔ **Aviation Youth Outreach Seed Fund** – schools get to develop customised aviation activities to suit the profile and interests of its students with funding support of up to S\$20,000 per initiative from CAAS.

SINGAPORE WORKFORCE DEVELOPMENT AGENCY (WDA)

WDA was established in 2003 to enhance the competitiveness of Singapore's workforce through lifelong learning and skills advancement with the Continuing Education and Training (CET) system. Since then, the WDA has launched the Singapore Workforce Skills Qualification



Renewed Aviation Development Fund (ADF)

S\$140m

to raise airport productivity and innovation as well as manpower development



S\$20m

Other projects

From now till 2020

S\$1b

per year to focus on SkillsFuture



Career guidance for students, enhanced internships and subsidies for mid-career learning

(WSQ) in 2005 to provide funding and learning support for specialised skills training.

Announced at the Budget 2015, SkillsFuture is the latest programme to be introduced.

SkillsFuture is a national movement to develop the skills of the Singaporean workforce and to cultivate each individual's mastery for an advanced economy. The government funding on continual education and training will be increased from S\$600 million per year over the last five years to an average of over S\$1 billion per year from now till 2020. Career guidance for students, enhanced internships and subsidies for mid-career learning will be among the focus of SkillsFuture.

Under the SkillsFuture Earn and Learn Programme, graduates from polytechnic and ITEs will receive a head start in their careers. They will be placed in paying jobs while undergoing structured on-the-job training, and subsequently, gain an industry-recognised qualification. To strengthen the linkages between study and work, WDA and the Ministry of Education (MOE) have appointed sector coordinators among IHLs which will play a central role in driving industry engagement and coordinating the implementation of SkillsFuture initiatives. Temasek Polytechnic has been designated as the sector coordinator for Aerospace Engineering.

Additionally, a Sectoral Manpower Plan (SMP) will also be developed under SkillsFuture for key sectors including the aerospace industry. The SMP will bring together employers, unions, education and training providers, trade associations and the Government is to project future skills needs and set out a systematic plan to develop those skills in the local workforce.

FEATURE

EDUCATION

EMBRY-RIDDLE AERONAUTICAL UNIVERSITY (ERAU)

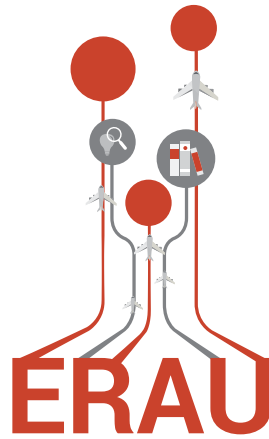
ERAU was launched in Singapore in 2011 and since then, the university has grown from a single programme with 20 students to five programmes with over 400 students today. With its current partnership with the ERC Institute, ERAU has been able to bring international students from the region to Singapore. The university plans to continue adding new programmes each year and be the regional centre of excellence when it comes to aviation/aerospace higher education.

Initiatives

“Singapore is poised for continued growth and success when it comes to aviation and aerospace. As a model for others in the region and around the world, Singapore continues to reinvent itself with its world-class airport, MRO capabilities and growing number of airlines,” says Matthew Flaherty, ERAU Executive Director of Enrolment and Campus Operations.

To support this growth, Embry-Riddle has recently formed an industrial advisory board to enhance its programmes. By working closely with industry experts, ERAU ensures that students are not only provided with cutting edge technical skills but also meet the industry needs relevant to aerospace growth.

One of the most exciting areas Embry-Riddle has shifted its attention to in recent years is Unmanned Aerial System (UAS) technology. From development and legislation to commercial applications and safety, UAS technology will require close collaboration between Original Equipment Manufacturers (OEMs), governments and end-users as the technology develops and the opportunities expand. Embry-Riddle currently offers a Bachelor of Science in Unmanned Systems Application and a Master of Science in Unmanned Systems.



Grown to **5** programmes with over **400** students today



TEMASEK POLYTECHNIC

Temasek Polytechnic (TP) aims to be a world-class aerospace education and training hub by developing high quality, value-added, innovative and industry-recognised programmes.

Initiatives

With the renewed investment of SkillsFuture, Temasek Polytechnic is looking at deepening the mastery of skills in the aerospace industry. TP is working with aerospace employers and partners to develop industry-relevant training to upgrade the skills of working adults in this sector, while continuing to provide its full-time students with training such as the SAR-147 licensed aircraft engineer programme.

The polytechnic is also committed to reaching out to secondary schools, by organising aerospace-related talks, workshops and facility tours at its campus to raise awareness about its courses while inspiring the students to consider a career in the aerospace industry.

SINGAPORE POLYTECHNIC

Singapore Polytechnic (SP) believes that a steady stream of talented, highly-skilled and innovative Aeronautical/Aerospace Electronics engineers is crucial for Singapore’s growing aerospace industry.

Initiatives

As about 90 percent of the companies in the Singapore aerospace industry are MRO of aircraft and aircraft systems, the two diploma courses in Aeronautical Engineering and Aerospace Electronics by SP will continue to train students in curricula that are aligned with the Singapore Airworthiness Requirements 66 for licensing of aircraft maintenance engineers specified by the Civil Aviation Office of Singapore (CAAS).

Besides the curriculum that has a six-week Industrial Training Program, SP also offers two other curricula – Enhanced Internship Program and Engineering Academy Program. These multi-path programs allow students to gain valuable and



Singapore Aerospace Industry

90%
MRO

of Aircraft and Aircraft Systems

RESERVE
YOUR PLACE IN THE WORLD

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School of Science and Technology

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CHOICE

FLEXIBILITY

OPPORTUNITY

UniSIM School of Science and Technology

BEng Aerospace Systems

The Bachelor of Engineering (Honours) Aerospace Systems offered by UniSIM School of Science and Technology (SST) is a broad-based programme that provides a firm grounding in aerospace structure and control, avionics and propulsion, delivered through a flexible pedagogy.

Unique features of the programme includes:

- Distinctive programme that combines academic study with practical hands-on experience
- Rigorous curriculum in aerospace systems engineering, technology and aviation management
- Relevant and real world knowledge in solving aviation maintenance and applied research issues
- Preparation for an exciting and rewarding career in the aerospace defence and aviation industries
- Flexible curriculum – learn anytime, anywhere
- Focus on adult learning – study and work at the same time
- Network while you learn from associate faculties and peers from industry

FEE SUBSIDY

Eligible undergraduate students will receive a government subsidy of up to 55% of their tuition fee.



Find out more

Other Programmes by SST

Built Environment Engineering
Human Factors and Workplace Safety
Infocomm Technology
Mathematics
Multimedia
Military Studies Minor

FEATURE

enriching experience in authentic working environments for easier transition into the workforce as well as to prepare them for further education. “The Engineering Academy Program has a higher emphasis on engineering project design, development and invention to promote applied learning. Students will have space to explore topics of their interest and build up various projects to develop their ability to innovate as well as self-motivate,” explains Ivan Hoe, Course Chair, Diploma in Aerospace Electronics, Singapore Polytechnic.

