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Singapore: A Lion Amongst Tigers

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INTRODUCTION

"I do not work on a theory. Instead I ask: what will make this work? If, after a series of such solutions, I find a certain approach worked, then I try to find out what was the principle behind the solution... You may call me a utilitarian or whatever. I am interested in what works."

There can be little doubt that the approach found by Lee Kuan Yew, the outspoken former prime minister of Singapore quoted above, has worked. In the country's half century of independence it has grown from an underdeveloped and largely impoverished former outpost of the British Empire to an ultra-modern metropolis that today ranks as the globe's third largest oil refining center, third busiest port in terms of cargo tonnage, the seventh wealthiest country in the world in terms of GDP per capita, and is a leading global financial center.

Singapore's rapid economic rise has caused other countries around the world to attempt to emulate its hybrid of neo-liberal economic policy and staunch decision-making. Yet none have managed to achieve quite the same accelerated third-world-to-first transformation. Yet at its core, the principle found by Lee Kyan Yew and carried on by his ruling People's Action Party (PAP) is quite simple: the unapologetic prioritization of progress.

In perhaps no other sector is this as aptly demonstrated as Singapore's chemical sector. Perennially ranking at the top of the World Bank's annual "Ease of Doing Business" survey, Singapore offers the technically complex and often regulation heavy chemical industry a well-educated population, strong intellectual property protection and a clear, incorruptible bureaucratic process. "Today, Singapore pursues an integrated strategy of refining and chemical production to serve companies in the downstream petrochemical and specialty chemical industries. These industries are major contributors to our manufacturing sector, accounting for close to one third of the overall manufacturing sector," explains Eugene Leong, Director of Energy and Chemicals for the Singapore Economic Development Board (EDB).

Singapore Chemical plant expansion. Photo courtesy of ExxonMobil Asia Pacific

This integrated strategy of the chemical industry is the result of careful, decades long planning by the government that has successfully attracted investment in the sector and created an array of supporting industries. At the heart of this planning since the 1980s, has been the development of a world-class chemicals manufacturing center of Jurong Island. "From oil majors to petrochemicals, Singapore houses the world's chemical heavyweights, all in one location, often working in collaboration with one another on Jurong Island, or within Singapore. We believe strongly in creating a favorable environment, which facilitates integration within the chemical industry. What Jurong Island is today, was only made possible by a concerted effort by the Singaporean government, in close collaboration with industry," says Leong.

With new initiatives such as Jurong Island version 2.0 (JIv2.0) and a raft of record-breaking new investments, Singapore's chemical industry appears to be progressing along much the same impressive trend as it always has done. Yet the departure of the visionary Lee Kuan Yew from Singapore's cabinet in 2011 seemed to symbolically mark a slight clouding of the country's clarity of vision. While the PAP still dominates parliament, holding 81 of the 87 seats, unprecedented losses in the 2011 election and a by-election loss earlier this year has forced the party to give weight to social concerns as well as economic factors.

This is a necessary step. However, there is a sense in which the PAP has become a victim of its own success. The almost unrestricted ability of companies to import both skilled and unskilled labor has always been one of the country's major attractions, yet resentment towards immigrants from Singapore's population has led the PAP to approve new restrictions on migrant labor. Space constraints in a country of just 274.2 square miles, high expected salaries and environmental concerns all raise costs for chemical manufacturers and are becoming even more pressing at a time when Singapore's regional peers are being increasingly viable places to do business.

Singapore's firm commitment to progress and foreign investment has not necessarily wavered, but must now compete with other concerns. Popular opinion does not always equate to sound economic policy and the rise of alternative investment destinations in the region is largely outside of the government's control.

Yet the new balancing act that the government has been forced to carry out seems to be working. After investment in the sector fell flat in the immediate aftermath of the financial crisis, the EDB launched initiatives to revamp the industry through a focus on high value downstream and specialty chemicals production, further streamlining efficiencies and promoting sustainability. This strategy seeks to exploit Singapore's competitive advantages vis-à-vis potential competition in the region in order to attract and retain foreign investment. Several recent developments show the strategy is achieving its desired effect, yet, as Singapore knows well, there is always plenty of work to be done.

Interview with Eugene Leong

Director of Energy & Chemicals, Singapore Economic Development Board

As one of the biggest proponents of Singapore's chemical sector, can you introduce the Singapore Economic Development Board and its role within the industry?

The Singapore Economic Development Board (EDB) is one of the government's economic agencies. Its primary objectives are to grow the economy of Singapore by stimulating investment, and to create jobs for Singaporeans. The sectors which we are responsible for are the manufacturing sector, which currently accounts for 20% to 25% of GDP; as well as the business services sector. Together, these industries account for close to 40% of Singapore's GDP. The EDB works very closely with the Ministry of Trade and Industry (MTI) and other economic agencies to develop industries in these sectors, as well as ensure they remain competitive and sustainable in the long run.

Singapore's current mandate to the international community is "Home for Business", can you explain this directive and how it is being fulfilled?

Home for Business is one prong of Singapore's "Host to Home" strategy. The EDB sees Singapore as a critical node within the development of the greater Asian economy, from India to China. As markets in Asia become increasingly important for companies around the world, we see Singapore as a Home for Business, a place from which companies can orchestrate their activities within the region, both in terms of strategic planning and execution.

Downstream chemical manufacturers highly value Singapore's reverence for intellectual property (IP) rights; can you outline your government's approach to the salient issue of IP protection in Asia?

Protection of IP is essential to the development of any industry. The same goes for the rule of law, enforcement of contracts, and the maintenance of economic and political stability. IP and the rights of innovators are protected by a robust legal framework. Using the lubricant additives space as an example, key players in this industry are very IP-sensitive - their formulations and proprietary technologies need to be safeguarded to the highest degree. We appreciate the confidence shown by the downstream chemicals players in Singapore's IP framework, as shown by their recent investments.

Besides ensuring companies' IP is protected, Singapore is also a place where companies can develop new IP. By collaborating with our research institutes, companies can pursue new avenues for innovation. The Institute of Chemical & Engineering Sciences is a research institute focusing on chemical process research, which has collaborated with both chemical and pharmaceutical players.

What is the horizon for the EDB and Singapore's chemical industry over the next few years?

The outlook for Singapore's chemicals industry is positive. Driven by the burgeoning Asian markets; regional demand for petrochemicals is also growing strongly.

That said, we believe continuous improvement and upgrading is necessary. One of the foundations of our chemical industry that we continue to strengthen is our refining capability. Upgrading the complexity of our refineries will enhance the competitiveness of our crackers and the rest of the industry. Secondly, we are constantly looking for new ways to extract more from the existing base, such as moving into higher value-added derivatives and specialty chemicals. Lastly, the EDB will continue to work with the industry players on Jurong Island, to ensure its competitiveness and sustainability as a chemical hub.

The Neighborhood: Crowding or Complementing?

Over the last two years, the two countries adjacent to Singapore have sought to attract world-scale investment in the petrochemicals sector, as Singapore's neighbors are eager to imitate the Lion City's success. Although still in their early stages, investment plans in Johor Malaysia, which is directly linked to Singapore via causeways, and Indonesia could provide an alternative option for investment as Southeast Asian markets show promising growth potential.

Gina C. Fyffe, executive director of Integra Petrochemicals envisages these nascent developments as having the potential to create a complementary arrangement in the region: "We see Southeast Asia as a very interesting place for the next 10 years. There is talk about new crackers in Indonesia; Petronas's RAPID project is gearing up to be built just across the causeway; Singapore is still developing with the Jurong Island v2.0 project and has the new LNG caverns. There will be a petrochemical triangle in Southeast Asia."

In Johor, the Pengerang Integrated Petroleum Complex is looking to attract 170 billion ringgit ($55.84 billion) of capital by the time it commences initial operations in 2017. As of writing, the final investment decision has yet to be made on the project, but high pedigree companies have shown interest. Anchoring the development will be a 300,000 bpd, $19.4 billion refinery of state-owned heavyweight Petronas. This world-scale complex, dubbed the Refinery and Petrochemical Integrated Development (RAPID), intends to supply feedstock to downstream chemical manufacturers. In January 2013, Qatar's sovereign wealth fund, Qatar Holdings, announced it intends to invest $5 billion in the petrochemicals complex over the next several years as part of a $10 billion investment in Malaysia's economy. Additionally, Evonik has signed a letter of intent with Petronas to become involved in the complex.

Indonesia, the largest economy in ASEAN, has also sought to boost the profile of its import-dependent petrochemical industry. In December 2012, Indonesia's interior ministry announced incentives to attract investment for several new petrochemical centers with a view of reversing the sector's adverse impact on the country's current account. South Korea's Honam Petrochemicals has indicated an interest in investing $5 billion in a petrochemical complex.

Singapore's immediate neighborhood could become the hotbed of Southeast Asian chemicals growth as competition from new production centers in the area could serve as the catalyst for an evolutionary change in the regional trade network. Gina C. Fyffe sees the "petrochemical triangle" as having implications that influence trade patterns: "It is difficult to see yet exactly how the product flows will work and the petrochemical triangle will all fit together since the different plant announcements are just beginning to become public… With Singapore's crackers and downstream industries, products will be moving back and forward between the countries. Some of Singapore's exports will go to Indonesia, while some of its imports might come in from Malaysia. It will be a wonderful opportunity for transportation companies and shipping."

This idea parallels the realities of the early 1990s when the synergies between the three countries were discussed as the Asian Growth Triangle. During this time, Singapore was able to leverage its position as a center of specialization and expertise in areas such as electronics. Low value, labor-intensive production was located in cheaper destinations like Malaysia and Indonesia, while higher value processes such as R&D, final assembly, and distribution occurred in Singapore. Therefore, although there is a degree of competition involved in the creation of such a petrochemical triangle, Singapore stands to gain as it can serve as the top echelon of such a structure, dominating high-value production while all three members compete for commodity production. "If you take these three countries [Malaysia, Indonesia, and Singapore], one element of the three is very established in terms of its market reputation [Singapore]. Then you have two others with geopolitical, financial, and infrastructure issues… Fundamentally these are three different markets and I do not see there being a more integrated, level production-base amongst these countries in the near future. Singapore will continue to lead and flourish as these new markets look to increase their production capacity," comments Mark Tinkler, commercial director of Fortrec.

Much like in the 1990's Singapore's leadership role is most apparent in the development of its high-value production, which puts the country's industry in an advantageous position to meet future demand. As Dr. Dai Yu, CEO of Jurong Aromatics Corporation comments, "the demand for specialty chemicals is bound to increase as living standards rise across Asia."

