

TRIDENT AVIATION SERVICES GROUP: “SITE SELECTION INFO PAPER”

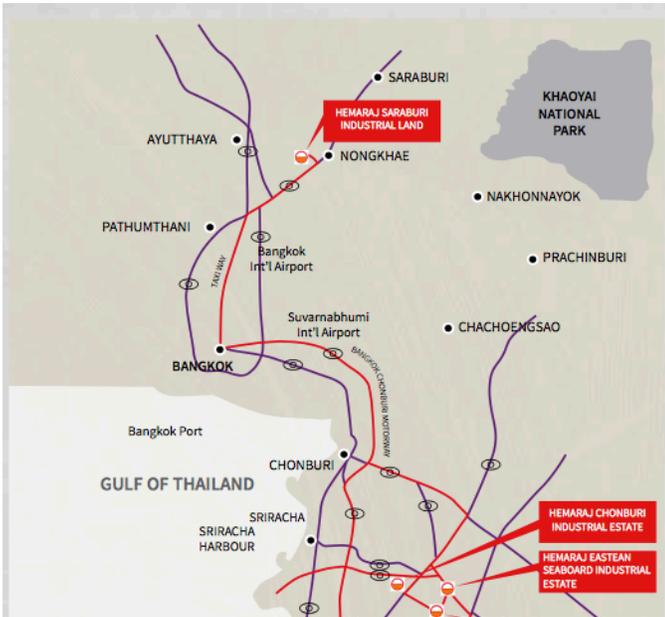
Why Thailand: While there are many comparison factors to consider when choosing a new operating location, the question that every board member wants answered is to understand the justification that led to the current proposal. Many of those statistics can be gleaned from numerical comparison graphs and this paper will highlight the significant key business competitive drivers. Additionally, it will emphasize the importance of country specific business climate and demonstrate that when various similarities exist between competitors. A favorable business climate is the essential element that can tip the scales in favor of a location that accentuates a cooperative business environment. What you will discover is that each of the ASEAN countries understands that location is important. China and India will be the two largest economic generators for the next 30 years and ASEAN is a geographic component. Also, government sponsored business incentives are for the most part, comparable and competitive. Wage costs and land prices will differ some, but those facts and figures do not significantly increase the chance of success when considering if this venture will ultimately be prosperous. Facts, figures, metrics and data are not always enough information from which to gain insight. While they can be used to substantiate a proposal, they are but pixels of the overall picture when validating the reasons for the decision for which county to choose. For just those reasons, Thailand is the choice of this proposal and the following explanations are germane.

Thailand is one of the easiest and most comfortable locations in Asia for Aerospace MRO and other forms of investment. While Thailand has faced increased competitiveness challenges from neighboring Asian countries, it has responded by offering investment incentives, streamlining import/export, and improving infrastructure. Additionally, banking reform and efforts to privatize more government functions by the current government should lead to more competition and even more supportive treatment of new investment projects. Indeed the US News and World report 2018 rankings have listed Thailand as the world’s number one location to “start a new business” <https://www.usnews.com/news/best-countries/start-a-business-full-list> besting Malaysia, Indonesia and even Singapore.

Currently, Asia contributes 32% of the world’s GDP with a total population of 3.5 billion. Thailand serves as an economic hub of Asia by virtue of its strategic location in the heart of the AEC benefiting production, trade, exports, and logistics. The country borders Cambodia, Laos, Myanmar, and is a short distance from Vietnam, all of which are undergoing rapid growth. Thailand is therefore one of the most suitable investment destinations - connecting Asia to the world.

One of the strategies of the Thai government is to transform the Eastern Economic Corridor (EEC), of Thailand (shown in the adjacent chart) towards stability, prosperity and sustainability, under the concept of Thailand 4.0. This will be implemented by investing in people and technologies, as well as developing critical infrastructure, eliminating or reforming rules and regulations that are obstacles to development, along with building industrial hubs for the future, thereby increasing Thailand’s competitiveness.