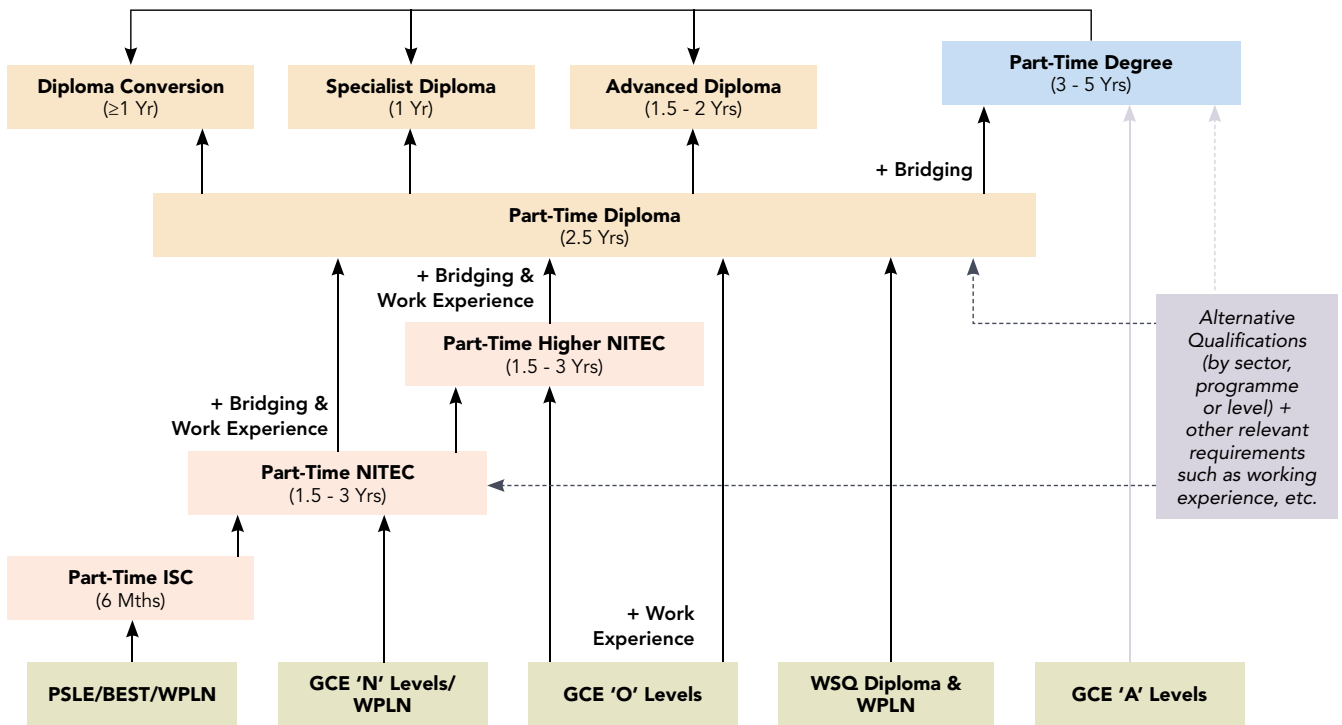
In support of the SkillsFuture programme, SP will be collaborating with the aerospace industry to develop Enhanced Internship programmes for the development of specific skills needed in aerospace engineering and career progression pathways. The polytechnic will also be supporting the SkillsFuture Earn and Learn programme designed to give fresh graduates from polytechnics a head-start in an aerospace career. Fresh graduates will get more opportunities to build on the skills and knowledge they have acquired to better support their transition into the workforce, thereby retaining them in the aerospace industry.

Here are some courses currently offered by Institutes of Higher Learning (IHLs) in Singapore, with a specialisation in aerospace and aviation. The courses listed here are non-exhaustive and should not be considered as a full representation of all aerospace/aviation related courses available. Aerospace companies also accept general engineering graduates in the electronics, manufacturing, mechanical and precision engineering fields, subject to the candidate meeting the job requirements and recruitment criteria.

IHL\AREA OF FOCUS	AVIONICS/ ELECTRONICS ENGINEERING	MECHANICAL/ MANUFACTURING ENGINEERING	AVIATION/ AIR TRANSPORT MANAGEMENT
Institute of Technical Education (ITE) College Central	Nitec in Aerospace Avionics	Higher Nitec in Aerospace Engineering Nitec in Aerospace Technology Nitec in Aerospace Machining Technology	
Nanyang Polytechnic	Diploma in Aeronautical & Aerospace Technology Diploma in Aerospace Systems and Management		
Ngee Ann Polytechnic	Diploma in Digital & Precision Engineering Diploma in Aerospace Electronics	Diploma in Aerospace Technology	Diploma in Aviation Management
Republic Polytechnic	Diploma in Aerospace Avionics	Diploma in Aerospace Engineering	
Singapore Polytechnic	Diploma in Aerospace Electronics	Diploma in Aeronautical Engineering	
Temasek Polytechnic	Diploma in Aerospace Electronics	Diploma in Aerospace Engineering	
National University of Singapore		Bachelor of Engineering (Mechanical Engineering) – Specialisation in Aeronautical Engineering	Diploma in Aviation Management & Services
Nanyang Technological University		Bachelor of Engineering (Aerospace Engineering)	
Singapore University of Technology and Design		Bachelor of Engineering with a Major in Engineering Product Development (Aerospace Technology Track)	
Singapore Institute of Technology [Supported by University of Glasgow]	Bachelor of Engineering with Honours in Aerospace Systems	Bachelor of Engineering with Honours in Aeronautical Engineering	
Embry-Riddle Aeronautical University Asia	Bachelor of Science in Aeronautics	Bachelor of Science in Aviation Business Administration	Master of Business Administration in Aviation
TUM Asia - German Institute Of Science And Technology		Master of Science in Aerospace Engineering [with Nanyang Technological University]	



Many IHLs and training institutes also provide part-time courses and programmes geared specially towards working adults and professionals. WDA supports some of these courses which helps working adults keep their skills relevant and upgrade their skills amidst rapid technological advances in their industry and the broader environment. The following diagram illustrates the multiple pathways for CET:



BOEING

Singapore’s strategic location as a commercial aviation hub for Southeast Asia, combined with a business-friendly environment, were the primary reasons for Boeing to establish its regional training campus at Changi in 2007. The company has brought advanced pilot and maintenance technician training programmes to serve customers based not only in the Asia-Pacific region but also from around the world.

“While our primary interest has been, and still is, in serving the current needs of our airline customers, Boeing recognises the need for training programmes that address the future workforce requirements to meet the anticipated continued growth in the commercial aviation industry,” states Sherry Carbarry, Boeing Vice President, Flight Services, Commercial Aviation Services and Commercial Airplanes.

Initiatives

Every year, Boeing Flight Services prepares


Boeing Flight Services forecast the need for

219,000
Pilots



224,000
Technicians
over the next
20 years

a careful analysis of anticipated demand for the pilots and technicians – the Pilot & Technician Outlook. In 2014, Boeing Flight Services forecast the need for 219,000 pilots and 224,000 technicians over the next 20 years to fly and maintain airplanes in Asia. As a result of these staggering numbers, Boeing is focused on supporting the development of ab-initio programmes for both pilots and technicians to support the industry.

“We believe it is important to deliver a comprehensive training programme for pilot cadets and apprentice technicians from the beginning of their training through their type ratings and certification on Boeing airplanes,” adds Sherry. Singapore will continue to be a focus for Boeing Flight Services in terms of a location to provide high quality, comprehensive training solutions to its current and future customers. 

FEATURE

Below are some training courses in aerospace and aviation available on the market. More skills-based modular courses will be launched in the second half of 2015 in line with the SkillsFuture initiatives.