This observation is in stark contrast with the comparative development of the Asian Growth Triangle in the 1990s. Two decades ago, high value goods made in Southeast Asia were viewed principally as exports to Western markets. Today, market dynamics are shifting. Goods, including chemicals, are increasingly produced in Asia for Asian consumers. This means goods are staying closer to their production base as Southeast Asian countries become more affluent. "[A] growing middle class in Indonesia, the Philippines and Vietnam is driving greater movements of goods within ASEAN" comments Henning Malmgren, chief commercial officer of DAMCO Asia Pacific.

Neighboring Indonesia, the fourth largest country in the world by population, provides a particularly exciting growth opportunity for companies operating in the region. According to a March 2013 report from the Boston Consulting Group, the size of the Indonesian middle class is projected to double to 141 million people by 2020. Although Indonesia is actively looking to expand its chemical manufacturing capacities, keeping up with the skyrocketing emerging middle class will be nearly impossible. "Indonesia is the largest market and over the last few years it has proven to be a stable environment with a huge domestic consumption base with a growing middle class - Indonesia has really been the star of Asian markets. Yet, in terms of production capability the chemical industry in Indonesia is still very basic." says Irwanto Tjota, chief operating officer of Singapore-based distributor Planet Asia.

As the region grows Singapore will have a key role regardless if the ambitious developments in Malaysia and Indonesia happen as scheduled (Petronas recently announced a delay to the RAPID project.) The execution of these grand plans is beyond Singapore's control. What the city-state can control is further defining its regional role, building on its strengths, and innovatively tackling its challenges. Although its neighbors may begin to catch up in capabilities, the regional market is sure to create plenty of room for growth. Recent projections from IHS expect ASEAN's nominal gross domestic product to more than double by 2020 from $2 trillion to $4.7 trillion. As the Asian middle class continues to swell, the regional demand for chemicals will continue at a high growth rate.

Although there is room for chemical production hubs to complement one another, the creation of a petrochemical triangle puts more pressure on Singapore to decisively address potential investment impediments if it wants to retain its undisputed position as the chemical hub of Southeast Asia. With the development of Jurong Island version 2.0 (JIv2.0), Singapore is distinguishing itself from its neighbors by reaffirming itself as the destination for integrated efficiencies, ease of doing business, and advanced capabilities. Nevertheless, Singapore's drawbacks, namely high operating costs, space limitations, and an expensive, tightening labor pool, are becoming more apparent as its neighbors become viable alternative investment destinations. The Lion City has overcome challenges against conventional wisdom before and is vigorously engaged in tackling the present challenges.

Jurong Island. Photo courtesy of Singapore Economic Development Board

JIv2.0: The next generation

When looking to discover "what works" in Singapore, look no further than Jurong Island as a textbook case study of the Lion City leveraging its seemingly limited comparative advantages. In late 2010, the government announced a plan for Jurong Island version 2.0 (JIv2.0) as the latest push for Singapore's for development in the chemicals sector. When viewed within five decades of context, JIv2.0, which emphasizes further integration of auxiliary services, diversification of feedstocks and a focus on developing specialty chemicals manufacturing, is just the latest element of a seemingly natural progression of the government's strategy for the industry.

In the post-World War II era, Singapore's position in the logistics network of world petroleum markets became ingrained as a key pillar that Singapore could leverage growth off of through refining and related industries. In 1961, Shell established the Bukom refinery, setting off a wave of investment in the country from players like Esso, Singapore Refining Company, Sumitomo, and Mobil as the Singaporean government designated the petrochemical sector as a key segment for industrial growth. Today, Singapore's position is heightened as a staggering one third of global oil shipped by sea passes through the Malacca Strait in order to reach energy hungry markets throughout Asia.

In the 1990s, the government, through the JTC Corporation, began reclaiming additional land and installing infrastructure to establish what is today Jurong Island. Presently home to nearly 100 petroleum, petrochemical, and specialty chemicals manufacturers, as well as a diverse array of auxiliary service companies supporting the island's industries, Jurong has certainly earned its title as a chemicals hub.

Matthew (Matt) J. Aguiar, chairman and managing director of ExxonMobil Asia Pacific comments "[Singapore is] a true model for developing a petrochemical industry around the world" in part due to "remarkable and visionary" actions from the government to develop Jurong Island.

In recent years, multibillion-dollar mega-investments from majors Exxon and Shell, further bolstered the country's position as a petrochemicals hub by helping bring the country's ethylene cracking capacity to approximately 4 million tpa, approximately 3% of world capacity [138 million tpa]. While this is already an impressive figure for a country that contributes just 0.3% to gross world product, the EDB aims for cracking capacity to reach 6 million to 8 million tpa over the coming decades.

Although Singapore has impressively grown its ethylene cracking capacity, new refining capacity coming online at both the source of hydrocarbon production in the Middle East and in China has the potential to cut out one of Singapore's traditional roles. "One of the foundations of our chemical industry that we continue to strengthen is our refining capability. Upgrading the complexity of our refineries will enhance the competitiveness of our crackers and the rest of the industry. Secondly, we are constantly looking for new ways to extract more from the existing base, such as moving into higher value-added derivatives and specialty chemicals. Lastly, the EDB will continue to work with the industry players on Jurong Island, to ensure its competitiveness and sustainability as a chemical hub," says Leong.

The EDB sees new investments, both from the private sector and the government, and feedstock flexibility as crucial if Singapore is to enhance its chemical manufacturing capability and retain its prestigious status on the world stage. In May 2013 BG Group delivered its first shipment to a new LNG terminal built and owned by the Energy Market Authority (EMA). The EMA's Singapore LNG (SLNG) terminal has initial capacity of 3 million tpa supplied initially through an exclusive contract with BG. However, the government is looking to expand capacity and open the terminal up to new players as gas markets become more globalized. "The Singaporean government is very forward-looking in building the new LNG terminal. The government has visions for this to expand in several steps starting," says Matt Aguiar of ExxonMobil.

Initially, the LNG will primarily serve Singapore's gas dependent power generators, as all of Singapore's major generators have arranged distribution through SLNG to augment their existing piped natural gas contracts from Indonesia and Malaysia. Yet, as plans for the terminal's expansion are being formed, the EDB sees LNG as a significant feedstock source for Singapore's petrochemical industry. "Feedstock diversification enhances Jurong Island's competitiveness in several ways. One is obviously by providing flexibility - diversification gives companies the option to use different feedstock at different times, depending on which feedstock is the most economical. Feedstock markets tend to be cyclical, but not on the same cycle, so if you can tap into LPG at one time and naptha at another time, it helps ensure cost competitiveness. These options also introduce robustness into the system - if operators have this flexibility with feedstock, it makes the system stronger," explains Eugene Leong of the EDB.

Enhancing feedstock options though LNG is one of the five core areas of JIv2.0. As part of the initiative, the EDB is reviewing energy, logistics and transportation, feedstock options, environment and water in order to enhance operational efficiencies and improve the hub's environmental sustainability. Addressing these five core areas will empower Singapore to overcome some of the key challenges it faces. Industry-government frameworks such as JIv2.0 tend to be ambitious in announcement and short on long-term action, yet an examination of the chemicals industry proves that government, operators, and auxiliary service providers are collaborating to turn policy into action.

Many of the core tenets of JIv2.0 are already ingrained at the heart of Nalco Champion's [an Ecolab company] service offering according to Deric Bryant, general manager Eastern Hemisphere Downstream: "Of the five objectives for Jurong [Island] v2.0, three are energy, water and environmental related. We will continue to be at the core of helping our

Peter Meinshausen, President South East Asia, Australia & New Zeland Region, Evonik

clients solve these problems. Whether it is an oil and gas major or a food and beverage company, we help them in a very integrated way to make their operations more efficient and with an improved environmental footprint."

The company has recently bolstered its energy services offering through its acquisition of Houston-based upstream and midstream specialty chemicals provider Champion Technologies. Bryant sees the ever-expanding Ecolab Group as well positioned to meet Asia's future petrochemical demands: "Our recent acquisition of Champion Technologies [in April 2013] makes our energy services unit 27% of Ecolab's global revenue further enhancing energy's role as a core piece of Ecolab's strategy."

Part of this growth strategy is to increase the emphasis on downstream services in locales such as Singapore. "We will continue to grow and expand not only in places where oil and gas is produced, but also where oil and gas and petrochemicals are consumed," says Bryant.

Like many leaders in the industry, Peter Meinshausen, Evonik's president South East Asia, Australia and New Zealand, gives the EDB high marks for its clear vision for the industry in the face of Singapore's constraints. Such vision is necessary for Singapore to remain a center of excellence: "Initiatives like Jurong Island v2.0 with further integrated utility and feedstock grids will augment Evonik's service offerings greatly. Ultimately, such initiatives will serve to differentiate Singapore from other chemical hubs in Asia."

Linde Gas Singapore, Jurong Island plant

INTEGRATED INFRASTRUCTURE

Further development of Singapore's shared utility, raw materials and storage networks is crucial to Singapore's continued ability to attract world-scale investment. Once again the EDB and JTC are spearheading new initiatives that will address constraints and attract investment. "As we map out the future of the island, more infrastructural enhancements are in the works; projects that will benefit the specialty chemicals and other value-added industries. The island's new barge terminal is on track, and the second overland roadway remains under study... In the meantime, the JTC is making enhancements to the current causeway to ease traffic flow and enhance security," says Eugene Leong of the EDB.

Another key aspect of Singapore's infrastructure is the networkability it provides the industry. "Common infrastructure such as pipeline racks that promote integration and linkages between companies are critical for the long-term competitiveness and sustainability of operations within Jurong Island. Today, the cost of such infrastructure prohibits users from establishing pipeline networks easily which would otherwise provide more flexibility and robustness to the network." commented Lim Seck Luan, managing director of Linde Gas Singapore.

Lim Seck Luan, Managing Director, Linde Singapore

Mr. Bernd Eulitz, Managing Director, Linde South East Asia

German-based Linde Group has a substantial presence in Singapore as it is the headquarters of company's South and East Asia Regional Business Unit. The company's Jurong Island facility exemplifies the integrated nature of the island as Linde boasts a world-class gasifier, the largest CO2 plant in Singapore, gaseous nitrogen production capabilities, and a supply chain facility for distribution of specialty gases. Evonik's recent partnership with Linde on its new $500 million methionine manufacturing facility is utilizing the innovative integrated services Singapore has built a reputation on. "To meet the industrial gases feedstock requirements of Evonik's new world-scale methionine production plant 'Me5', Linde Gas Singapore is building a unique and highly customized gases plant onsite - the first '3-in-1' integrated plant in Singapore comprising a Hydrogen SMR, Methane PSA and C02 recovery unit using natural gas as a feedstock," says Lim Seck Luan.

