

INVEST-IN-PENANG BERHAD

STUDY ON THE AEROSPACE INDUSTRY IN PENANG

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1. INTRODUCTION

With Penang International Airport (PIA) the 3rd highest air traffic (MAHB: 5.5 million passenger throughput) in the country, Penang provides a conducive environment and infrastructure for a vibrant aviation cluster. About 20% of all aerospace activities are located in the state, the largest outside of Klang Valley. The total turnover of the industry grew 9.4% to RM 30.3 billion in 2012 from RM 27.7 billion in 2011 representing 3.2% to the gross domestic product (GDP) and reflects the optimistic sentiment in the industry.

2. AEROSPACE INDUSTRY

According to Boeing forecasts, GDP is to grow 4.7% per year over next 20 years, above world average growth rate of 3.3%, while Asia's share of world's GDP to expand from 27% today to 35% by 2030. Air traffic to grow 6.7% per year over next 20 years, world traffic growth at 5.1% per year with shorter-haul flying, including domestic and inter-regional travel, to grow at 7.0% per year.

2.1 Aerospace in Asia Pacific and ASEAN

There is positive outlook as the global demand for air traffic is growing, especially in emerging markets. According to Boeing forecasts, one-half of world's new air traffic added during next 20 years will be within Asia Pacific region, and the number of aircrafts is expected to triple from 4,110 in 2009 to 12,200 in 2029. Southeast Asia airlines will need 2,750 new airplanes valued at USD 410 billion (2011-2030). According to Airbus Global Market Forecast, Asia Pacific will lead in world traffic by 2032 (Airbus, 28 Jan 2014).

Global business consulting firm Frost & Sullivan recently forecasted a regional growth rate of at least 3% during the next years, which would further support the demand for commercial air transport, new aircrafts and related services. Similar developments have emerged globally, where ASEAN will play a bigger role in the future. The global market is estimated at about US \$44 billion in 2011 and experiencing a steady growth rate of 4%. In this context, Asia is believed to contribute more than US \$11 billion, still lagging behind US and Europe. Generally, Frost & Sullivan forecasts a shift of air fleets to the Asia Pacific region, which will comprise 40 % of the global air traffic within two decades.

According to Frost & Sullivan, passenger traffic across airports in the five major ASEAN countries of Malaysia, Singapore, Indonesia, Philippines and Thailand, is expected to reach close to 318 million passengers by 2017. The one single aviation market of ASEAN Economic Community (AEC) and open skies agreements among ASEAN countries are expected to drive growth of these industries in the region (Frost & Sullivan, 2 January 2013)

2.2. Industry Outlook Malaysia

The Aerospace industry has been developed according to four main focus areas, which were targeted to streamline all efforts instead of a broad approach:

- Maintenance, Repair and Overhaul (MRO)
- Parts and Components Manufacturing
- Avionics and Systems
- Aviation

Malaysia has a good position in the centre of ASEAN and with already well-established aerospace cluster. Some key aerospace manufacturing projects are located in Penang. Developments in this context are often related to the state of Penang with its excellent location with respect to the Indonesia, Malaysia, and Thailand – Golden Triangle (IMT-GT), infrastructure and facilities. Penang International Airport has good connections with major cities in Southeast Asia. Majority of companies chose to be located around in Selangor (50%) or Kuala Lumpur (28%), and balance in Penang (17%) and others (5%).

In aviation, there are fifteen passenger / cargo aircraft operators in Malaysia:

- Commercial Airlines: Air Asia, Air Asia X, Berjaya Air, Firefly, Malaysia Airlines, Malindo Air, MAS Wings
- Chartered Airlines: Eaglexpress Air, Flyjet, Royal Malaysian Air Force, Weststar Aviation
- Cargo Airlines: Gading Sari Aviation Services, Maskargo, Neptune Air, Transmile

Source: Planespotters.net, "Operator Aircraft List Malaysia"

The Malaysian Industry-Government Group for High Technology (MIGHT) reported on the thriving aerospace sector growing by 9.4% in 2012, which would translate into a contribution of 3.23% to the national gross domestic product (GDP). Aerospace is currently achieving a turnover of RM 30.3 billion and forecasted to reach RM 32.7 billion in 2013. Some key elements of this development are investment promotion activities which resulted in a number of quality projects from USA or Singapore. Big names Honeywell and SAM can be found in Penang. For Malaysia, the focus on aerospace sector is about economic growth, technology transfer as well as creating highly value-added jobs.