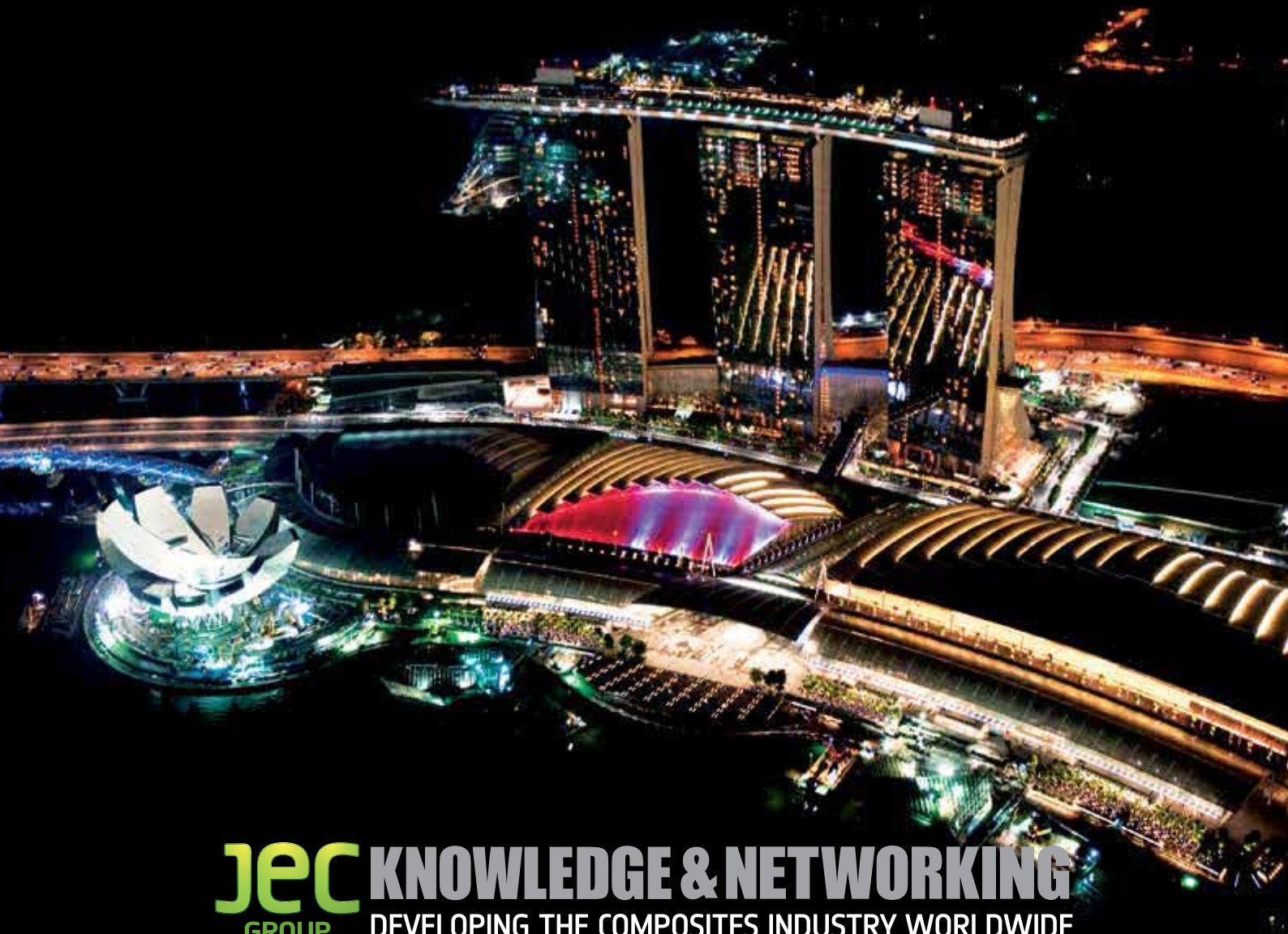
TRAINING PROVIDER/ CERTIFICATION	CERTIFICATE	DIPLOMA	BACHELORS/POST-GRADUATE DEGREE
Institute of Technical Education (ITE)	Nitec in Technology – Aerospace Machining Technology WSQ Higher Certificate in Aerospace Manufacturing		
Nanyang Polytechnic		Diploma in Engineering (Aerospace Manufacturing)	
Ngee Ann Polytechnic		Diploma in Engineering (Aerospace)	
Republic Polytechnic		Specialist Diploma in Advanced Composites	
Singapore Polytechnic		Diploma in Engineering (Aerospace) Advanced Diploma in Aerospace Engineering and Management	
Temasek Polytechnic	Executive Certificate in Risk Assessment (Aviation Security) WSQ Professional Certificate in Aerospace Engineering	Diploma in Engineering (Aerospace)	
Nanyang Technological University			Master of Science (Aerospace Engineering) Executive MBA in Aviation and Air Transport
SIM University [Supported by Cranfield University]	Certificate in Aerospace Vehicles Design Certificate in Aircraft Engineering Certificate in Airport Planning and Management Certificate in Air Transport Management		Bachelor of Engineer (Honours) Aerospace Systems
Embry-Riddle Aeronautical University Asia			Bachelor of Science in Aeronautics Bachelor of Science in Aviation Business Administration Master of Science in Aeronautics [with the Singapore Aviation Academy] Master of Business Administration in Aviation [with the Singapore Aviation Academy] PhD in Aviation [with the Singapore Aviation Academy]
Air Transport Training College	WSQ Higher Certificate in Aerospace Maintenance (Aircraft Maintenance – Mechanical) WSQ Higher Certificate in Aerospace Maintenance (Engine/Engine Repair & Overhaul) WSQ Basic Aviation Skills (Extended) course WSQ Basic Aviation Skills (Gas Turbine) course WSQ Maintain Aircraft Electrical Systems WSQ Maintain Composite Structures course	Specialist Diploma in Aircraft Maintenance and Engineering Professional Diploma in Aircraft Maintenance and Engineering Applied Diploma in Aerospace Maintenance	Bachelor of Science (Honours) Aircraft Engineering [with Kingston University London] Bachelor of Engineering Science (Aerospace Operations) [with University of Technology Sydney] Foundation Degree in Aircraft Engineering [with Kingston University London]
Singapore Aviation Academy		Diploma in Civil Aviation Management	Master of Science in Air Transport Management [with Cranfield University, UK] Master of Science in Aeronautics [with Embry-Riddle Aeronautical University] Master of Business Administration in Aviation [with Embry-Riddle Aeronautical University] PhD in Aviation [with Embry-Riddle Aeronautical University]



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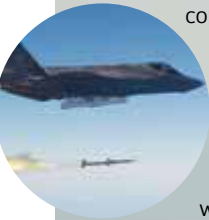
www.JECcomposites.com

F35 LIGHTNING II MEAN MACHINE

Lockheed Martin's F-35 Lightning II is the world's most advanced multi-role fighter. The 5th Generation fighter combines advanced stealth capabilities with fighter speed and agility, fully-fused information, network-enabled operations and advanced sustainment.



→ The F-35's Electro-Optical Targeting System (EOTS) is the world's first and only sensor that combines Forward-Looking Infrared (FLIR) and Infrared Search and Track (IRST) functionality, which recommends the pilot which target to attack and whether he or she should use either kinetic or electronic means to address the threat.



→ The F-35 is equipped with advanced Electronic Warfare capabilities and Distributed Aperture System (DAS) that enable the pilot real-time access to battle space information with 360-degree coverage to locate and track enemy forces, jam radars and disrupt attacks.

→ The DAS streams high resolution imagery to the pilot's helmet from six infrared cameras mounted around the aircraft, so the pilot can see around them – day or night – without loss of quality or clarity. This also greatly reduces the potential of mid-air collisions and virtually eliminates surprises.



→ The F-35's core processor can perform more than one trillion operations per second.

→ The low-drag, stealthy EOTS is integrated into the F-35's fuselage with a durable sapphire window and is linked to the aircraft's integrated central computer through a high-speed fibre-optic interface.



→ The Communications, Navigation and Identification (CNI) system is the most advanced integrated avionics system ever engineered. It provides F-35 pilots with the capability of more than 27 avionics functions.

→ Its classified electronic warfare suite developed by BAE Systems helps collect data to identify enemy radar and electronic warfare emissions.

→ The F-35 has Active Electronically Scanned Array (AESA) radar technology, which enables the pilot to engage air and ground targets at long ranges without detection. ^{AS}

→ The F-35 has an advanced sensor fusion that draws information from all of its sensors to create a single integrated picture of the battlefield, which can be automatically shared with other pilots or surface and ground-based platforms on their network using the most modern datalinks, such as the Multifunction Advanced Data Link (MADL).



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AIR-TO-GROUND

8x More Effective



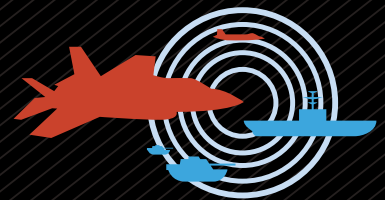
SURVEILLANCE

6x More Effective



THE F-35 CAN SECURELY SHARE INFORMATION

- to the ground
- in the air
- at sea



DMG MORI

CELOS

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to the finished product

X 2500 | 700





PAVING THE INNOVATIVE WAY AHEAD

With nineteen world premieres and many other technological innovations, DMG MORI is set to have an exciting year ahead. Aerospace Singapore sits down with Dr. Jens Hardenacke (JH), Chief Executive Officer, Dr. Christian Braun (CB), Managing Director and Michael Kirbach (MK), Director Aerospace Excellence Centre, on their Aerospace Excellence Centre and some of the trials and tribulations endured in reach of their success.



ABOVE:
Michael Kirbach,
Director Aerospace
Excellence Centre

LEFT:
(L-R) Dr Christian
Braun, MD and
Dr. Jens
Hardenacke, CEO

Tell us a little about the progress of the DMG Mori Seiki Aerospace Excellence Centre.

MK: The idea of the Aerospace Excellence Centre is to have the technical competence bundled in one of our factories, to support our customers worldwide. The Aerospace Excellence Centre is located in the factory DECKEL MAHO Pfronten in Germany. Today, we have a team of around 15 technical experts in the centre, which provides a strong link to our application engineers in our worldwide Sales & Service organisation.

How has the centre benefitted the business?

MK: Since its official launch in 2012, we have increased our market share. Our customers know that they can count on the technical expertise from the centre, which finally increases the customer interest in our machine tools.