Singapore's integrated facilities are certainly world class. However, the truly impressive aspect of the integration is the way in which multiple companies are able to cooperate and reach a maximizing outcome. Competitors are often forced to have some synergies with one another. Bay Chin Hao, regional commercial manager of Oiltanking points out that the close-quarters on Jurong Island creates this dynamic: "in a sense, the land shortage fosters close cooperation, bringing together parties to jointly seek solutions instead of acting alone."

ADDRESSING LAND SCARCITY

Land-use on Jurong Island and in the neighboring areas of Tuas and Jurong is a severely limiting factor in Singpaore. With Jurong Island and the main island becoming increasingly built-out, storage and distribution companies in Singapore are having a difficult time acquiring the necessary land to expand their operations. Kelvin Sim, managing director of Singapore-based distributor Absotech explains the conundrum surrounding land-use for storage and distribution companies: "Land has not only become very expensive in Singapore, but it has also become exclusive: many companies may have the capacity to purchase a certain plot or asset, but the company who the government perceives will add the most value in its bid is ultimately the one favored to make a purchase."

Although this behavior limits distribution and storage companies, the government views preservation of prime real estate for high value production as a necessary measure. Furthermore, the government, through the JTC Corporation, is also taking action to introduce its own storage measures. This project, known as the Jurong Rock Caverns (JRC) is an ambitious subterranean complex located 130m below the surface that seeks to save limited space on Jurong Island. The Jurong Aromatics Corporation, whose $2.4 billion integrated complex is expected to

Interview with Matthew (Matt) J. Aguiar

Chairman and Managing Director, ExxonMobil Asia Pacific Pte Ltd.

At the time of the initial commissioning of ExxonMobil's new cracker in December 2012, you commented that this expansion "demonstrates our continued confidence in Singapore." What advantages does Singapore provide that gives you this confidence?

To understand Singapore's importance to ExxonMobil it is necessary to look back on our past; the company is celebrating its 120th anniversary in Singapore this year. We began as a kerosene trading company in 1893 and both Exxon and Mobil built refineries in Singapore at the early days of independence in the 1960s. And our manufacturing capability has grown with the country. Our chemical complex began with aromatics in the early 1990s and we developed some small specialty businesses at this time as well.

We made the decision in the 1990s that Singapore would serve as the Asia- Pacific hub for the company as we thought it was the country that offered the best strategic advantages in the region. It was very aligned with the fundamentals we have as a company: a business-friendly climate, pro-business tax structure, transparent laws and regulations, and a strong relationship with the government. On top of all this, we saw the government's commitment to building the infrastructure on Jurong Island which is remarkable and visionary, and a true model for developing a petrochemical industry around the world.

When we originally built petrochemicals production on Jurong Island and Jurong in the 1990s, it was done to integrate with our existing refinery. We were able to replicate what ExxonMobil has successfully done around the world to build a complex integrated with our refinery, with full feedstock advantage, and build the largest world-scale facilities in industry with our latest technology. The current expansion (Singapore petrochemical expansion) came as a way to build on this existing base and advantages. We built it to expand capacity of existing products but also add new products, including a significant number of specialty products, again applying our latest technologies. When ExxonMobil makes an investment, it is on a 20- to 30-year time horizon.

Looking at ExxonMobil's The Outlook for Energy 2040, ExxonMobil has outlined Asia as a priority given the growth in the region. What do you see as the key opportunities in Asia?

If you look at economic growth in the last ten years, two thirds has come from Asia and we [ExxonMobil] see that continuing; this is where the market opportunities are. ExxonMobil now has a lot of experience in China, and we are also selling into India and Southeast Asia. We have an established marketing and supply chain presence in Singapore and the countries in the region, and we are a significant exporter to the region from our other platforms in North America and Western Europe.

What do you see as Singapore's role as gas demand increases in Asia?

The Singaporean government is very forward looking in building the new LNG terminal. This new terminal can be expanded significantly as the government has visions for this to expand in several steps.

What do you see as the priorities for ExxonMobil Asia Pacific in coming years?

Our first priority is to have our new cracker demonstrate all the capabilities and technologies we have invested in it. We see our Singapore complex as a platform for future growth; we are interested in additional investments here, including specialty products to serve the high demand in Asia.

go online in 2014, is scheduled to be the first user of this new facility. Eugene Leong comments on the value of the JRC: "It is an efficient and unique way of storing products on the island that does not compromise the limited space available. It has capacity to store up to nine million barrels of petrochemical products, which would have taken up 60 hectares of space above ground."

Considering the total landmass of Jurong Island is currently around 3000 hectares, the JRC is a significant space saving initiative that is focused on long-term gains over short-term costs. The government's willingness to get involved in projects like the SLNG terminal and JRC illustrate the long-term vision the government has for the chemicals sector. In these projects the Singaporean government is willing to invest on its own when private companies are reluctant to do so. While time will tell if these latest investment decisions are wise, Singapore has a proven track record of correctly betting on long-term trends.

The JRC is not the only storage project entering Singapore's chemical scene. Private sector companies such as Oiltanking, Yang Kee and YCH are looking to expand warehousing capacity, while minimizing land use. Locally based Yang Kee Group recently christened a S$120 million ($100 million) Jurong Pier Chemical Logistics Hub (CLH) with more than 1 million square feet and two floors for chemicals. "Yang Kee's CLH is specially outfitted for our chemical clients; it has firefighting and water containment features, explosion-proof lightning, epoxied flooring, a mechanical ventilation system, and a design that caters to Quality, Health, Safety, and Environmental (QHSE) compliance," explains Ken K.C. Koh, deputy managing director of Yang Kee.

Local warehousing and logistics provider YCH broke ground on an innovative new facility dubbed Supply Chain City™. The facility will offer 15 floors of automated storage and warehousing and utilize Automatic Storage and Retrieval Systems in order to save space and manpower costs. Michael Leong, vice president of sales and marketing at YCH Group explains the concept behind the company's new Supply Chain City: "our SCC will be a fully consolidated and integrated complex, housing new technologies and a wide selection of professionals in the logistics and SCM industries; the SCC is quintessentially plug-and-play."

WATER CONSERVATION

Given the importance of the water-intensive industrial manufacturing sector to the country's economy, Singapore is taking serious steps to address water shortages and environmental impact. At present Singapore imports 40% of its freshwater supply from neighboring Malaysia. The Singaporean government, through the country's Public Utility Board, has embarked on the Four National Taps Strategy, which looks towards desalinated, recycled, rain and imported sources for Singapore's future water needs. For a water-scarce nation, properly utilizing every last drop in water-intensive process industries is key to avoid shortages in the medium and long term.

In this light, Carlo Patteri, business development director of Veolia Water Solutions & Technologies SEA, explains why water issues and Zero Liquid Discharge (ZLD) technologies will be of heightened importance for Singapore vis-à-vis other countries. "ZLD means that you are not allowed to dispose of any liquid that is not fully cleaned up and wastewater needs to be recycled. This policy is very important in Singapore because the city wants to be as autonomous as possible and does not want to keep importing water from Malaysia. Furthermore, unlike its neighbors, Singapore has a limited amount of land, so practices such as free dumping or wastewater ponds are simply not sustainable in the long-term."

POWER ENABLING JIV2.0

As Singapore has grown into a petrochemical hub over the last two decades, it has had to add significant power generation capacity to keep up with the rise of manufacturing especially on Jurong Island. In terms of power generation, the government heavily encouraged the development of natural gas generation as


Aaron Domingo, Managing Director, PacificLight Energy.

the power sector deregulated in the early 2000s. Today, Singapore relies on gas power plants for 78% of its generation capacity. This single-fuel market buoyed by high gas prices in Asia has put comparative pressure on generation costs as Singapore's regional neighbors have largely opted for cheaper coal generation or enjoy subsidized fossil fuel prices to control costs for their rapidly growing energy needs.

Presently, Singapore ranks as the third highest power costs in Asia behind Japan and the Philippines. As other locales try to emulate Jurong Island's success, industry leaders presently view this cost issue as a potential limiting factor for new investment in Singapore. "The most discussed issue is the cost of energy in Singapore. Chemical players consume a large proportion of energy, and the associated costs have a very significant impact on the industry's competitiveness," says Chiew Nguang Yong, chairman of the SCIC and general manager of Shell Chemicals Seraya.

Although costs are relatively high, Singapore's world-class infrastructure offers customers an unparalleled degree of stability, thus eliminating many of the costs associated with risk in other, more emerging markets in Asia. "For power users, i.e. chemical manufacturers, Singapore has a higher price of electricity, but this market also offers a more developed, efficient infrastructure that allows manufacturers to effectively and predictably manufacture and transport their products for market," says Aaron Domingo, managing director of PacificLight Energy.


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In such a market generating companies must find an edge over their competitors through increasing their operating efficiencies, finding innovative, new methods to utilize diversified feedstocks, and integrating services into a total package for their customers. Costs may be high, but inefficiencies are not tolerated.

PacificLight Energy plans to commission their new S$600 million ($475 million) gas powered asset on Jurong Island by the end of the year. The company was formed in March 2013 as Philippines-based power generator Meralco and Hong Kong-based First Pacific acquired 70% of a nearly complete asset. "As the new entrants into the market with our facility expected to go online in December 2013, we have adopted the most advanced methods and technologies for the plant. Thus, compared to the incumbent power generators already present on the market, we expect to gain a competitive advantage through technologically based efficiency," says Yu Tat Ming, CEO of PacificLight Power.

They will face stiff competition from existing players on the market, namely Sembcorp Industries and Tuas Power Generation, who have both made integration the heart of everything they do on Jurong Island.

Ng Meng Poh, executive vice president and head of Singapore and ASEAN, for SembCorp explains the company's wide range of services to customers in the chemicals sector: "We offer chemical and petrochemical companies a full suite of services including power and process steam, industrial wastewater treatment and on-site logistics. Power and steam generation is the largest contributor to the business, while our water and wastewater treatment facilities which can treat multiple streams of complex industrial wastewater, and our onsite logistics infrastructure which connects facilities on Jurong Island, also play a crucial role in making the whole petrochemical cluster more efficient."

SembCorp, a leader in developing Singapore's famous "plug and play" integrated infrastructure on Jurong Island, has committed an additional S$1 billion ($800 million) to construct a new multi-utilities facility to service the Jurong Aromatics Corporation's new S$3billion ($2.4 billion) complex. In its initial phase, the facilities cogeneration plant will add 400 MW of power and 200 mt of steam per hour of capacity to Jurong Island.