2.3. Aerospace Subsectors in Malaysia

The government is promoting the growth of manufacturing of components and parts. This can be easily explained analysing the export statistics; MRO may require a lot of import activities, since not all components or parts are readily available in Malaysia and this is affecting the country's trade balance.

The aerospace industry import values have been rising in regard to the economic activities. This inequity has become even worse in 2012, where there was a surge in imports up to RM 13.2 billion involving aircraft, raw materials and spares, while exports remain low at RM 2.2 billion comprising mainly aerospace parts and components (BERNAMA, 27 Mar 2013). Consequently, it is very sensible to intensify aerospace manufacturing of high-value products that will simply raise the export numbers.

Perhaps the most mature subsector would be aviation, while it is undergoing some of the most dramatic changes in recent years. This refers mainly to the fabulous growth and accomplishment of budget airlines in Malaysia and lastly in ASEAN. This maturity is reflected in the strong growth of the sector. Malaysia's aerospace industry in 2012 grew 9.4 per cent to RM30 billion compared to 2011 and contributed 3.23 per cent to the country's Gross Domestic Product (GDP) (BERNAMA, 27 Mar 2013). Malaysian aviation sector with approximately RM 20.5 billion turnover holds the largest share within the aerospace industry. The industry observed the rise of Air Asia, Firefly and Malindo Air, which are competing increasingly in and outside of Malaysia region. Overall passenger traffic at all 39 Malaysia Airports Holdings Berhad (MAHB) airports surpassed 67 million passengers in 2012 representing an annual growth rate of 5% per annum.

For the MRO sector, an income of RM5 billion was recorded, while for the manufacture of aircraft components, about 8,000 workers with a variety of skills and 1,500 engineers are expected to be produced. In total 65,000 of all aerospace jobs having been successfully created to 2012 (BERNAMA, 22 Mar 2013). Though the avionic and systems integration sub-sector has just emerged since 2011, the income has exceeded those from aerostructure manufacturing.

The aerostructure manufacturing is the main driving force of export growth for the aerospace sector. Furthermore, investments of the SAM Group will bring another company into Penang, which is capable of providing engine components and parts. SAM Malaysia provides integrated equipment manufacturing and precision engineering services to customers in aerospace and other industries. SAM Malaysia is the only Malaysian high precision engineering company producing complex aero-engine parts for commercial aircraft. SAM Malaysia's plan is to develop into a leading aerospace player in Asia Pacific with a RM1 billion revenue. This specific expertise is high on the agenda of the Penang government and will widen the footprint of the local manufacturing landscape. Avionic and Systems integration is mainly driven by Honeywell Aerospace, but also supported by multinationals such as Plexus closing gaps in the supply chain.

2.4 Penang's Aerospace Cluster

Penang is a major electronics manufacturing hub in Malaysia. One of the key advantages of Penang is availability of excellent infrastructure. Besides, positive expansion and developments in Penang International Airport also acted on rising demand. In this case, the state has Penang International Airport (PIA) which has been expanding steadily in regard to passenger throughput. This extension has a value of approximately RM250 million. Passenger throughput grew 15% from 4.8 million to 5.5 million in 2013 as well as recovery could be seen in air-cargo with more than 121,000 tonnes achieved for 2012.

Furthermore, there are several related organisations located in Penang create a certain competitive advantage, include research and education, such as Universiti Sains Malaysia (USM) which offers aerospace engineering programme.

Considering all developments and trends, the aerospace sector will find in Penang a strong destination with suitable infrastructure and partners to develop their business. Another merit is the strategic central of Penang's location as a regional hub within IMT-GT and ASEAN, which offers easy access to the regional market. The ASEAN Economic Community (AEC) 2015 and further agreements on investment policies such as ASEAN Comprehensive Investment Agreement (ACIA) will standardise requirements to trade and invest. Penang can be a launch pad due to a stable political environment, excellent infrastructure and skilful multi-lingual workforce.