The government is developing new growth hubs by starting with the EEC, which covers Rayong, Chonburi, and Chachoengsao provinces, with a total area of 13,000 square kilometers. The government is also accelerating the area’s readiness to support all aspects of investment and economic growth, and fully expects that the EEC will be an important center for trade, investment, regional transportation, aerospace and a strategic gateway to Asia. The EEC can be characterized as follows:



- A major industrial area, with a strong focus on industries where Thailand is a leading global player such as the petrochemicals industry (among the top five in Asia), and the automotive and electronics sectors.
- A region offering modern and efficient infrastructure such as deep-sea ports, an airport, rail systems, highways, and industrial estates.
- A skilled labor pool
- A leading location for tourism

There are many factors to consider with choosing a location, as outlined below in Regional business competitiveness table:

Regional business competitiveness Drivers

	Thailand	Malaysia	Indonesia	Philippines	Vietnam
Ease of doing business	77.44	78.43	66.47	58.74	67.93
Ease Of starting a Business	92.34	87.38	77.93	68	82
Ease of dealing with Construction Permits	74.5	82	66	66	79
Ease of getting electricity	90.99	94.33	83.87	84.31	78
Ease of registering property	68.75	76	59.01	57.55	70
Ease of getting credit	70	80	65	30	75
Ease of paying taxes	76.73	76	68	69.27	72
Global competitiveness index 2017	4.64	5.16	4.52	4.36	4.31
Global manufacturing Competitiveness 2017	62.1	59	55.8	N/A	56.5
Manufacturing labor Costs (2016 est.)	2.8	2.5	0.5	N/A	2
Infrastructure rating	5.8	7	5	N/A	4.9

Thailand can be a very cost competitive location to manufacture or locate an MRO business. Although China is currently getting much more publicity, a close analysis of cost and other factors shows that Thailand is very competitive and generally exceeds Malaysia and even Vietnam, which sometimes is thought of as a low-cost option for some operations.

Malaysia frequently comes up on the short list of possible site locations in SE Asia, and certainly there are some positive factors when companies consider Malaysia. Malaysia has excellent infrastructure and a strong pro business government. There are several aerospace

facilities to the north and east of the capital Kuala Lumpur with successful operations. However one present but highly unpredictable factor makes Malaysia a risk, global terrorism. Malaysia like Indonesia is predominantly Muslim and outer regions of the country are quite poor, although very low level there continues to be pockets of unrest in each country. In addition, the quality of life for expatriates is not nearly as appealing as a location in Thailand. The Philippines has one of the greatest potential business locations in all of SE Asia; however the presence of corruption, on a massive scale, along with personal security concerns eliminates the Philippines almost immediately.

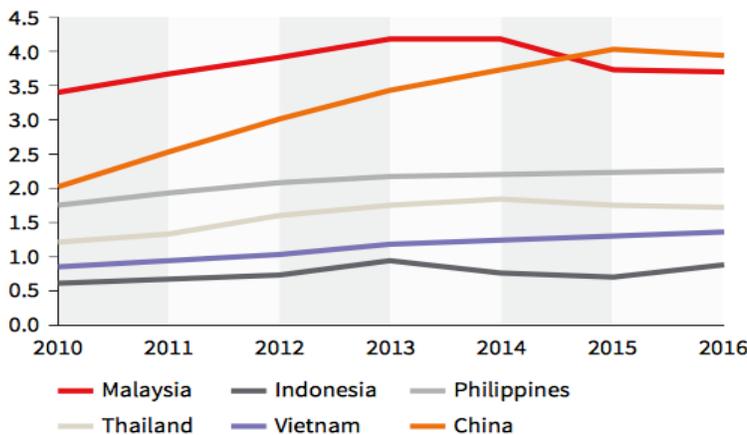
Historically, Singapore has been “the” location in SE Asia for both MRO and OEM operations. The EDB (Economic Development Board) of Singapore is outstanding in its support of Aerospace investments in the country. In so many ways Singapore is the ideal location for business; an educated workforce, infrastructure, security, entrenched aerospace community etc., so why not put a facility in Singapore? Numerous reasons:

- 1) Highest cost of living in Asia with no end in sight.
- 2) Most all employees are “imported” from other countries
- 3) High competition for skilled labor pressures salaries
- 4) Highest labor rates in the region