Emerson Smart Wireless Solution. Photo courtesy of Emerson Process Management Asia Pacific

Sembcorp, the first power generator on Jurong Island, has long made sustainability a top priority. Ng believes that this commitment has given Sembcorp a competitive edge in the market: "Because we invested early in green technology, unlike some of our competitors who had to replace their older facilities with more efficient new units, we have not had to retire or revamp our power plants. Also, in our combined cycle gas turbine cogeneration plants, we can often achieve a higher plant efficiency, so we use less fuel and can pass on the savings to customers."

In addition to conventional gas generation, SembCorp has also demonstrated its continued commitment to sustainability through investing S$300 million ($240 million) in an industrial waste to power generator and S$30 million ($24 million) in a wood chip boiler. Given Singapore's land constraints, especially on Jurong Island, waste-to-energy facilities provide the integration that will be crucial for the hub to maintain a competitive advantage over regional neighbors.

Along the same lines, Tuas Power has established a solid foothold on Jurong Island through its Tembusu Multi-Utilities Complex (TMUC). "In 2006, Tuas Power secured the rights to develop utilities for the new cluster of petrochemical companies in Tembusu, Jurong Island. We started construction in late 2009 and the first phase of construction was completed in February 2013. We are currently supplying competitively priced utilities to our customers. When fully completed in 2017, the total investment of the Tembusu Multi-Utilities Complex will be about S$2 billion ($1.6 billion). The utilities business is expected to form a core part of the company's business diversification plan. The TMUC project is aligned with the government's push to develop the petrochemical industry in Singapore," comments Lim Kong Puay, president and CEO of Tuas Power Generation.

In terms of generation, Tuas Power has decided to break the mold of gas generation in an effort to gain an advantage in the single-fuel dominant market. Their new facility uses diesel, coal, gas, and biomass for steam and electricity generation. According to Lim: "A multi-fuel strategy [is] a balanced approach to take for this market. Our Tembusu Multi-Utilities Complex is a model of fuel diversification that provides competitive utilities to our customers on Jurong Island."

Although energy cost will remain an issue as JIv2.0 continues to develop, operators can be assured that Singapore's utility providers are reaffirming their commitment to the market through offering an unparalleled package of integrated, efficient services and forward thinking investments. "Ultimately, efficiency is about transforming the cultural mindset of management. Energy prices are not likely to be low in the future; therefore, companies need to commit to scrutinizing areas that can reduce operating expenses and energy consumption from the top-down," says Lim.

Material Installation by crane taken at the SPA-X Project (Singapore Alcohol Expansion Project) Photo Courtesy of McConnell Dowell

Innovation and a Sustainable Environment

Given the high-energy costs the market faces, it is unsurprising the proactive EDB is working on new ways to help operators achieve greater energy efficiency "from the top-down." In addition to working with the mega projects like ExxonMobil and JAC on cogeneration plants, the EDB has also spearheaded several studies and initiatives to engage all relevant parties in order to streamline efficiencies.

One such initiative is the Green Campus, a collaborative effort between consultants McKinsey&Company, the EDB, and the National Environment Agency to inform the sector of ways to achieve energy saving measures: "The Green Campus is about helping corporations turn energy efficiency into a competitive advantage. It is about seeing energy not as a burden but rather as a business opportunity and a point of differentiation that can increase overall performance. The Green Campus will offer companies a hands-on opportunity to drive an end-to-end energy transformation by providing experiential learning opportunities in a live process plant," says Dr. Mads Dührkop Lauritzen, managing partner of McKinsey&Company's Southeast Asia Operations Practice.

Dr. Lauritzen comments that companies attempt to address inefficiencies, but in most cases these initiatives are not upheld in the long term: "Many companies have attempted to transform their companies to be more energy efficient. However McKinsey research shows that 90% of energy transformations fail after four years – mainly due to non-technical issues. The role of the Green Campus is to help companies achieve lasting change."

Another company at the forefront of sustainability is testing and certification services provider Tüv Süd PSB. CEO Chong Weng Hoe believes that when it comes to environmentally friendly products and energy efficiency, companies are finally starting to enact permanent changes: "Companies are getting better at assessing the environmental impact of their purchasing habits. We notice that companies are more and more willing to spend on green products. On the other hand, the prices of green materials are also coming down. As these forces affect the price level of green products, the sustainability of our industry will continue to improve… The green initiative requires many different supporters to succeed. We are one component of a larger effort."

Erman Tan, CEO, Asia Polyurethane

Once a government agency in Singapore, PSB was privatized in 1996 and subsequently acquired by German based Tüv Süd in 2007. The company has grown by 150% over the last six years and has set ambitious growth targets for the medium term. At the heart of this growth strategy is a desire to facilitate their client's optimization through their full suite of services. "As the global population continues to grow, the challenge is to create a sustainable living environment powered by energy efficient necessities and cost efficient clean energy" says Chong.

Energy efficiency and sustainability should no longer be buzzwords on an annual shareholders report; the concepts make business sense and must be treated as such. In Singapore, where the government has steadfastly focused on long-term investment, many companies would be behooved to do the same in their long-term investment in energy efficiency and sustainability. In a globalized business world where driving costs down is limited by local factors, driving down energy costs and adapting environmentally friendly policies now are likely to pay off in the long run.

Erman Tan, CEO of Singapore-based producer Asia Polyurethane, sees cost increases as a perpetual issue in such a worldwide-interconnected market. Limited by economic conditions and present in a fast-changing market, the company has to adjust its business to stay ahead of its competitors. "Price pressures are coming from everywhere. Inflation is prevalent. Learning to be more cost-effective than your competitors is one of the survival skills that you must learn to succeed in the tough market conditions. Whether you are in the chemical, oil and gas, automotive industry etc., costs are rising and will continue to do so. Continued innovation is our strategy to combat these rising costs and to achieve superiority, we must be able to drive the costs out of the system," says Tan.

Asia Polyurethane exports its polyurethane resins and blended components to Asia-Pacific and African markets for use primarily in the insulation and automotive sectors. The company is looking to become more dynamic in the face of shifting market conditions, as specialty chemicals of yesterday become contemporary commodity chemicals. "Realizing that new technology can quickly become outdated and commoditized, we focus on developing innovative materials to add value to our customers' products and processes. To ensure that the latest technology is being adopted, we source our raw materials and technology partners throughout Asia, USA and Europe. Our primary market is in Asia but we have also extended our reach into the Middle East, Europe and Africa," says Tan.

In Singapore there is neither a miracle solution to improving processes, nor are constraints such as energy costs or land scarcity going to disappear overnight. However, the attitude that puts innovation at the forefront contributes to the notion that Singapore's chemicals industry has not reached its peak. "In my view when you look at Singapore's role more globally, inventions are still coming from the United States and Europe, but innovations are coming from Singapore. This attracts chemicals manufacturers to invest here," comments Fritz Graf von der Schulenburg, executive vice president of Jebsen & Jessen.

Given the amount of integration and efficiency already present, success in improving efficiencies through innovation will likely be measured in inches not miles. Nevertheless, these small gains can eventually add up and reinforce the competitive advantages most companies already enjoy in Singapore.

Structural steel. Photo courtesy of Hai Leck Engineering.

Dr. Carpenter, executive director of the Institute of Chemical and Engineering Sciences believes these gains will be the key to Singapore's future growth: "Really, it is about increasing productivity. There is massive investment here, but you can see that the land itself is fairly limited, so the opportunities for growth are not associated with just continuing to attract new investment. Going forward, it will be a matter of increasing output through increasing productivity."

MAINTENANCE

Like the small gains made through innovation, plant maintenance will be an increasingly vital aspect for Singapore's chemicals engineering, procurement, and construction providers (EPCs) as new construction projects become fewer in number and existing facilities age. It is important to note that many of Singapore's facilities have been operational for two decades or longer and Singapore's chemicals market is reaching a more mature phase according to Robert Dompeling, CEO of PEC: "The project market will slowly tail off over the next ten years as Jurong Island fills up. The emphasis will need to change towards sustainable and responsible maintenance."

Despite the long-term view of the chemicals industry that many executives claim to take, Dompeling believes many operators are willing to go with the cheapest service provider du jour: "Some multinational companies should look more at the total costs of ownership and maintenance from a long-term perspective. Scale is crucial – companies can offer competitive rates only if they are relatively large and serving many clients."

UK-based Hertel is an industrial service construction and maintenance service provider that has made energy conservation a key component of its offering. Due to the stricter European Union environmental goals and objectives the company has become accustomed to handling, it has taken action to adopt thermographic technology to measure heat loss at plants worldwide. Application of this technology helps operators gain a

Robert Dompeling CEO, PEC Ltd.

better understanding of their wasted potential energy. "Operators are becoming aware of how much heat their plant is losing, which means the potential of energy saving is huge when they are operating at temperatures between 150 and 300 degrees. For Singapore, this is particularly imperative as we have one of the highest energy costs in Asia," comments Hertel's regional managing director of Asia and Australia, Marinus Jacometti.

Jacometti notes that a single un-insinuated or poorly insulated valve, which is easily identifiable by thermographic technology, can cost a company €2800 ($3620) per year. For large plants, this can mean savings of $7 million to $10 million per year on a one-time investment of $3 million for re-insulation. This has wide ranging implications for Hertel and others in the insulation business as the industry takes a new look at construction and maintenance costs. Jacometti describes how companies used to look at insulation as an afterthought, but this attitude is evolving. "Now the conversation has changed from construction costs to total costs of ownership for plant operators. This is creating a paradigm shift in the industry because in the past operators saw little reason to go through the cost and inconvenience of insulating something like valves, but now modern techniques like thermography allows us to calculate the exact losses in energy from an un-insulated or a poorly insulated valve."

Locally-based player Ad-Meth Mech Field sees its prospects as strong given the landscape of the local market. "Demand is picking up on downstream maintenance as plants in Singapore age. Typically operators are looking to run a plant for up to four years in Singapore without a scheduled shut down in order to minimize operating costs," states Shaun Pang Tong Heng, general manager of Ad-Meth Mech Field.

As operators are persistently put a higher premium on reducing plant shut down time as a cost saving measure, Ad-Meth Mech Field has positioned itself accordingly. "Operators want a quick turnaround time for maintenance and repairs, thus this is at the core of our business strategy. For us at Ad-Meth Mech Field, we understand the urgency of our customers' requests. We recognize for every minute our customer's plant sits idle, their operating costs increases and their plant turns from an asset to a liability" says Pang.

New Investment

SPECIALTY CHEMICALS: THE NEXT FRONTIER

Recent activity shows that the EDB's efforts to promote investment in specialty chemicals are paying off handsomely. A number of companies such as Lanxess, Evonik, Clariant, Mitsui, Croda, Asahi Kasai, Sumitomo, Jurong Aromatics Corporation and Zeon Chemicals have bought into the government's development of JIv2.0. In 2012 Singapore's Fixed Asset Investment reached S$16 billion ($12.7 billion), an increase of 16% from 2011.