Are there plans to expand manufacturing to include more aerospace industry needs?

MK: We are not manufacturing in the sense of producing components for the aerospace industry. We rather support our customers to manufacture their components

INPROFILE

on our machine tools in a more productive and competitive way. To understand the needs of the aerospace industry, we have many experts in our team from this industry and together with the customers, we are creating new ideas and processes.

How has the advancement in Aerospace technology benefitted the business?

MK: Today's modern aircraft and engines are built with more difficulty in relation to machine metals and non-metals. Most of the components need to be machined and this influenced our engagement to develop appropriate machine tool solutions and process ideas. Also, the fact that many new aircraft will most likely be built in higher volumes is a driver towards more automation of the machining process, as well as the handling of the components.

“

IF WE WANT TO OFFER A SOLUTION WHICH GIVES THE HIGHEST BENEFIT TO OUR CUSTOMER, WE MUST ALSO LOOK TO OTHER CIRCUMSTANCES CONCERNING TECHNOLOGY.

”

What is the current strategy in place expanding your range of products and services?

MK: We look to focus markets. Many countries have a well-established aerospace manufacturing industry and we have long-term relationships with them. Others are growing or will grow in the future. Our target is to also support these customers to get

used to the international competitive manufacturing environment by using state of the art machining technology. It is also our strongest interest to deliver appropriate technology, which fits to the individual needs of such customers.

How quickly have your customers' needs evolved?

MK: We always try to be aware of trends and to prepare ourselves in advance. But finally, we are learning regularly from the individual needs of our customers and together with them, we are able to develop the most fitting solutions.

How well are you managing their needs?

MK: The major rule is to listen to the needs of the customer very carefully. As soon as we and our customer have a complete and common understanding of the challenges and the potential ideas, we are able to work on the best solution.

What seems to be the greatest challenge in this line of work?

How have you overcome this?

MK: One of the greatest challenges are the different individual needs of our customers around the world. Infrastructure, costs levels, knowledge base, technical experiences and other factors are different in various economic regions. In other words, a technical solution in a high cost region would most likely not fit with a customer in a lower cost region. If we want to offer a solution which gives the highest benefit to our customer, we must also look to other circumstances concerning technology.

How will the introduction of the Tokyo Global Office affect sales in South East Asia?

JH: It is for sure an important footprint

in the Asian market because our headquarters for sales and services worldwide is in Switzerland, close to Zurich, and now in order to be able to increase the focus of our sales activities in the Asian region, this will surely be symbolic and also a huge step towards developing another headquarters. We are a German – Japanese company, so it makes sense to have headquarters both in Europe and Asia.

What can Singapore look forward to from DMG MORI in 2015?

JH: We see substantial development in the aerospace and oil industry, as well as the high technology industry that DMG MORI is part of. We are further developing our set up here as well as our footprint in the market. We had 10 global premieres of machines in the second half of 2014, some of which are completely new. We see a big tendency towards automation, so labour costs are on the rise.

Especially within the automotive side of our business, we have developed some brand new machines, as well as machines that now have updated and additional functions. This is one of DMG MORI's key strengths and we hope to continue to push the boundaries of innovation and development.

CELOS, our philosophy of controlling a machine, is something we are very proud of as it is completely unique in our industry. CELOS enables consistent administration, documentation and visualisation of order, process and machine data.

JH: Most of the machines have a delivery time of about half a year, so due to that, you tend to see all these results a little later.



What are some of the challenges that are exclusive to the Asian region?

JH: Many of the Asian markets have had the tendency in the past to house the production due to cheap labour costs, but now you see that this is somehow changing. Wages in China for example are rising. Asia will face more problems due to high costs, therefore solutions that we initially had devised for the American and European markets will change the landscape of the global industry. We created DMG MORI Systems, a new company close to Stuttgart, where we develop automated solutions. We're bundling all these activities there and then we develop worldwide solutions for even the Asian market. Feedback from our regional offices are constantly fed back to DMG MORI Systems, which acts as a headquarters for global solutions.


What are your strategies in recruiting and retaining talent?

JH: We don't really face any

CELOS, enables consistent administration, documentation and visualisation of order, process and machine data

challenges in regards to recruitment, thanks to our global network. We are considering starting an academy in Germany which can later feed graduates into the company throughout the regions. We are in current discussions with some universities in Germany and hope to start an academy by 2015.

CB: We also closely coordinate with institutions and universities where we send students to Germany or Japan for internships and then we have trainee programmes as well as tie ups, hiring from the local technical universities.

We put a lot of emphasis on training and education programmes as it is key for us. It is our aim to develop the competence of our entire team and not just the young staff. We continuously send our engineers to our factories to train them for a couple of weeks at a time, to maintain a high level of competence across all technologies as well as to provide the customer with the best support. 

“ WE PUT A LOT OF EMPHASIS ON TRAINING AND EDUCATION PROGRAMMES AS IT IS KEY FOR US. ”

We speak to Riccardo Tan, a graduate from SIM University (UniSIM)'s Bachelor of Aerospace Systems Engineering programme, about his ideas and insights into the ever-changing industry's promising pursuits. Riccardo, 33, is presently a Customer Engineer for Turboshaft Engines at Pratt & Whitney Canada.



SCALING FOR SUCCESS IN AN AEROSPACE CAREER

Singapore's aerospace industry is witnessing unprecedented growth in an increasing number of aerospace design and manufacturing operations. High-calibre developments include the Pratt & Whitney's first hybrid fan blade and turbine-disk manufacturing facility outside the US, which broke ground in Singapore in January 2013.

At its sub-unit, Pratt & Whitney Canada, Riccardo Tan, 33, is currently a Customer Engineer

for Turboshaft Engines. In his role, he provides engineering support for Turboshaft engine operators, on top of delivering solutions for all turboshaft engine in-service defects.

As a customer engineer, Riccardo has been "intrigued by the tempo of aerospace engineering, where work goes round the clock and snowballs to greater innovations". His advice to those planning a career in aviation is to "persevere in the beginning and be ever keen on learning and working with others". As an aerospace engineer, the multi-faceted responsibilities

can include researching, designing, developing and testing aeroplanes and spacecraft. In the research phase they may be involved in looking at safer or more efficient ways to get people flying and assessing qualities like the impact weight, temperature or altitude that may bear on the aircraft. After research comes design, where research ideas get transformed into real-life, actionable plans. The next stage features the development and testing of the product, which requires more engineers refining and testing the vehicle for quality standards.

Riccardo highlights that the aerospace industry is ever-changing with new issues, challenges and players that emerge. Riccardo feels that his education and training have strongly contributed to him pursuing his career targets and securing his aerospace dream. Here, he shares more about how his studies helped him to be a well-rounded aerospace professional.

What were your thoughts (first impressions) on joining the aerospace industry as a fresh graduate?

This is an industry which has a strong emphasis on safety and yet is pushing the boundaries at every instance in bringing new aerospace products and solutions. There are constant challenges that require aviation professionals to push for deadlines, milestones and creative breakthroughs while respecting the risks involved in this industry.

To what extent has your training and education been suitable, and what have you found most useful?

What I have learnt from school was only the beginning of my learning journey in the aerospace industry. There have been many new things in the industry that take my academic experience to a whole new level. There isn't a single day that goes by without my mind being stimulated with fresh challenges. The foundation knowledge gained from my training and education has been useful in making sense of how aerospace technology, in its varying forms and capacity, works and evolves.

What are some of the areas that can see better integration

or relevance – courses, skills, technical knowledge or trends?

An approach towards a design and manufacturing-centric education would be a great step towards moving Singapore from an MRO-centric industry to one with the capability to design and develop aerospace products that can be readily used around the world. It may be ambitious to talk about a 'Made in Singapore' aircraft but for a start, Singapore can make ourselves relevant in the global aerospace industry through the Design and Production areas.

was participating in a series of flight tests on board a regional jet. Taking down streams of various flight data while physically experiencing different manoeuvres was a rare and exciting opportunity, one that is hard to come by in Singapore.

What should youths interested in an aviation/aerospace career be prepared to do? What should they expect or focus on?

A thorough and well balanced foundation knowledge in aviation is a must! In an aerospace career, it is insufficient to only know one aspect of a huge range of subjects. For example, just knowing how a jet engine works is insufficient especially when the aircraft depends on more than one part of its operation to challenge gravity and human limitation. There may be a considerable volume of knowledge to acquire, covering both the engineering aspects (Airframe, Engine, Avionics) to managerial areas (Economics, Airworthiness, Safety). It is essential to understand how they connect and work together before making a commitment to focus on a specific area.