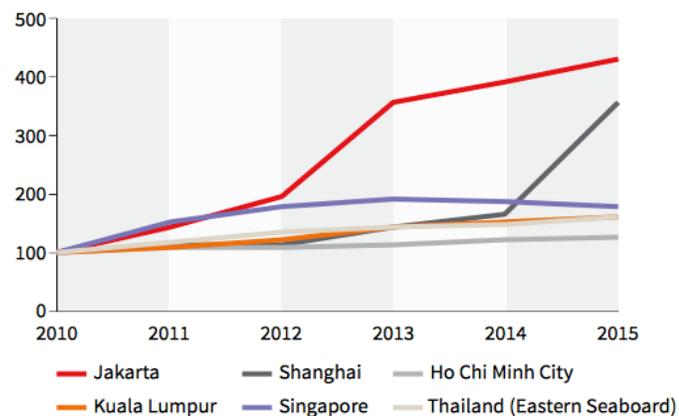
Accordingly, the word on Singapore MRO and its future aerospace growth is that it’s difficult to make a profit in Singapore when faced with competition from MRO’s in other SE Asia countries. A case in point, Nordam Corp had a major Thrust Reverser MRO in Singapore, within four years of Triumph Group setting up competing operations in Thailand, Nordam was forced to close the facility due to heavy losses.

One of the primary reasons for this was manufacturing/MRO wage cost “stability” and relative reliability of the price of land & building expansion in Thailand over that time. While other ASEAN nations, most notably Singapore, Malaysia and China have been facing intense wage escalation; the MRO operations in Thailand have had relatively few external factors influencing MRO costs. Many factors are reflected in that cost, but in SE Asia, that cost has a lot to do with the long-term business climate and the importance that the country places on attracting new investors. Aside from the tax and non-tax incentives provided by Thailand’s Board of Investment (BOI) that is a main partner and help source for potential investors, foreign investors can also benefit from many of Thailand’s strengths in the aviation industry. Thailand has abundant land availability for the expansion of its booming aerospace industry and skilled labor at competitive costs is available, specially compared to other Asia-Pacific countries. Plenty of highly skilled labor is available in Thailand, trained in institutions that offer degrees in aerospace engineering, such as the Civil Aviation Training Center (CATC) and over 60 private and public universities. The charts below reflect that consistency in both labor cost and the industrial land price index.

2017 Manufacturing labor USD/Hr.



Industrial Estate Land Price Index



Another noteworthy factor to consider is the potential for future market share. The increasing air traffic trends will be sustained in Asia for the foreseeable future. Facilitated by rapid economic growth, there has been increasing demand for air travel for the past 20 years. The air travel industry has weathered various major

external shocks over the years to register a 5.4% CAGR over that period, almost double the average global GDP growth rate. Going forward, increasing per-capita income, increasing affordability and propensity to travel and the emergence of low cost carriers (LCCs) will continue to drive traffic growth, especially in emerging markets like Asia and spur the need for more aircraft and aircraft maintenance. Driven by China and India as the main engines of growth, Asia is forecast to be the biggest aviation market in the world by 2036 with passenger traffic in the region forecast to grow by around 5.7% CAGR till 2036, outstripping the global growth rate of 4.7%. Liberalization and policy initiatives like open skies and easing of visa regulations are also driving the traffic expansion in this region.

All business intelligence indicators forecast that single aisle aircraft will dominate deliveries in future. Total jet aircraft fleet is expected to double over the next 20 years according to Boeing, and close to 74% of new deliveries will be single-aisle or narrow body aircraft. Better fuel economics and lower maintenance requirements drive the replacement demand for the narrow body fleet.

In line with the fleet additions in the region, Asia is expected to drive the growth of the global MRO market at 6.7% CAGR over 2017-2027, according to Oliver Wyman's estimates, with market share expanding from around 30% to 40%. The North American and European MRO markets are likely to stagnate, as fleet additions will be offset to a large extent by retirements. Maintenance operators in Asia also will continue to benefit from the trend of exports of wide body maintenance requirements from other parts of the world, especially North America and Western Europe.