In June 2013, German specialty chemicals heavyweight Lanxess commissioned its largest single investment in company history in Singapore. Even before the completion of this €400 million ($517 million) butyl rubber plant, Lanxess broke ground on a €200 million ($258 million) neodymium-based performance butadiene rubber (Nd-PBR) facility, the company's second largest investment to date and, at 140,000 tpa, the world's largest polybutadiene rubber plant.

With these investments, LANXESS has shown a firm belief that Singapore will play a critical role in bolstering the company's global earnings. "The establishment of global and regional offices here, along with production sites, cements the focus on Singapore as a key element to the global growth story of LANXESS… With these two major rubber investments in Singapore, the site on Jurong Island will play a key role in LANXESS achieving its mid-term earnings goal of €1.4 billion ($1.8 billion) and €1.8 billion ($2.33 billion) EBITDA pre-exceptionals in 2014 and 2018," says Ian Wood, managing director and country representative for Lanxess Singapore.

Lanxess is not the only company building synthetic rubber production on Jurong Island; three Japanese companies; Zeon Chemicals, Sumitomo Chemicals, and Asahi Kasai are all in the construction phase of their own production facilities.

Ian Wood, Managing Director and Country Representative, Lanxess Singapore

Yuki Hirakawa, Managing Director, Zeon Chemicals

Zeon Chemicals has invested S$240 million ($200 million) in a solution polymerized styrene-butadiene rubber (S-SBR) and is scheduled to commence the first phase of its operations in 2013, with a second phase coming online in 2016. Once fully operational the plant will have up to 80,000 tpa of production capacity. According to Zeon's managing director, Yuki Hirakawa, raw material limitations in Japan caused the company to look elsewhere for synthetic rubber manufacturing. "After studying several options, Singapore was a good investment because of the government's support and the ability to sign long-term butadiene feedstock supply agreements with reputable local manufacturers."

Sumitomo Chemicals, a long-established manufacturer in Singapore, broke ground on its $120 million S-SBR plant in February 2012. Once completed, the

Interview with Chiew Nguang Yong

Chairman, SCIC

What is the mandate of the Singapore Chemical Industry Council (SCIC) and some of the association's major milestones?

The SCIC is the body representing the chemical and petrochemical industries in Singapore; it voices the interests of this incredibly diverse manufacturing sector. This diversity grants the SCIC and its members the capability to leverage both the experience of global MNCs and the perspective of smaller players in order to promote higher standards for health, safety and the environment. In terms of growing the business of their members, the main assets of SCIC are its regional and international connections.

What are some of the main challenges to Singapore's chemical industry as perceived by SCIC and its members?

The most discussed issue is the cost of energy in Singapore. Chemical players consume a large proportion of energy, and the associated costs have a very significant impact on the industry's competitiveness. Since last year, the SCIC has begun engaging the JTC with regards to the infrastructure on Jurong Island in order to address the issue of security of supply to energy, logistics capabilities, and other potential future challenges. Moreover, new limitations on foreign talent and labor costs are also causing concerns to MNCs.

For SMEs in the chemical industry in particular, there are several additional challenges. Understanding and compliance to the HSE standards is an area that SMEs often lack the hardware, experience and manpower to maintain the same standards as efficiently as a MNC. In addition, the chemical industry is highly capital-intensive and it is sometimes difficult for a SME to access the necessary financing, technology or talent as they strive to remain competitive. In this area, it is encouraging that Singapore's Ministry of Trade and Industry (MTI) is very proactive and offers many incentives for SMEs operating in this market.

Despite the challenges, Singapore continues to be a major hub for investment in chemicals; what makes this market ideal for the chemical industry?

Singapore is fortunate to have a critical number of competitive advantages. Jurong Island, for example, was arduously reclaimed for the sole purpose of building a downstream petrochemical hub characterized by high levels of integration. The presence of major MNCs has managed to attract investment from their global downstream customers and add-value to the industry as a whole. This environment also creates opportunities for SMEs and allows expertise to flow from MNCs to other SMEs and players in the industry. Outside of Jurong Island, the other main advantage of Singapore is the element of stability; the economic, political, and regulatory environments are all very transparent and predictable. Lastly, the growth of markets in the region such as China makes Singapore an ideal place to do business; a chemical company in Singapore is well positioned for growth. Indeed, Singapore's model is being replicated throughout the region.

plant will have a capacity of approximately 40,000 tpa. This will add to Sumitomo's massive $7 billion revenue stream in Singapore, which includes its leading stake in the Petrochemical Corporation of Singapore.

Asahi Kasai Chemical Corporation's S-SBR production facility will be the second complex for the Japanese plant on Jurong Island, as the company's subsidiary Asahi Kasei Plastics Singapore already operates a $200 million world-scale polyphenyl ethers (PPE) facility. Once fully operational in 2015, Asahi Kasai's S-SBR facility will have a capacity of 100,000 tpa.

German specialty chemical manufacturer, Evonik, is currently within budget and on schedule to complete its $500 million, 150,000 tpa methionine plant by August 2014 and has recently selected Jurong Island as the site of a new polyamide 12 plant. As the company seeks to double its 2010 sales figure in Asia to €4 ($5.17) billion by 2015, Peter Meinshausen, president of Southeast Asia, Australia, and New Zealand for Evonik, explains Singapore's importance to the company's position in Asia: "Since 2009, we have been expanding our asset portfolio in Singapore and Singapore continues to play a vital role in Evonik's considerations for the future. We will continue to expand our asset footprint by investing in production sites and innovation facilities across Asia to better accommodate the requirements of Asian markets and our Asian customers."

Yasushi Nawa, managing director and CEO of Mitsui Chemicals Asia Pacific, explains why Singapore is such an ideal destination for foreign chemical companies: "To summarize Singapore's allure in one word: stability. There is very little country-risk here, both in terms of political and geographical uncertainty. Compared to peers with similar chemical hubs like China, Vietnam, and Philippines, few of them inspire the same levels of investment confidence among Mitsui's leadership as Singapore."

A longtime player in Singapore, Mitsui Asia Pacific is set to begin construction on a 300,000 tpa polyolefin facility with a price tag of S$250 million ($200 million), bringing Mitsui's cumulative

FAI in Singapore to well over S$1 billion ($800 million). Given its well-established investment commitment to the country, the company is looking to move "further up the value chain by way of specialized coating compounds and polyolefin products. We are continually growing and diversifying our asset portfolio in Singapore in order to capture a larger share of the titanic Asian market for specialty chemicals," says Yasushi Nawa.

Nawa's comments summarize why corporate boards continue to choose Singapore as an investment destination despite the relatively high cost vis-à-vis other Asian countries: investment confidence and strategic location. One key pillar of this confidence is Singapore's strong IP protection regime. The inherent risk of compromised IP that many innovative multinational companies encounter from doing business in other parts of Asia is not a concern in Singapore. "The IP framework is definitely one of the main reasons that many of our chemical collaborators come to Singapore, knowing that the things they do here will be handled in the strictest of confidence… We do recognize that Singapore is quite small, and we really cannot compete on the same scale as China and India in terms of manufacturing. Consequently, we focus on how to make the best of what we have and try to compete in those areas where we know that innovation and a strong IP framework can actually make a difference. Singapore's strong IP framework supports our work and makes us happy to be here," says Dr. Keith Carpenter, executive director of the Institute of Chemical and Engineering Sciences (ICES).

PETROCHEMICALS RE-UP THE ANTE

Not to be outdone by the specialty chemicals manufacturers, Singapore's major petrochemical players are continually upgrading their portfolios to both expand their capacities and enhance their capabilities in the specialty chemical sector as well. Chevron Oronite is enhancing its offering for additives, while both Royal Dutch Shell and ExxonMobil have undertaken wave after wave of new investments to further enhance their world-leading facilities and move them further downstream, and Jurong Aromatics Corporation is progressing with construction on its new integrated facilities.

In Q42012 Shell announced an upgrade to its ethylene cracker complex on Bukom Island, which will expand the cracking capacity at the Shell Eastern Petrochemical Complex from 800,000 tpa to 1 million tpa. Shell also has announced it will augment its polyols production by 100,000 tpa. On top of this, in April 2013 the final investment decision was made to increase high-purity ethylene oxide and ethoxylation production by 140,000 tpa each at Shell's Jurong Island facilities. In a statement, Chiew Nguang Yong, chairman of the Singapore Chemicals Industry Council (SCIC) and general manager of Shell Chemicals Seraya, comments: "Shell has the right asset base on Jurong Island to capture growth opportunities in the region. Customers will clearly benefit from our investment as we can now produce the products they need more sustainably and efficiently."

In May 2013 ExxonMobil's new ethylene steam cracker began producing ethylene at the company's Singapore petrochemical complex. This upgrade represents the final component of a multibillion-dollar investment over a 15-year period, making the complex the largest integrated refining and petrochemical facility for the super major worldwide. The upgrades to the complex will add 2.6 million tpa of finished capacity, more than doubling the current site's capabilities and caps off the largest chemical expansion project in ExxonMobil's history.

Matt Aguiar, chairman and managing director of ExxonMobil Asia Pacific, sees this latest commissioning as the culmination of two decades of work. "We made the decision in the 1990s that Singapore would serve as the Asia- Pacific hub for the company as we thought it was the country that offered the best strategic advantages in the region... When ExxonMobil makes an investment, it is on a 20- to 30-year time horizon."

Another ongoing project of note is the Jurong Aromatics Corporation. Held by a consortium of investors led by South Korea's SK Group and China's Jiangsu Sanfangxiang Group, the $2.4 billion complex is scheduled for completion in 2014 following a two-year delay attributed to tight credit markets in the wake of the financial crisis. The project will be complemented with a S$1 billion ($800 million) onsite cogeneration plant from Singaporean-based SembCorp. Once fully operational, the complex is expected to bring online an additional 1.44 million tpa of aromatics as well as 2.47 million tpa of oil products.

The capital flowing into Singapore creates the image of confidence in the market and highlights the favorable market environment for multinational investments. According to Chiew Nguang Yong of SCIC and Shell: "Singapore is fortunate to have a critical number of competitive advantages. Jurong Island, for example, was arduously reclaimed for the sole purpose of building a downstream petrochemical hub characterized by high levels of integration. The presence of major MNCs has managed to attract investment from their global downstream customers and add-value to the industry as a whole. This environment also creates opportunities for SMEs and allows expertise to flow from MNCs to other SMEs and players in the industry. Outside of Jurong Island, the other main advantage of Singapore is the element of stability: the economic, political, and regulatory environments are all very transparent and predictable. Lastly, the growth of markets in the region, such as China, makes Singapore an ideal place to do business; a chemical company in Singapore is well positioned for growth. Indeed, Singapore's model is being replicated throughout the region."