If it were not for aviation/aerospace, what would you have pursued and why?

I would have pursued a career in the marine industry with a special focus in underwater search and salvage. I am intrigued by the challenges the ocean offers as much as those of the skies. The ocean is inherently a risky environment that requires careful design, building and deployment of equipment. Much of today's latest technology on land has in many ways evolved from the tried and true technology of the deep seas and high skies.

A THOROUGH AND WELL BALANCED FOUNDATION KNOWLEDGE IN AVIATION IS A MUST! IN AN AEROSPACE CAREER, IT IS INSUFFICIENT TO ONLY KNOW ONE ASPECT OF A HUGE RANGE OF SUBJECTS.

What has been the most memorable experience during your course? Are there any distinct or unique experiences that you would like to share?

Part of the curriculum required me to travel to Cranfield University in the UK to attend a series of courses. It was of much benefit as I had a chance to learn about a wide range of subjects from Cranfield lecturers and instructors who were experts in their specialised fields. The most memorable experience

CREATING A SKILLED WORKFORCE

Rolls-Royce teams up with some of Singapore's leading education institutions to help develop the next generation of talents.

Rolls-Royce has been present in Singapore since the 1950s and has been expanding along with the development of the aerospace industry in Singapore and the Asia-Pacific region. The company has been playing a significant role in the industry where, along with its joint venture partners, it employs more than 2,200 people and accounts for over 15 percent of the country's aerospace output. Rolls-Royce is also a committed contributor to establish Singapore as a leading regional hub for talent in the aviation and aerospace sectors. The company's Regional Training Centre at Seletar for example, is part of the global network of Rolls-Royce training centres that is dedicated to offer the latest technology, equipment and facilities which will give individuals and companies in



the region access to world class training and internationally accredited qualifications. The centre offers over 400 different modules ranging from information technology to management, leadership as well as technical skills applicable across all Rolls-Royce business sectors.

To support the local industry further, Rolls-Royce is in close partnership with various agencies and institutions across government and academia, to train and develop talent, and cultivate a culture of engineering excellence. Rolls-Royce's commitment to develop



high-value skills and nurture young talent for the future is evident by its robust internship programme. Big thoughts, ambitions and aspirations are the three key elements of this programme, where selected students get to experience challenging real-life assignments designed to help him or her gain practical knowledge with a world-class organisation.

Throughout the Rolls-Royce internship programme, students would also have access to a large number of Rolls-Royce professionals comprising multi-disciplinary professionals, specialists and world experts in their field. Apart from the internship programme, Rolls-Royce's focus on education has yielded several partnerships in Singapore:

Students get to work at Rolls-Royce facilities in or outside Singapore

TERTIARY INSTITUTIONS

Rolls-Royce works closely with the following institutions to establish engineering and scholarship programmes in aerospace as well as industrial attachments for students seeking work and hands-on experience in a fast-paced aviation industry. Some of these attachments include 20-weeks long stints in Derby, UK, for third and fourth year engineering students. Industrial placement is also extended to Singapore University of Technology and Design.

➔ **Nanyang Technological University**

Internship programmes with Rolls-Royce can last up to six months and available in a range of disciplines including aerospace engineering, purchasing/supply chain, advanced technology centre – electrical & computing, information technology, and marine services – engineering & sales. Industrial training can be started at various times of the year depending on the university's schedules.

➔ **Nanyang Polytechnic**

Students get to work in different departments during internship with Rolls-Royce, which can now go up to nine months long with new plans by the SkillsFuture Council to spearhead efforts for an integrated system of education, training and career progression. Students will be assessed based on specific skills and assigned with a mentor as well as a workplace supervisor to ensure quality understanding of their skills.

➔ **Institute of Technical Education (ITE)**

In 2010, an agreement was signed between Rolls-Royce and ITE for the provision of core skills in aerospace manufacturing to be added to the ITE curriculum. An MoU was also subsequently signed, offering internships, aerospace related scholarships and specialist courses to equip the engineers of the future with the technical skills needed by the aerospace industry. Each year, Rolls-Royce takes on 30 students from Institute of Technical Education for internship, five of whom are under scholarships for a placement for four to six months. Recipients of the scholarship and ITE staff also have

AEROEDU/YOUTH



the chance to work at Rolls-Royce facilities in or outside Singapore, and collaborate on relevant joint projects. The training focuses on specialist courses that equip the students with world-class technical skills vital for both the aerospace and marine industries. Upon graduation, students get an opportunity to take up a technical role within the company.

POST-EDUCATION Training Initiatives by EDB

Rolls-Royce participates in the Singapore Economic Development Board's Training and Attachment Programme (TAP), which is an initiative designed to help companies develop manpower capabilities and prepare for growth. Through TAP, training – both in Singapore and abroad, are available to engineers and other professionals. In addition, the Industrial Postgraduate Programme, also managed by EDB, allows students to pursue their PhD degrees while being employed by Rolls-Royce and conduct research on subjects that are of importance to the company.

Skills Training and Upgrading

Rolls-Royce has also partnered with e2i (Employment and Employability Institute) and the Singapore Workforce Development Agency (WDA) on a training programme structured around Workforce Skills Qualification (WSQ) Aerospace and Precision Engineering modules. Trainees have the opportunity to work closely with



ABOVE:
The Rolls-Royce Trent 1000 engine powers the Boeing 787 Dreamliner

Trent 900 and Trent 1000 engines, ensuring that their training mirrors the activity that they would eventually undertake on the shop floor.

FUTURE PARTNERSHIP STEM Ambassador Program

Rolls-Royce is currently working to expand its outreach activities further with a STEM Ambassador Program later this year. While planning is still underway, the company has started identifying key experts within the Science, Technology, Engineering and Maths (STEM) fields to become the mentors/STEM ambassadors. These mentors will go into schools and talk to students about the amazing career opportunities available in STEM industries. Globally, there are over 1,000 Rolls-Royce STEM ambassadors who are actively involved in education programmes and activities. Rolls-Royce is committed to inspiring young people to pursue rewarding careers in STEM fields. The company is targeting to reach 6 million people globally through its STEM education programmes and outreach activities by 2020.





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SKY IS THE LIMIT

Aerospace Singapore talks to some of the brightest individuals here about pursuing their dreams and why an education in the fields of aeronautics, aviation and aerospace is like no other.

ABDUL LATIF BIN AHAMED BASIR

Bachelor of Science in Aeronautics, Embry-Riddle Aeronautical University Asia

As a final year student at Embry-Riddle Aeronautical University Asia, I am only a few modules away from graduation. Having been used to the Singapore education system, my learning journey at ERAU has been an eye opener. Industry professionals with vast experience in the field of aviation, our instructors are flown in from the American campuses. I truly admire their style of teaching; it is never about memorising the entire text or swallowing every morsel of redundant information without comprehension. They are hell-bent on getting you to meet, understand and apply every single one of the courses' learning objectives. They motivate you to reach levels of greatness you never dared fathom yourself. I find myself undertaking modules which I could actually apply in real life situations. Having said this, I truly look forward to joining the highly qualified and capable professionals in Singapore's aviation sector.



MATTHEW YAP WEI CHUEN

Bachelor of Science in Aeronautics (Minor in Unmanned Aerial Systems), Embry-Riddle Aeronautical University Asia

It has been an experiential learning journey studying in Embry-Riddle Aeronautical University Asia, and I would like to express my gratitude and appreciation to everyone in the Embry-Riddle family that has made this happen.

Embry-Riddle has given me a wonderful opportunity to realise my dream for aviation since young, and the school has provided me with the necessary skills and knowledge required to enter the aviation corporate world.

The courses prepared by the school are very much relevant to the

Singapore aviation industry. For example, the Unmanned Aerial Systems (UAS) minor that I had taken online is applicable to the current trend of integrating UASs into the Singapore airspace. I especially enjoyed these online courses given the extensive amount of information every professor provided. They were very supportive (even though they were working in a different time zone in the US), and these courses allowed me to manage my time more efficiently and effectively. All of my online classmates came from diverse working backgrounds, sharing a wealth of skills and knowledge.

I am looking forward to entering the aviation world upon graduation in a few months' time.