2.5 Penang Aerospace Manufacturing Supply Chain

Currently, there are over 13 companies in Penang involved in the manufacture and supply chain of aircraft components and parts including aerospace structures, avionics, engines, cable assemblies, connectors, PCBA, sub-assembly, machining solutions, moulding, precision machining and grinding and special surface treatment process .

Supply Chain	Companies	Aerospace Products
Tier 1	Honeywell	Aerospace products and services, avionics integrated supply chain activities.
Tier 2	Advanced Manufacturing	Sub-Assembly, PCBA and box-built for aerospace and avionics products
Tier 2	Plexus Manufacturing	PCBA and fully complete products for aerospace
Tier 2	SAM	Aerospace engine mounts, airfoils, engine cases and structural parts

Tier 3	Amphenol Manufacturing	Connectors, cable assemblies and integrated system aerospace industry
Tier 3	Koma Kogyo	Aerospace parts
Tier 3	Paradigm Metal Industries	Accessories and parts for aerospace
Tier 3	World Micro	Aerospace electronics parts hub
Tier 4	Aeromek Manufacturing	Aerospace components including precision aircraft wing structures and parts and special surfaces treatment process
Tier 4	Aviatron	Machined aerospace structures
Tier 4	Benchmark Electronics	Precision multi axis machining and grinding of aerospace engine blades, vanes, nozzles and other complex parts, precision grinding of mass spectrometer
Tier 4	Technoflex	Moulds and precision machined parts for aerospace
Tier 4	Tornos	Machining solutions for aerospace components

3. TRENDS AND DEVELOPMENT

Investors have clearly chosen Penang because of the strategic location, growth potential within the region and an excellent infrastructure. There is a great opportunity to locate regional headquarters within Penang. On top of many investment projects within the aerospace industry, there are also positive signs from the demand side.

Due to high jet fuel prices, airlines are aiming to modernize aging, less fuel-efficient airplanes with new, more fuel-efficient planes with higher reliability and better cost efficiency to reduce fuel expenses and the cost of air travel. In addition, the ASEAN Open Skies Policy: The Roadmap for Integration of Air Travel Sector, is included in the blueprint of ASEAN Economic Community (AEC) and the regulations are expected to loosen.

Therefore, the major trend of the low-cost carrier model continues to shape the air transport industry. The low-cost carrier movement has changed the avionic landscape in Malaysia and the whole ASEAN region. Malaysia Airports Holdings (MAH) is attracting new airlines to fly to Malaysian airports, and this denotes increasing future demand in MRO services. Air Asia was the first player in the market and has been constantly growing. Indonesia's market leader Lion Air has introduced their own low-cost carrier,

Malindo. From March 30, 2014, Cathay Pacific Group's Dragonair will commence Hong Kong – Penang route. Penang and especially the MRO sector, is set to yield from this development as new low-cost carrier will look into cost-efficient maintenance partners with sufficient experience and capacities.

According to Deloitte, the four emerging trends are:

- #1: OEMs and Tier 1 suppliers are moving to fast growing markets
- #2: The OEM landscape will be shaken by new players
- #3: OEMs are reducing in-house manufacturing to focus on integrated systems assembly
- #4: Global competition in lower tiers is becoming very fierce

The manufacturing activity is the most impacted by globalization. Not only the OEM invest directly in new assembly lines in foreign countries but Tier 1 suppliers do too, which accelerates the globalization in the supply chain and the manufacturing delocalization. (Deloitte, 12 November 2013)

Consequently, there are still many opportunities particularly from the regional perspective, and Penang, Malaysia provides vast opportunities for foreign partnership with established local players to leverage on *cost, capture better market share and positioning* in the region (Source: MIGHT).

Useful Contacts

- Ministry of Transport: <http://www.mot.gov.my>
- Department of Civil Aviation: <http://www.dca.gov.my>
- Malaysian Industry-Government Group for High Technology: <http://www.might.org.my>
- Might-Meteor Advanced Manufacturing Sdn Bhd (Aerospace Malaysia Innovation Centre):
<http://www.ami.net.my>

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