PROCESS: BUILT FOR THE JOB

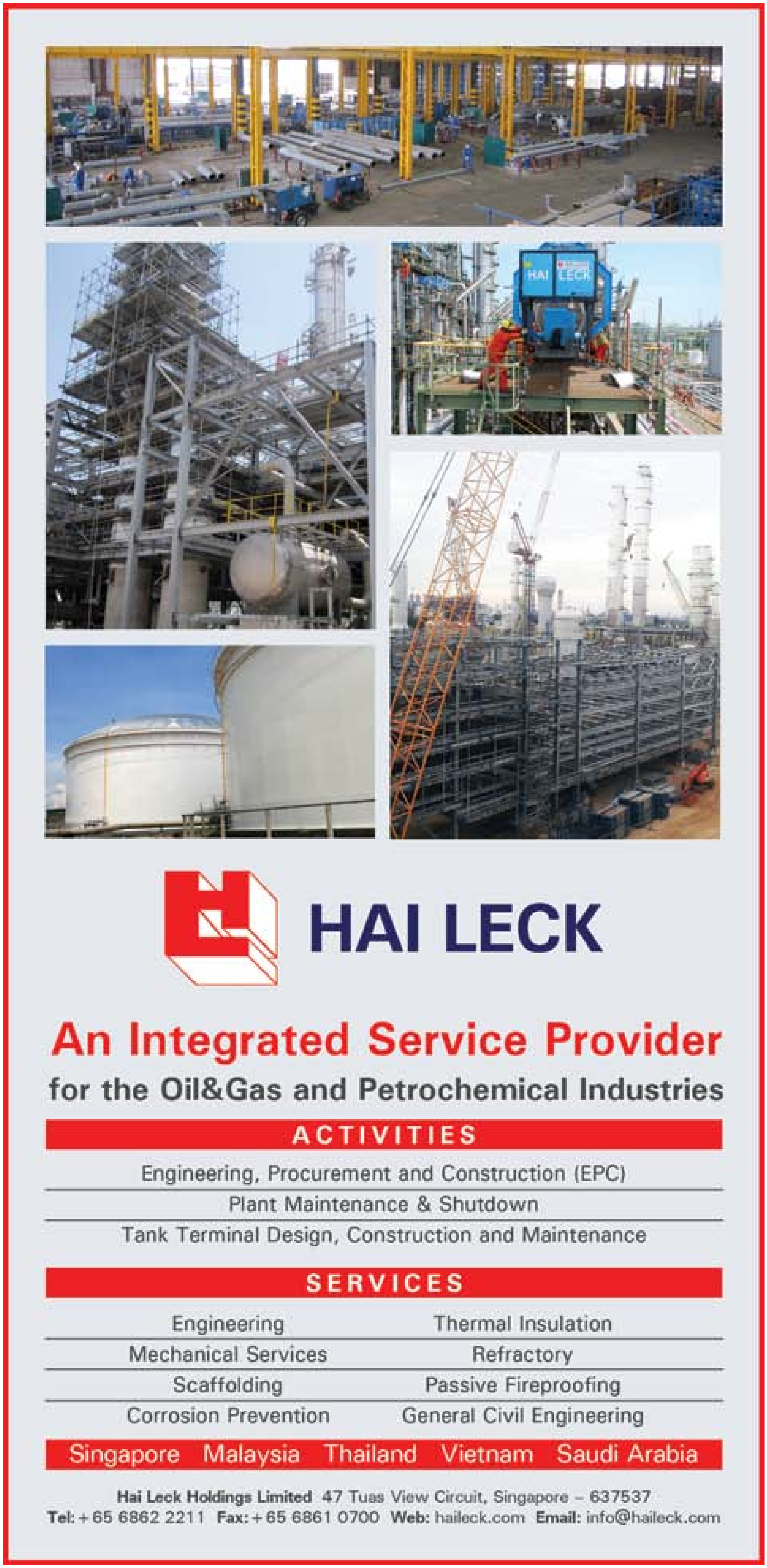
The landscape of Singapore's engineering, procurement and construction providers (EPCs) is more diverse than the chemical and related industries that it

Don Cheng, MD, Hai Leck Engineering

serves. While the chemicals industry is largely made up of investments from large multinationals, the process industry is composed of both multinational and domestic players, which vary dramatically in size, capability and niches. As investment flowed into Singapore, a complex web of contractors and subcontractors has developed to meet the needs of a growing country and world-class chemicals industry. Amongst this network is a handful of notable players including locally based Hiap Seng, Rotary, PEC, Hai Leck, Cyclect, Tiong Woon, W H Marathon and Mun Siong and multinationals such as Cape, McConnell Dowell, and Hertel. These companies can attribute a significant amount of their growth and success to the development of Singapore's chemicals industry.

Nevertheless, Singapore was certainly not immune to the global financial crisis, and Singapore's EPC's faced a rather rough environment as projects such as the $2.4 billion Jurong Aromatics Corporation complex were put on hold due to the credit crunch. A market that had boomed became uber-competitive as the number of new contracts decreased in the aftermath of the downturn. "Five years ago, there were many projects but few contractors, but now it is the other way around," comments Robert Dompeling, CEO of PEC.

With the new wave of specialty chemicals investment, many process industry leaders see their prospects as strong in the near-term. "From our perspective, and that of our members, the future looks very bright. The EDB has done an excellent job in attracting new investments



Control panels are designed and built in-house. Photo courtesy of Cyclect

into Singapore and promoting the city as an international business hub," says Lim Jit Say, executive director of Singapore's Association of Process Industry (ASPRI).

Although there is a general consensus that the demand for EPC services has picked up again after a few years of stalled growth, companies do not expect the huge workload they experienced before the crash. "At the moment, there is more activity in the industry than there was a few years ago, but it is not at the level it was before the financial crisis and I am not sure it will recover to that level any time soon," says Murray Dundas, managing director of McConnell Dowell.

D. Ramesh, operations manager of Cape East explains how the fewer available contracts have created a race to the bottom in terms of pricing: "Local companies have responded to this [more competitive marketplace] by slashing prices."

This slashing of prices is not healthy for the EPC industry as it leads to lower standards and squeezed margins. According to Robert Dompeling of PEC, it is up to the clients to recognize that just because a cheaper tender helps their bottom line, it may hurt the quality of the industry in the long run. "The multinationals need to change their contracting strategies; rather than picking the cheapest providers, they should think more about long-term partnerships. This is especially important in view of labor restrictions which do not allow for workers to come in on a job by job basis."

The EPC market with regards to the chemicals sector is currently oversaturated in the wake of the commissioning of the ExxonMobil cracker upgrades which have created a gap. The multibillion-dollar investment represented a boon to those in the process industry contracted on the project and the projects in the pipeline do not equate to its magnitude. "The nature of our business is quite cyclical and with the completion of the ExxonMobil project, the market will be very competitive due to less volume of work," says Ramesh of Cape East.

Cape East, a non-mechanical service provider that has 90% of its Singaporean business coming from oil, gas and petrochemical services, is looking to revitalize its Singaporean operations as the megaproject is completed. The issue for the company will be the scale of new projects as mega investments in integrated cracking facilities become fewer. "On smaller projects, we face competition from mechanical service providers who are able to offer non-mechanical solutions as well. However on larger developments, like the ExxonMobil project, we are one of the only companies with the expertise to handle such a complicated project from the non-mechanical side," says Ramesh.

As activity in the sector picks up, companies will continue to face stiff competition in the market still hungry for new business and new staff. "The chemical and petrochemical industries are upgrading and expanding their current assets to cater to increased demand from Asia and stricter emissions standards in Europe. Singapore's current economic conditions have made pricing very competitive for EPCs: we face a great deal of competition from foreign peers in the market, moreover manpower shortages have made growth difficult for contractors overall," according to Don Cheng, managing director of Hai Leck Engineering.

Despite rising construction costs in Singapore, Murray Dundas of McConnell Dowell believes the market is still price competitive because of Singapore's transparent regulatory regime, expertise and world-class efficiency. While less developed markets may encounter build stalls due to logistical issues or an opaque inspection process, Singaporean projects have a reputation for going up quickly. "Looking at Singapore in comparison to other countries, construction costs are extremely competitive here; it is a good environment for initial investment because of the relatively short build time," says Dundas.

Melvin Tan, managing director of Cyclect sees the EDB's recent investment in high-value specialty chemicals manufacturing as an exciting growth opportunity: "A more sophisticated chemical industry creates a gap of expertise, and at Cyclect our goal is to enhance our skill set and fill these gaps for our customers. Our current niche is in heat recovery, co-generation, MNEs and instrumentation, where Cyclect is very competitive. There is great potential within the chemical industry to reduce cost and drive profits through the implementation of co-generation and other cutting-edge energy technologies."

The privately held, locally-based company has grown substantially over its 70-year history, reaching S$100 million ($80 million) in revenue in 2010 with the chemicals sector contributing 35% to 40% of that business. According to Tan, one of the key strategies for Cyclect's growth is to closely align its agenda with national priorities: "Whatever the EDB brought to our shores, Cyclect sought to stay ahead of the curve with its involvement."

Manpower: The Political Paradox of Success

From a business-friendliness perspective, no issue threatens Singapore's near spotless image more than the debate currently surrounding foreign labor in the country. For most of its short history, the Singaporean government has kept its borders open to a large foreign workforce, both to attract highly sought after foreign experts and to bring in the mass of lower skilled workers necessary to build and provide services in a modern economy. However, recent dissidence against the continuation of this long-term government policy has coincided with announcement of new restrictions on foreign labor.

According to the Ministry of Manpower, Singapore's 1,268,300 foreign workers presently account for one third of the country's labor force. Of this foreign workforce, over three quarters (952,100) are Work Pass holders. This means they are considered lower-skilled workers and that the sponsor company must pay a foreign worker levy based on the nature of the worker's work, the skill set the worker brings, and the percentage of foreign workers in the company's total domestic workforce.

The controversy behind immigration came to light when the government announced its "White Paper on Population" in February 2013, which sought to raise Singapore's population from 5.1 million to 6.9 million by 2030 largely through immigration. The government's intention was to keep the population and thus the economy growing at a healthy pace. However, the public reacted negatively to the announcement setting off a firestorm of popular backlash by Singaporean standards. People claimed that such a wave of immigration would adversely impact the employment prospects for Singaporeans. On February 16, approximately 4,000 people staged a peaceful protest opposing the White Paper, the largest public demonstration of dissent since Singapore's independence in 1965. The PAP, still trying to define its identity and regain credibility after losses in the 2011 election, reacted by announcing new restrictions on foreign workers 10 days later.