NICHOLAS ONG JUN JIE

Diploma in Aerospace Electronics, Singapore Polytechnic

My three-year educational journey in the Diploma in Aerospace Electronics course offered by Singapore Polytechnic was indeed an enjoyable, holistic and fulfilling one. Besides giving me a head-start for a career in the aircraft Maintenance, Repair and Overhaul sector of the aerospace industry, the rigorous curriculum of the course has also prepared me well for further education in local and overseas universities.

The "Conceive, Design, Implement and Operate" engineering phases incorporated into the course integrates theoretical knowledge and practical skills to strengthen my engineering competencies in



project development, innovation ability and problem-solving. In addition, the course lecturers and tutors impart and inculcate life-long learning skills, as well as oral and written communication skills which are essential for working efficiently and effectively.

The six-week Industrial Training Programme which I completed in an overseas aerospace

engineering organisation provided me a valuable and enriching experience in an authentic working environment, where students were trained to acquire team work skills. This programme has also given me a clearer perspective of the aerospace industry.

This course has built up my confidence to be work ready, life ready and world ready.

FUH YANG JUN

Bachelor of Science (Hons) in Aircraft Engineering, Air Transport Training College

Since young, I have always been amazed by how such a heavy aircraft can fly in the air. I had studied Mechatronics Engineering (Aerospace) in Temasek Polytechnic and I am currently in the Bachelor of Science Aircraft Engineering programme in the Air Transport Training College. I am glad to be studying in a SAR-147 approved organisation which allows me to attain my Category B license quicker and gain the necessary knowledge to be a licensed aircraft engineer.

My attachment at Singapore HAECO Pte Ltd at Changi Airport Terminal 3 was really enjoyable. I experienced the working life in a

line maintenance organisation. Problems faced there were often unexpected and required a lot of experience and problem-solving skills to get the aircraft back in the air. There was once when it rained really heavily but we still had to strip the blades off of an engine. We were dripping wet but it was a memorable experience. It may have been stressful but the sense of satisfaction was real.

Taking an aerospace engineering course is not easy. It would be even harder for someone who does not have the interest or passion for aircraft. No matter how difficult the memorising and understanding of formulas and textbooks could be, there is still the prospect of a good job in future. With the ongoing works for Terminals 4 and 5 at Changi Airport, there will be more job opportunities open to us. I cannot wait to start my life as an aircraft engineer.

CHUA YONG CHUN

Diploma in Aeronautical Engineering, Singapore Polytechnic



The Diploma in Aeronautical Engineering (DARE) offered by Singapore Polytechnic (SP) is viewed as one of, if not, the best polytechnic engineering course in Singapore. That was all I knew when I chose it after my O levels. But after three years of hard work, fond memories

and life changing experiences, I now know why it is considered one of the top polytechnic courses.

As president of the Singapore Polytechnic Aviation Club, I head a group and a CCA that runs on passion. The only reason for our involvement in the Club is our love for aviation – CCA points are of minimal importance, if any at all. We love to create and pilot our own aero models. As most of us are from the DARE course, we are also able to utilise some of the theories learnt in classrooms at a more practical level. You might think, “All these guys do is play with toy aeroplanes”, but the sense of satisfaction and thrill it provides can only be experienced first-hand. In addition, we also run outreach programmes organised by our lecturers for secondary school students. This allows us to share our passion with others and hopefully inspire the next generation of aviation enthusiasts. As we like to say: Aviation is love, aviation is life.

It is also all thanks to the lecturers who make it happen. They are the ones who are adamant in maintaining a minimum standard of difficulty for the course. They are the ones who fight to give us exposure and experiences that will stay with us for the rest of our lives. They are the ones who push us just enough to bring out the best in all of us. These are the things that make up education and that is why DARE in SP is as good as it is. It is by no means easy but boy, is it worth it!



ESTELLA KOH SIEW LEE

Diploma in Aerospace Engineering (Merit), Temasek Polytechnic

The novelist, Joseph Conrad (1857—1924), once wrote: “Being a woman is a terribly difficult task, since it consists principally in dealing with men.” Perhaps, he had the male-dominated world of Aerospace Engineering in mind!

I do remember the awkward feeling as I stepped into the classroom on my first day in the Diploma in Aerospace Engineering course at Temasek Polytechnic – I was one of only two girls in my class of 26 students! However, that awkwardness gradually disappeared and contrary to Conrad’s words, working with my male classmates was not such a “terribly difficult task” after all. In fact, I was deeply enriched by their complementary male perspectives.

During my 4-month internship in the Quality Assurance Department at Pratt & Whitney Canada (SEA), I was, once again, a rose among thorns. As it turned out, gender did not matter, and it was a truly beneficial stint during which I helped to verify audit findings and in the process, learnt about the SAR-145 regulatory framework of eight different countries.

My friends joke that being a female in a male-dominated industry has its benefits, as male colleagues tend to be more helpful and forgiving to a female. But that was certainly not my reason for choosing to major in Aerospace! I did so because Aerospace is my passion, and I believe that a female can perform as well as – if not better than – any male in the aerospace field. ^{AS}



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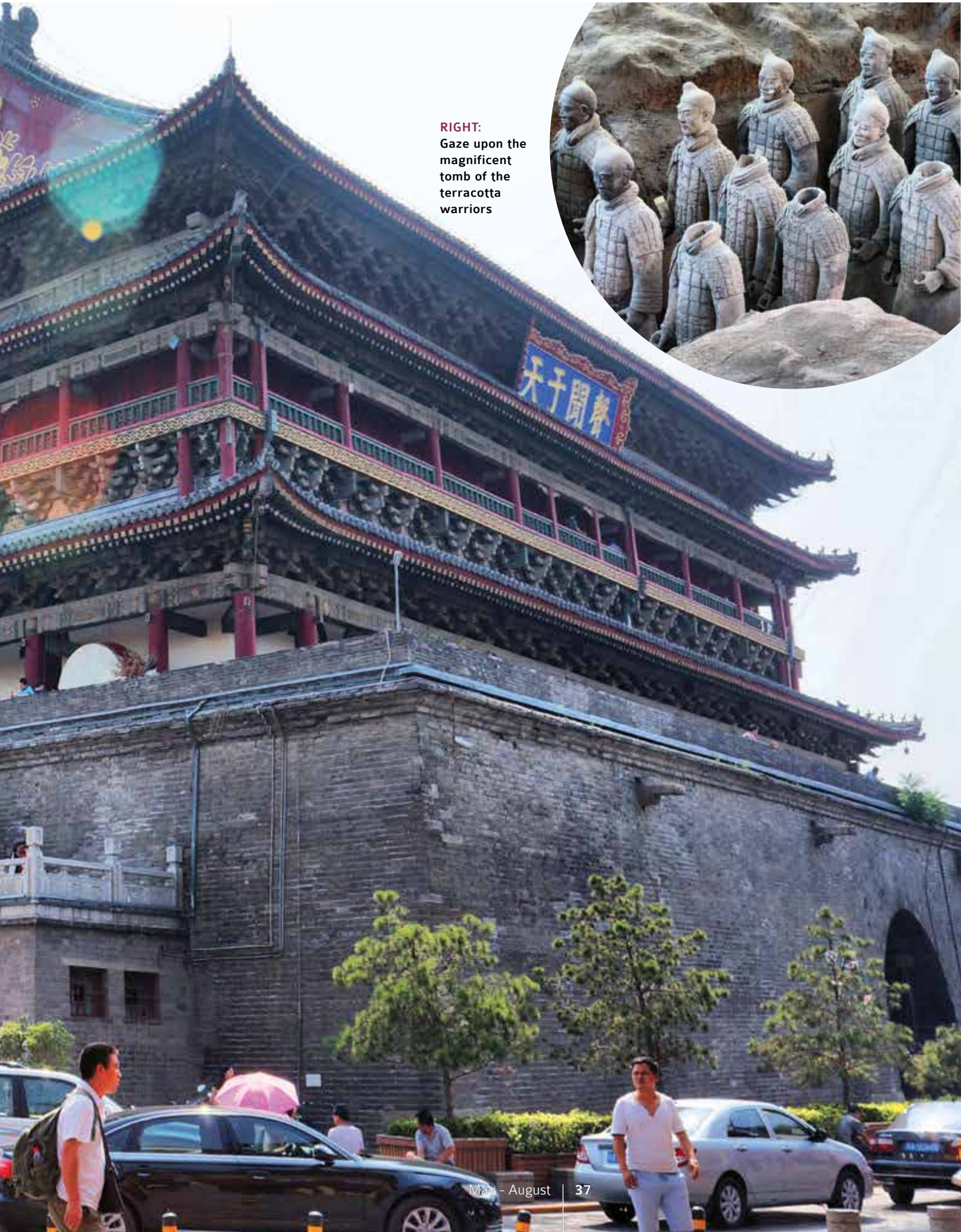
aerospace - aviation industry - destination promotion - aerial photography

XI'AN AN ANCIENT CITY BECKONS

Its history literally began in the Stone Age 3000 years ago and it served as the capital of China for several ancient dynasties. A great metropolis that was as important as Rome in its heyday.