Air traffic in emerging regions is filling up MRO shops in the Asia-Pacific with local demand. Approximately 72% of maintenance work occurs in the region of an airline's home base. Consequently, as air traffic demand increases in markets like the Asia-Pacific, those maintenance shops are filling up with demand from airlines based in those regions.

Specific case in point: Thailand has numerous strengths to foster the development of the aerospace industry and attract foreign companies. Thailand notably has 38 commercial airports, diverse international and local airlines operating in the country, a fast-growing maintenance, repair and overhaul – MRO – services industry and several companies involved in the manufacturing business.

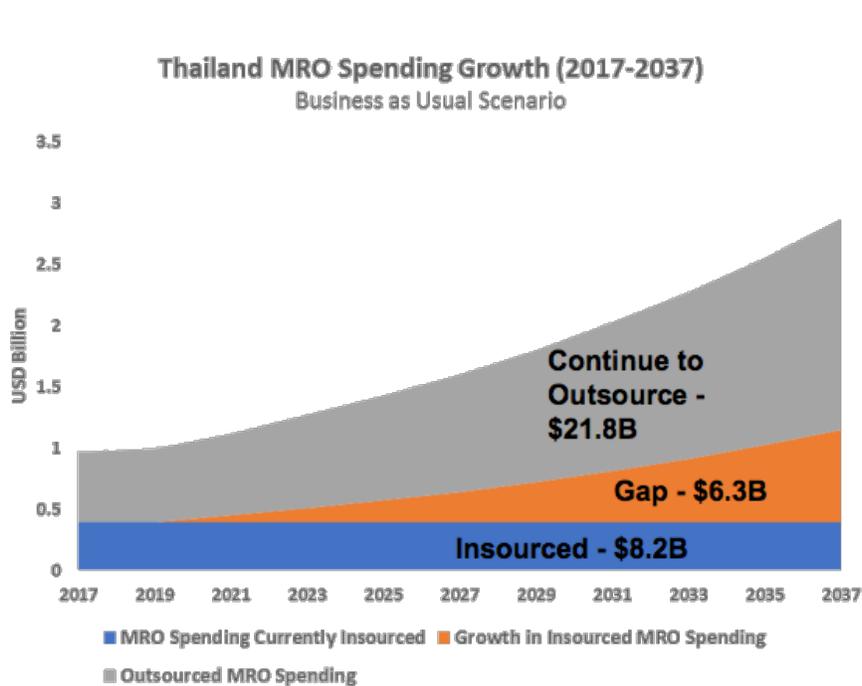
The Thailand Aerospace sector is expected to grow rapidly due to expansion in its fleet size and the rising trend of the migration of Commercial MRO activities to the APAC region. The aviation industry in Thailand has seen the emergence of a number of new players over the past few years and the commercial MRO sector currently has over 5000 aerospace career technicians and engineers. “As demand in the Thailand aerospace industry continues to grow rapidly, the supply side of the industry will have to expand in order to cater to this increasing demand. Thailand's key to success in developing its aerospace manufacturing and MRO industry is its availability of skilled labor. MRO activities are especially reliant on skilled labor as certification and qualifications are a prerequisite for MRO personnel to conduct maintenance and repair activities,” said Nishant Dey, Consultant at Frost & Sullivan. He continued, “A total of additional 7,700 new technician and engineer jobs are expected to be created in the commercial MRO space over the 20-year period from 2017 to 2037.”

One significant benefit that Thailand enjoys over the rest of the competitors is thanks to its geocentric position within the region, and the attractiveness of tourism in Thailand. The country's air traffic is currently growing three times faster than the rest of global market. Both the number of aircraft movements and passenger's movements are increasing quickly, with growth above 13% in the 2011-2017 period. Thailand's location in the ASEAN Economic Community (AEC) and the Thai airline industry's solid connections to corresponding airline industries in ASEAN, presents investors with a myriad of opportunities in the MRO business. Thailand has further, a well-established aerospace industry base and excellent linkage to automotive and electronics industries. Companies that have already invested in Thailand include among others Airbus, Senior Aerospace (former Weston Aviation), Saab Thailand, Chromalloy, Triumph Aviation Services, Leistriz, Zodiac Aerospace, Turbine Aero and GKN Aerospace