These new restrictions, expected to take full effect in 2015, impact not only lower skilled Work Pass holders, but also mid-skilled and high-skilled S and Employment Pass holders. The changes raise levies on lower skilled Work Pass holders by an average of S$50 ($40) per month for workers in the manufacturing sector and S$160 ($125) per month for those in the construction sector, while raising the qualifying salary for low to mid-level professionals and specialists with S and Q-1 employment passes. In announcing these new restrictions, the government cited a need to raise the productivity of all workers in Singapore. "Recent changes of governmental policies concerning foreign worker's permits have hurt small to medium sized service providers. However, the government has acted very proactively in providing means and incentives to help these companies overcome this struggle," remarks Lim Jit Say, executive director, Association of Process Industry

Ooi Tiat Jin, executive manager of locally based distributor Absotech explains how SMEs can take advantage of new government incentives in the wake of these changes to the manpower regime: "If one looks at the Singaporean government as a whole, labor restrictions are being offset by many new incentives to help SMEs become both more competitive and productive. Whereas a local SME in the past might have built up its manpower, the government today is promoting investment into technology and capital that decreases reliance on man-hours. The government is now providing more funding programs and other initiatives to prop up SMEs; however, it is not a one-size-fits-all model."

Although the government has tried to promote more automation and efficient business practices through organizations such as SPRING (Standard, Productivity, and Innovation Board), the gains to be made in labor-intensive industries are minimal. As the government seeks to raise productivity in the workforce, Don Cheng of Hai Leck Engineering points out that there are only so many gains that can be made in the EPC industry: "Hai Leck Engineering has implemented automation in some of its processes… Hai Leck's strategy is to continue to invest in capital and technologies that increase productivity, reduce operating costs, and lower the number of man-hours required on projects. The extent to which a company like Hai Leck can automate its operations is limited, however, and we are nevertheless in a labor-intensive industry."

The changes to the labor regime will hurt businesses looking to hire low and semi-skilled workers as foreign workers make up 43% of the non-professional, managerial, executive, and technician workforce according to the Ministry of Manpower. Dato Andrew Ng, managing director and CEO of ChemstationAsia points out that the hardest positions to fill are low-skilled jobs: "The local Singaporean labor market is… notoriously difficult to navigate. Workers generally do not want jobs that involve the three D's: difficult, dirty, and dangerous."

Small businesses, many of them reliant on low and semi-skilled Work Pass holders, are feeling the pinch. Chow Wai Leun, manager of process plant maintenance and service provider Hong Heng Iron Works, sees the levy increase as just the latest employment related cost increase for his locally-based SME: "Even before levy increases, the cost of labor has perpetually risen in Singapore. The proposal being discussed now means that the levy may increase by 30%. This is definitely something that will adversely impact our business. On top of levy increases it is now commonplace for workers to demand 10% wage raises across the board…. As a small company, wage pressures could completely wipe out our profit margin. This pressure on wages will hurt smaller, local businesses more than multinational companies, who can easily transfer workers between countries or cut down on staffing if necessary."

As new policies squeeze the labor pool further, pressure on wages is certain to increase. Melvin Tan, managing director of Cyclect, echoes the sentiments of many industry leaders who are looking to hire as investment increases in the chemicals sector: "Cyclect's goal is to expand its operations in the area of chemicals; it is a key space for growth. In order to do this, we need to attract talented people to Cyclect; there is no shortage of business, but there is a shortage of manpower in Singapore and it is becoming increasingly difficult to bring people in from overseas."

The cheap, relatively inexperienced, laborers, that many EPCs relied on to fill their ranks before the financial crisis, are quickly becoming a relic of the past. Instead, EPCs are now more focused on employing workers on a longer-term basis. "It is no longer possible to bring in such workers on a job-by-job basis. Companies here must be able to attract good people, train them in a variety of skills and retain them. The government recognizes that such moves will raise the industry's standards," says Robert Dompeling of PEC.

The problem of upskilling workers is not limited to the low skilled labor pool; EPCs are having difficulty attracting local entry-level workers. Alvin Leong, managing director of W H

Melvin Tan, Managing Director, Cyclect

Marathon, explains that EPCs are often forced to look overseas for entry-level engineers, despite Singapore's world-class education system. This is a particularly alarming problem as it could eventually lead to a local skills gap of mid-level and high-level engineers and executives in the coming decades. "In the past, young engineers would be very proud of their profession, but these days most of Generation-Y want the comfort of the air-con room and to stay out of the sun – they have forgotten someone has to build the buildings they sit in and that hard work is what pays. Young people should remember that most CEOs in the oil and gas industry are engineers. Singapore has a lot of talented new graduates, but not enough of them are engineers," says Alvin Leong.

Increased reliance on specialized recruitment and staffing agencies provides a possible solution for companies trying to grow their ranks in the wake of these new restrictions on foreign labor. Given the rapid development of Singapore's economy and its traditional reliance on foreign workers, the market is home to a host of staffing agencies working in the chemicals sector including executive recruitment firm Spencer Stuart, and staffing agencies Brunel International and Kelly Services.

Despite the new restrictions, Brunel International is well positioned from a regulatory compliance standpoint to handle new business. "Singapore's quota system is in place to promote local employment: for every expatriate brought in on a project, a company must also employ a certain number of Singaporeans.


Piping in progress. Photo courtesy of Brunel International

Brunel employs a substantial number of locals, which means we are able to bring in about 750 foreign workers into Singapore—a number that would satisfy our biggest clients," says Jon Proctor, business development manager, Brunel International S.E.A.

Brunel has grown considerably in SEA since entering the region through an acquisition in 1996. The company has played a major role in staffing key projects as new refineries and petrochemical complexes were built. "Brunel usually follows the investment and construction trends taking place in Singapore and Jurong Island. If one looks at our past projects, Brunel accounted for a major share of the provided workforce, especially in terms of white-collar expatriates," says Sil Hoeve, general manager of Brunel.

Despite the challenge it poses businesses looking to hire workers, the government appears set in its course. Although manpower will remain an issue for Singapore, it is also an encouraging sign for growth as businesses are having issues finding enough staff for their ranks. The labor pool is expected to remain constrained in Singapore, making it harder for labor-intensive businesses to operate. Whether or not this will have a measurable impact on final investment decision for new chemical projects remains to be seen.

Enhancing Singapore's Regional Identity

In the post independence era, Singapore has successfully leveraged its geographic position and crystallized its position as a center of global trade. However, as supply chains constantly evolve and new opportunities emerge, Singapore must continue leveraging its position in order to drive economic growth. In 2010 the city-state was dealt a symbolic blow as Shanghai eclipsed Singapore as the world's busiest port by cargo tonnage. Nevertheless, Singapore remains the world's busiest port in terms of transshipments. As Southeast Asia experiences rapid economic growth and increased affluence, Singapore will be an integral nerve center for global and local distribution, trading and logistics companies exploiting these markets.

As a founding member of the 10-nation Association of Southeast Asian Nations (ASEAN), Singapore has been a supporter of increased regional integration. In 2007, the member nations created a blueprint to form the ASEAN Economic Community, AEC, with the goal of creating a regional free trade area by 2015. The Asian Free Trade Area (AFTA) will definitely be a boon to the logistics and distribution companies in the region that already are seeing increased regional activity as economies continue to grow at some of the fastest paces in the world.

Fritz Graf von der Schulenburg, executive vice chairman of Jebsen & Jessen, sees the relative scale of Southeast Asia's growth as an immense opportunity as economic integration occurs: "With a population of over 600 million people and sustained regional GDP growth of five to seven percent per year, ASEAN is on the way to becoming the largest integrated market in the world. We have an intra-trade volume within Asia of $2.9 trillion, which is larger than the total exports in the European Union today."

Although some countries, such as the Philippines, have warned they may not be ready for AFTA by 2015, the plan appears to be moving ahead near schedule. The formation of AFTA will help increase pan-Asian trade as countries such as China, India, New Zealand, Japan, South Korea and Australia have all expressed interest in signing FTAs with the association. "I am not sure if ASEAN will be fully integrated by the 2015 deadline, yet the targets are established and the road map is set, which gives me confidence we are moving in the right direction," says Graff.

Gina Fyffe of Integra envisages this coordination as an unparalleled basis for new linkages between the chemical industries of Asian nations. It is still too early to see whether or not these linkages come to full fruition, yet the potential is certainly apparent and the opportunities for logistics, distribution, and trading firms are vast: "Nothing as exciting as this petrochemical triangle has been seen since the Korean developments 20 plus years ago. Eventually countries like Vietnam and the Philippines will enter the game. It will be interesting to see what Thailand does – it has an enormous amount of experience, and I expect to see it partnering with Malaysia or Indonesia and moving outside of its borders into the surrounding countries, and perhaps moving toward more specialties as well as refining and bulk petrochemicals. Korea, Japan and Taiwan are very focused on the north today, but I expect them to move south too. The Koreans are very creative and inventive, so it will be interesting to see how they take advantage of developments, having already purchased some plants in the triangle."

In this light, Jebsen and Jessen, a Singaporean-based diversified business group, has set ambitious targets for growth. In 2010, the group launched its Double in Five Strategy to double its net profits before taxes in five years. As part of this strategy, the company has grown its chemicals distribution business both through organic means and acquisitions. "I believe such a strategy can only be accomplished in Asia, given the current economic climates in other markets such as Europe," comments Fitz Graf von der Schulenburg.

German-based global distribution heavyweight Brenntag was largely absent during the early 2000s as Asia became a focal point for the global chemicals industry. Since 2008 the company has changed tack and aggressively expanded in Asia Pacific. After its acquisition of Rhodia, the company made its presence felt through acquiring the Danish East Asiatic Company in 2010. Currently,


Gina C. Fyffe, Executive Director, Integra Petrochemicals


Henri Nejade, President & Chief Executive Officer, Brenntag


Dato Andrew Ng, MD, Dovechem

Brenntag has 44 logistics sites in the Asia Pacific region and recently completed a new regional operations hub in Singapore as a new base of operations. Despite only being present in Asia for five years, the company achieved €750 million ($975 million) in turnover in Asia Pacific last year. "We are experiencing healthy growth throughout the region, and we are currently in the process of integrating and consolidating our new networks," explains Henri Nejade, president and CEO of Brenntag Asia Pacific.

In the wake of the company's IPO in 2010, Brenntag sees expanding its already impressive footprint in Asia as key to the company's continued success globally. "For the future, we are actively seeking full product lines for distribution to our existing customers in the region. Part of our strategy since becoming public is to expand our geographical presence. This approach involves matching the appropriate supply to better suit emerging markets, whose needs are quite distinct from one another," says Nejade.