MAIN:
Climb up the
Drum Tower
that dates back
to the Ming
Dynasty





RIGHT:
Gaze upon the magnificent tomb of the terracotta warriors



AEROSTYLE



It was the starting point of the ancient Silk Road – the largest overland trade route linking China to Central Asia and Europe. It has 4000 historical sites and tombs, the grandest of them all being the Terracotta Army. Welcome to Xi'an! The ancients knew it as Chang'an, the land of perpetual peace.

Motorised cycles swerved past me, pink buses and green taxis rushed by, the grey skies of a heavily industrialised city drooped over me, but this was not just a modern metropolis. Xi'an, the capital of the Shaanxi province seemed to be amused by my presence. Many have passed through its venerable land and I, too, am another traveller who has come to gape at its treasures.

It was once the capital of China, but even after the capital was relocated, the city remained an important military stronghold for



LEFT:
The Muslim Quarter is an amazing street market for food

ABOVE:
Learn about Emperor Qin's obsessive quest for the secret of immortality

RIGHT:
The wooden memorial archway at the Great Mosque

centuries. Merchants from various parts of the world carried precious cargo to and from this land on the trade routes that they built, laying the foundation and formation of what came to be known as the Silk Road – a road that linked China, India, Persia, Greece, Rome and several other important markets of the time. The road brought with it not just fortunes but also diverse ethnic identities and religious beliefs.

The central location of Xi'an, near the confluence of the Wei and Feng Rivers, helps explain why the area was the site of several important imperial capitals for almost a millennium of Chinese history. The ancient city wall is a reminder of the city's greatness.





RIGHT:
The Huaqing
Hot Springs
transforms
into a magical
stage at dusk



It wraps itself seamlessly around the metropolis, with its construction started during the Tang Dynasty (618–907) and later on expanded by Zhu Yuanzhang, the first Emperor of the Ming Dynasty (1368–1644).

I climbed more than a hundred steps to the top and was dumbfounded at how well-preserved everything was. Remember, Xi'an is more than 3000 years old and was ruled by 73 emperors over 13 dynasties across a period spanning a thousand years!

The wall stands 12 meters tall, 12-14 meters wide at the top and 15-18 meters thick at the bottom. It is 13.7 kilometres in length and surrounded by a deep moat.

Every 120 meters, a rampart extends out from the main wall. In total, there are 98 ramparts, which were built to deter enemies from climbing up the wall. Each rampart has a sentry building, in which the soldiers could protect the entire wall without exposing themselves to the enemy.

It would take about four hours to complete a walk around the city wall at a leisurely pace. Alternatively, you could rent a bicycle from any of the many designated stores around. From the wall you can see the ancient Bell Tower, a beautiful building which denotes the city centre within the walls.

You can also see how the modern city, with its tall apartments and office blocks, has developed outside the city wall. Within the walls, however, the Chinese Government has rightly placed restrictions on the height of a building that can be constructed. So on one side of the wall you have the monstrosity of modern architecture that we have all contributed to, and on the other side are buildings which are traditional, shorter and prettier.

The wall is decorated with many lanterns and I could just imagine how beautiful it would look at night. But as usual, time was not my



“
**EVERY 120 METERS, A RAMPART
EXTENDS OUT FROM THE MAIN WALL.
IN TOTAL, THERE ARE 98 RAMPARTS,
WHICH WERE BUILT TO DETER ENEMIES
FROM CLIMBING UP THE WALL.**

”

friend. I was there for only 30 minutes during the day but I did manage to get a stunning shot of the wall from my hotel room at night.

After a few minutes walking around the wall within the area of the South Gate (Yong Ning Men), I took refuge from the sun under the gate tower. Much to my delight, I discovered that this ancient wall can offer you free Wi-Fi! I have travelled and lived in modern cities where Wi-Fi services are non-existent! So there I was sitting on stone dating back several centuries posting photos on Instagram! 📸

TRAVEL TIPS

Remember when you visit this place, go through the South Gate. It's the best place to go through because it is the largest and most accessed. The South Gate is open from 8am to 10pm and tickets cost US\$9 (RMB 54 or S\$12).

AAIS

HOST @ GRAND COPTHORNE WATERFRONT HOTEL SINGAPORE

The AAIS held its first networking event for the year on 5 February 2015 at the Grand Copthorne Waterfront Hotel

Singapore. More than 20 professionals from the aerospace industry were in attendance. The quarterly held HOST sessions provide a great opportunity for industry members to come together and mingle in a relaxed environment, complete with



great food and refreshments.

The evening started off with a welcome address from Tin Ho, 2nd Vice President of AAIS. It was followed by a short presentation by Kelvin Seah, Vice President, Sales and Marketing Asia, Millennium & Copthorne. Guests were then given a tour of the hotel's event spaces and state-of-the-art facilities, as well as its serviced apartments, rooms and grounds.

As Chinese New Year was just around the corner, Grand Copthorne Waterfront Singapore arranged a "Lo-Hei" (Prosperity Toss) to wish all the attendees good fortune in the Year of the Goat. Two lucky draws were also conducted which saw 10 winners walk away with food vouchers and hotel stays sponsored by Grand Copthorne Waterfront Hotel Singapore.

The AAIS thanks Grand Copthorne Waterfront Hotel Singapore and all our guests for making the first HOST of 2015 a success.

HOST @ ORCHARD HOTEL SINGAPORE

AAIS was proud to partner Orchard Hotel Singapore for the second HOST session in 2015. The networking event was held at the beautiful poolside of Orchard Hotel Singapore. The relaxing and cosy atmosphere encouraged the more than 30 guests to mingle and network with each other while enjoying the sumptuous food and drinks.

The evening started off with a welcome address from Mr T Hastings Siegfried, Honorary Secretary of the AAIS Management Committee, followed by remarks by



Mr Richard Ong, General Manager of Orchard Hotel. The evening carried on with guests given a short tour of the hotel grounds.

A Lucky draw session was conducted, with five lucky guests winning dining vouchers and hotel stays sponsored by the Millenium and Copthorne Group Singapore.

The AAIS would like to thank Orchard Hotel Singapore, their dedicated team and all guests for making this HOST Session a memorable and lovely one!

JTC AVIATION THREE FOCUS GROUP

In support of JTC, the AAIS organised an engagement session, where we invited a select number of industry members to a focus-group discussion on the JTC Aviation Three @ Seletar Aerospace Park (SAP) project concept. Riding on the success of its predecessors – JTC Aerospace, JTC Aviation One and JTC Aviation Two – JTC Aviation Three is conceptualised as a hybrid development in SAP comprising hangars, support workshops and high-rise industrial space.

At the discussion held on 21 January 2015, JTC presented the concept to the representatives and engaged in a question-and-answer session. One key area which JTC sought the industry's feedback on was the functionality, feasibility and security of hangar operations within such a hybrid development.

The session proved to be fruitful and useful to both JTC and the industry representatives. AAIS is pleased to have facilitated this discussion and will continue to provide such platforms for corporations and government agencies alike to engage with key players of the Singapore aerospace industry and vice-versa.



AAIS ANNUAL FUTSAL TOURNAMENT 2015

The **AAIS Annual Futsal Tournament 2015** was held on 21 March at Uber Sports East Coast. With the participation of 27 teams from 18 companies and a total of 189 players, the tournament achieved the best turn-out in its history.

Kicking off the event, AAIS Assistant Honorary Treasurer, Steve Price, gave a rousing welcome address before lending his support to the players.

After gruelling rounds of group and final matches, the team from Rolls-Royce emerged as champions. TOS FC and SAESL took home the first and second runner-up trophies respectively. In addition, Abdul Kadir Hassan of SAESL was awarded the Most Valuable Player for his exceptional performance on the pitch.