Frost & Sullivan estimates, in the next 2 decades, 42% of the 32,146 global aircraft deliveries will happen in Asia-Pacific while that of total number of aircraft in Thailand alone is expected to almost triple from 314 aircraft in 2017 to 811 aircraft by 2037. This is mainly a result of growing passenger traffic, which will rise from 60 million unique passengers to 180 million unique passengers by the end of 2037. The rise in passenger traffic, aircraft departures, and the aircraft deliveries in Thailand indicate the growing importance of Thailand's aerospace industry, which creates enormous opportunities in MRO and Manufacturing sectors.

Frost & Sullivan stresses on the US\$ 6.3 billion gap that will exist in the Thailand MRO market in the next 20 years thus creating significant business opportunities for the aerospace MRO companies. The market gap of US\$ 6.3 billion over the 20 years is enough to accommodate almost three new full-fledged MRO companies similar to Thai Airways Technical Department that can serve the MRO services demand locally in Thailand.



2017 Scenario



Source: Frost & Sullivan

It's not just the Thai Board of Investment (BOI) that is touting the aerospace opportunity that exists in Thailand for foreign companies to set up MRO operations, the U.S. Commercial Service of the U.S. Department of Commerce based in Bangkok also cites the most recent study of July 2017, and reports that an upturn in Thailand's tourism industry contributed to the recent record growth in air passenger traffic. According to the leading operator at Airports of Thailand (AOT), the airports managed by AOT handled 121.7 million passengers in 2016 up from 109.8 million in 2015. There were 790,194 aircraft movements (takeoffs and landings, in 2016, versus 727,750 in 2015). Air cargo movements showed a significant upturn, 7.67% in 2016 to 1.45 million tons from the stagnant 0.97% rate achieved in 2015. According to the U.S. Commercial Service report, the Thai government is positioning Thailand to be a premier aircraft maintenance and service hub for the region, with the full support of its government agencies. Airport expansion plans are already underway at Bangkok's Suvarnabhumi International Airport for a new passenger terminal, more parking bays, and a new runway built to handle 60 million flyers by 2017. Similarly, renovation projects are likewise underway in the heavy passenger traffic locations of the international airports at Don Mueang and U-Tapao (the latter being operated now by the Navy).

Specific case in point: U-Tapao International Airport development is part of Thailand's plan to become a regional aviation hub and MRO service center. After raising the airport's capacity to 15 million passengers in the first phase, the second phase calls for servicing 30 million passengers in 10 years. The final stage is to handle 60 million passengers in 20 years. The development is projected to require combined investment of 200 billion baht. Additionally, The U.S. Commercial Service report predicts Thailand be a major player in regional aircraft maintenance and "associated" manufacturing industries. Infrastructure facilities are in place for aircraft repair and engine overhaul services. The major, leading airlines in the country, Thai Airways and Bangkok Airways, have established Maintenance Repair and Overhaul (MRO) facilities, aiming to serve their own aircraft and those of other airlines that visit Thailand. MRO activities are very active in Thailand,

creating demand for aircraft parts and technical services. Thai airlines and aviation industry are open to opportunities for U.S. aircraft parts and foreign aerospace equipment suppliers.

While potential is interesting, government incentives to attract more foreign companies and foster growth counts. Albeit, the various government incentives are addressed in the adjacent Thai government BOI Investment incentives chart, most noteworthy is that the Thai aerospace sector is viewed as a primary driver of growth for the coming decades. Consequently, the BOI of Thailand offers a wide range of tax and non-tax incentives for various activities in the aerospace industry. Also note, that as mentioned in the first paragraph of this topic, all ASEAN countries have reasonably competitive packages for investment promotion. Investment promotions in and of themselves, should not be considered a major discriminator when choosing a SE Asian MRO startup location.

Bottom line: When factors such as long term consistent government pro-business policies, government stability, stability of legal provisions, rule of law, right to own land (as opposed to lease), mandated additional personnel benefits, tax incentives and quality of life for company executives sent to manage operations are factored into the decision process, Thailand looks like a very good choice.