AAIS congratulates the winners and thanks all participants for making this event a roaring success. We look forward to another exciting futsal tournament next year! 🏆

Most Valuable Player



UPCOMING EVENTS

AAIS ANNUAL BOWLING TOURNAMENT 2015

The AAIS annual Bowling Tournament will be taking place on Saturday 20 June 2015 at Orchid Bowl@SAFRA Tampines. With a cash prize of S\$888 awaiting the team champion, who will strike it rich? Will it be a repeat victory by the Pratt & Whitney Canada (SEA) team or will there be a major upset in 2015? Find out in our next issue or head down to Orchid Bowl @ SAFRA Tampines to support your favourite team!

ANNUAL AEROSPACE HUMAN RESOURCE FORUM 2015

The annual forum organised by AAIS, serves as a platform for Human Resource professionals from aerospace companies to network, while at the same time gaining insights and tools to improve the human capital processes in their organisations. This year, the forum, which will be held on Friday 24 July 2015, focuses on the topic of SkillsFuture. In particular, representatives from the Singapore Workforce Development Agency (WDA) will inform participants on the SkillFuture initiatives, schemes and programmes that are tailored to the aerospace sector. Registration for the forum will be open on 5 June 2015 at http://www.aais.org.sg/aerospace_hr_forum.

THE AMAZING AVIATORS RACE 2015

In conjunction with the SG50 celebrations and following the success of its inaugural run, AAIS will be holding the second instalment of the Amazing Aviators Race on Saturday 5 September 2015. Modelled after the 'Amazing Race' concept, 100 teams will race to designated pit-stops around the island and complete a series of aviation and SG50-themed tasks and challenges, in a bid to win a range of attractive prizes. If you and your friends have the endurance, resourcefulness and knowledge to prevail, form a team of four and register for the race at http://www.aais.org.sg/taar_2015. Amazing goodie bags will be up for grabs too!

NEW MEMBERS



ORDINARY MEMBERSHIP
Composite Technology International Pte Ltd (CTIPL)

Composite Technology International Pte Ltd (CTIPL) is an authorised Customer Service Facility for Airbus Helicopters, Bell Helicopter, Sikorsky and AgustaWestland. The company has been active in Singapore since 1984 providing quality rotor blade maintenance, repair and overhaul requirements for helicopter operators in the Asia and Oceania region. More information on CTIPL can be found in its website at www.cti.com.sg.



ORDINARY MEMBERSHIP
Excel Aerospace Pte Ltd

Excel Aerospace Pte Ltd is a multi-national approved Aircraft Cabin MRO company, which provides MRO solutions for both commercial and private aircraft operators and owners. Its services include certified Turn-Key, One-Stop-Shop, parts, customisation, and modification solutions for Cabin Interior Works. Excel Aerospace has accumulated many years of experience with world-renowned aerospace companies and international airlines. Their customers range from aircraft manufacturers, commercial airlines and private-jet owners to air forces worldwide.



ASSOCIATE MEMBERSHIP
Daifuku Mechatronics Singapore Pte Ltd

Daifuku Mechatronics (Singapore) Pte Ltd helps companies improve their businesses by implementing automated material handling systems, RFID and software solutions. Daifuku assists customers with each step of factory and material handling, automotive assembly line and cleanroom automation from planning to proposal, design, manufacturing, installation, after-sales service and facility retrofits. Their extensive resources and broad experience has made Daifuku a leader in technology, quality, reliability, service and 24/7 after-sales support.



ASSOCIATE MEMBERSHIP
MNX Singapore Pte Ltd

MNX Global Logistics, headquartered in California USA, is an ASA-100 accredited critical logistics provider to the aviation industry. MNX designs customised solutions for the shipping, storage and control of aircraft components. Anywhere in the world, their 24/7/365 Aviation Desk will help deliver the components you need. Their goal is simple: to provide services that fulfil your mission to keep your aircraft flying.



ORDINARY MEMBERSHIP
Testia

Testia, a fresh venture for the Asia Pacific Region, brings Airbus experience and expertise in Quality Assurance to the global market. Testia Asia-Pacific headquarters in Singapore offers EASA approved companies, accredited training and certification for Non-destructive Testing meeting EN4179 and NAS 410. Testia distributes and customise a suite of complementary tools based on tablet PC. Within the same time zone Testia delivers complete solutions for your Quality, training, Testing, services and Equipment needs.



ASSOCIATE MEMBERSHIP
Star Metal Recall Pte Ltd

Star Metal Recall Pte Ltd (SMRS) is a service provider of Total Scrap Management (TSM) for the aerospace industry. SMRS manages end-of-life aircraft parts to maximise residual value / minimise cost of controlled waste disposal and ensures full compliance with FAA rules and regulations while preserving the environment to achieve Green Status. All materials treated through the TSM process, are certified by ISO 9001:2008, documented and provided a certificate of mutilation. The programme is based on self-financed profit-sharing.



ASSOCIATE MEMBERSHIP
Keppel Logistics Pte Ltd

Keppel Logistics Pte Ltd, a wholly-owned subsidiary of Keppel Telecommunications & Transportation, is a leading Third-Party Logistics service provider based in Singapore with over 40 years of experience in offering customised integrated logistics solutions. It currently also operates world-class logistics facilities with state-of-the-art IT infrastructure in China, Hong Kong, Malaysia, Indonesia, Vietnam and Australia.



ASSOCIATE MEMBERSHIP
Optical Gaging (S) Pte Ltd

Optical Gaging (S) Pte Ltd (OGS) is a QVI USA Company specialising in the manufacture and design of multi-sensor metrology systems. OGS provides supports to South East Asia via Sales/Technical Centres and authorised representatives in the aerospace, medical, automotive, data storage, telecommunications and electronics industries. Its product range includes multi-sensor metrology machine OGP SmartScope, 3D laser scanner ShapeGrabber, shop-floor CMM Itaca Flexgauge, CT Scanner SHAKE SHR, and optical measuring machine for turned parts Vici Vision MTL.



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AAIS TRAINING CALENDAR

The Professional Development arm of AAIS offers a spectrum of training and development programmes throughout the year. These range from general or soft-skill courses to industry-specific certification courses.

AEROSPACE & INTERNATIONAL STANDARDS

AS 9100 Rev C Lead Auditor Training
22 to 26 June 2015
24 to 28 August 2015

Understanding and Implementing AS9100:2009
20 August 2015

AS 9100:2009 Internal Auditor Course
20 & 21 August 2015

Understanding and Implementing AS9120:2009 QMS
18 June 2015
17 September 2015

AS 9120:2009 Internal Auditor Course
18 & 19 June 2015
17 & 18 September 2015

ISO 9001 Internal Auditor Training
2 & 3 June 2015
1 & 2 July 2015
11 & 12 August 2015
1 & 2 September 2015

ISO 14001 Internal Auditor Training
2 & 3 June 2015
1 & 2 July 2015
11 & 12 August 2015
1 & 2 September 2015

OHSAS 18001 Internal Auditor Training
4 & 5 June 2015
13 & 14 July 2015
13 & 14 August 2015
3 & 4 September 2015

QEHS Internal Auditor Training
22 to 24 June 2015
29 to 31 July 2015
26 to 28 August 2015
21 to 23 September 2015

ISO 9001 Lead Auditor Training
8 to 12 June 2015
6 to 10 July 2015
3 to 7 August 2015
7 to 11 September 2015

ISO 14001 Lead Auditor Training
8 to 12 June 2015
6 to 10 July 2015
3 to 7 August 2015
7 to 11 September 2015

OHSAS 18001 Lead Auditor Training
15 to 19 June 2015
20 to 24 July 2015
17 to 21 August 2015
14 to 18 September 2015

BIZSAFE

bizSAFE Level 1 Workshop for CEOs / Top Management
5 June 2015

bizSAFE Level 2 Risk Management Course
11 & 12 June 2015

REGULATORY (FAA)

Part 145 Repair Stations including EASA, AS9110 Standards, PMA, FAA Form 8130-9 Usage, and SMS Updates
28 & 29 September 2015

REGULATORY (EASA)

EASA Part 145 Maintenance Organisation Approvals
22 & 23 July 2015

SPECIAL PROCESSES (NADCAP)

Introduction to Pyrometry
7 & 8 September 2015

Heat Treating – Process Owner
9 & 10 September 2015



e-ATVs are available to be used for training courses from 1 October 2014 to 30 September 2015.

*Information accurate at time of print. AAIS reserves the right to cancel/postpone/re-schedule the above courses as a result of any unforeseen circumstances. Visit www.ais.org.sg/training for an updated list of training courses.



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