As Asian markets continue to show sustained economic growth, companies will use Singapore as a strategic base. Henning Malmgren, chief commercial officer of DAMCO Asia Pacific, believes Singapore's role as an executive hub will not be compromised even as production capacity grows in other markets: "Southeast Asia is the region in which DAMCO sees great potential for our clients; a growing middle class in Indonesia, the Philippines and Vietnam is driving greater movements of goods within ASEAN. In the context of chemicals, production may be moving to China, but decision-making power for the region remains in Singapore."

DAMCO, a subsidiary of shipping giant AP Moller-MAERSK, sees its Singapore-based control towers as a key for the company's operations in Southeast Asia. These control towers centralize information and allow customers to control shipments and specific goods. "A supply chain should not be a necessary evil in doing business, but a strategic weapon that our clients can use to beat the competition and improve their service offering to the end-customer," says Malmgren.

Along the same lines, Dato Andrew Ng, managing director and CEO of ChemstationAsia (formerly known as Dovechem) believes Singapore's reputation is becoming increasingly based on its decision-making capabilities and less so on its production capacity: "Singapore's economic direction is not in manufacturing but rather services. Therefore, it is good to set our headquarters in Singapore as Singapore provides great infrastructures to facilitate an effective and efficient control. Our level of commitment to this country has not changed. Exports are strong, but the domestic market is shrinking – our customers are shifting production to other countries due to increased costs and the small size of the local market."

Singapore has not grown into a world-class logistics, distribution, and trading hub through geographic default. Like most aspects that give the country high rankings in business environment surveys, Singapore's infrastructure and import/export regulations are second to none. In May 2013, Singapore's port won "Best Seaport in Asia" at the Asian Freight and Supply Chain Awards (AFSCA) for an unprecedented 25th time whilst Changi International Airport was named the best airport in the world by World Airport Awards. Richard Strollo, managing director for South Asia at BDP International remarks: "The Singapore government is always looking at ways to improve the infrastructure and transportation network, be it airports, roadways or ports."

The arrival of Singapore's export-focused chemicals industry over the last three decades has lead to a shifting distribution landscape within the domestic market. Nicholas Lim, managing director of locally-based Unilite explains the shift in the industry since his company's founding 35 years ago: "Singapore was what I would consider a small, more traditional chemicals manufacturing market that one would expect to find in a developing country. At this time the government was encouraging smaller industrial developments with a concentration on sectors such as paints, coatings and inks. However, over the last decade the government has focused on making Singapore a petrochemicals hub for high value products. Due to cost increases as the country developed, especially in land costs, the smaller manufacturing companies are being phased out. Thus trading companies who had begun supplying to more traditional industries have had to evolve accordingly to the market in terms of their product offerings."

Unilite has established an office in Malaysia in order to take advantage of increased synergies between the two countries. "The planned high-speed rail link between Singapore and Malaysia makes it an attractive market. Singapore is getting expensive as a manufacturing base. If Singapore and Malaysia can integrate into a common market, then we may see a restructuring of manufacturing bases along this [rail] corridor. The huge industries may still be located in the major cities but the auxiliary services may be located outside. We have to be ready when this happens," says Unilte's managing director Nicholas Lim.

Singapore's EPCs and distributors are generally in agreement that business is picking up in Singapore compared to a couple of years ago, yet the degree of excitement in the local market varies. For many local companies, regional growth prospects for the medium term are best beyond Singapore's shores. "Quite frankly, many big industrial projects in Singapore are now coming to an end, and companies are expanding more in other countries. Business in Singapore looks very tough: any new projects will face high costs, and new entrants into the industry may not realize quite how competitive it has become" says Alvin Leong, managing director of W H Marathon.

Robert Dompeling of PEC echoes Leong's sentiment on investment in Singapore and its impact on the construction sector: "I think capital will shift from Singapore to Malaysia and Indonesia. The multinationals will continue to invest here [Singapore] in downstream and specialty chemicals, but not refineries. Singapore is a small country and you have to wonder how much more land can be made available for this industry."

Singaporean-based companies are well positioned to take advantage of this growth abroad. As multinational operators expand in new markets, they will look for companies they are familiar with and with whom they have built relationships. Singaporean service providers have evolved to the standards multinational companies demand over decades of experience.


Nicholas Lim, Managing Director, Unilite

Credit not only belongs to multinational corporations, but also to the Singaporean government. During his storied tenure as prime minister, Lee Kwan Yew successfully created a bureaucratic culture that is both incorruptible and highly competent. This ensures corners are not cut and the highest regulatory standards are met in a timely fashion. According to Transparency International's Corruption Perception Index 2012, Singapore ranks as the fifth least corrupt country in the world. Only two other countries in ASEAN, Brunei (46th) and Malaysia (51st), rank in the top 100. As Singaporean companies expand regionally, they have the obligation to export their high standards to markets where corruption and poor regulatory regimes remain prevalent issues.

Wilson K. L. Tan, chairman and CEO of locally based distributor Planet Asia, believes that the image Singaporean companies have developed has helped his company secure business abroad and is an utmost principle that Singapore must diligently maintain: “Brought up in an environment of a progressive and ethical management style of our government, Singaporean companies like Planet Asia take a no nonsense approach to rules and regulation both at home and abroad. In this day and age people use the term integrity in a vey loose manner, but integrity is becoming a very rare commodity. People tend to want to take shortcuts to get ahead, but Singaporean companies have been successful in upholding their integrity abroad. For this reason, we notice that many countries do accord recognition of the Singapore branding and reputation for reliability and professionalism, making it much easier for us to close deals.”

Michael Ang, Chief Operating Officer, Tiong Woon

Tiong Woon, a “local boy” specializing in heavy lift operations is one such company that has symbiotically developed its standards over the last 35 years with the help and assistance of multinationals and is now developing its market both at home and abroad. “The impetus behind this decision [to expand the company’s offering in 2005] really speaks to how Singapore has developed its worldwide brand. For example, when Tiong Woon began its operations, safety regimes were almost non-existent until the Ministry of Manpower and the multinational refining companies really took steps to rapidly improve the safety culture,” says Michael Ang, chief operating officer of Tiong Woon.

For Tiong Woon, multinational companies not only brought standards with them, but also brought new business strategies. Michael Ang credits emulating these companies as the key to Tiong Woon’s growth from a crane rental company to a fully integrated heavy lift specialist with revenues over S$150 million ($120 million). “During the same time as multinational companies invested and brought new standards with them, we looked at what the multinational crane companies were doing and saw them winning some additional businesses through lead engineering. As a result, we moved into the engineering field as well in order to integrate ourselves with what our customers need and add value to our company,” says Ang.

The other component Singaporean companies can export to countries with expanding petrochemical industries is their know-how. Although, attracting and retaining lower skilled or less experienced talent is a challenge in Singapore, EPCs have a dearth of experienced workers that are extremely valuable, especially in markets abroad where there is an acute shortage of expertise. “Singapore’s vastly experienced skilled labor pool – especially at top and middle management levels – definitely gives companies here an advantage when entering the neighboring markets,” says Alvin Leong, managing director of W H Marathon.

For multinational companies, Singapore’s expertise and business environment offers the strongest base in Asia. Eugene Leong of the EDB comments: “As markets in Asia become increasingly important for companies around the world, we see Singapore as a Home for Business, a place from which companies can orchestrate their activities within the region, both in terms of strategic planning and execution.”

When compared to Hong Kong or Shanghai, many executives prefer having a regional headquarters or complementary base of operations in Singapore to being solely based in China. Many believe APAC headquarters based in China tend to become too Sino-focused and fail to recognize the region’s vast diversity and potential. As China’s rapid, double-digit GDP growth appears to have cooled off, ASEAN markets are viewed as increasingly important growth markets by corporate boards. Thus, those companies

Scene of SMAG Complex in Jurong Island . Courtesy of Sumitomo Chemicals

that have taken a less China-centric approach stand to gain.

South Africa's Sasol is one such company that has taken the approach of basing its Asia Pacific operations out of Singapore; despite the fact northern Asian countries (Japan, China, and Korea) are their largest markets in the region. Guy Bessant, managing director of Sasol Chemicals Pacific, explains: "Singapore… still wins on ease of doing business; the only viable competitor is Hong Kong. For some companies it would make sense, but I would at this stage argue against putting Asian headquarters in China, for various reasons: people, tax, risk of change to policies, and the risk of becoming too China-centric. I like Singapore because, in addition to its legal framework and transparency, the country gives me a broader scope of the region – it is too small a place to fixate us. Hong Kong's closeness to China can influence strategy; Singapore's neutrality gives it an advantage.

Sumitomo, one of Singapore's largest players, sees Singapore's small size as an advantage because there is little worry of balancing the needs of domestic and foreign markets. "Singapore is such a small country that we can focus almost solely on using it as a base for supplying external markets, so it serves as a convenient hub from where we can serve anywhere in Asia," according to Hiroki Sakasai, former managing director of Sumitomo's Head Corporate Branch, SEA & Pacific.

Huntsman is one such multinational that sees Singapore as a key component of its regional strategy moving forward. "Five years ago the best opportunities were in China and India, and we have now penetrated these countries to a great extent. Huntsman Performance Products has given a lower priority to ASEAN up to now due to available resources, but some of the countries in it have faster growth than China and India, so the division is looking very seriously at the ASEAN region now." comments Albert Decelis vice-president APAC at Huntsman Performance Products.

Huntsman has been manufacturing its JEFFAMINE polyetheramines product line in Singpaore since 2007 and is considering an additional $70 million investment on its Jurong Island site. "Huntsman has only used about two of the ten hectares of land it has access to at Jurong [Island]; our next expansion will take us to about five, so we need to think seriously about what to do with the rest. We have not developed them yet because of market volatility, but the global economy is now starting to pick up," comments Decelis.

Multinationals see Singapore as not only a manufacturing and distribution hub, but also a strong base for their research and development efforts. British specialty chemical manufacturer Croda has made its R&D efforts a "key focus" for its regional headquarters in Singapore according to managing director Arthur Knox: "Innovation is one of Croda's key goals in Asia and Singapore is one of our key hubs for innovation in the world. Our goal is to provide innovative ingredients developed, manufactured and tested in Asia to meet our customer's needs in Asia."

Along the same lines, Dow's Singapore-based R&D efforts are largely focused around delivering solutions for the ASEAN market. "Southeast Asia needs different solutions [than China], and our model works well because Singapore is

Suiniaty Basirun, Country Manager, Singapore, Dow Chemical Pacific.

so well connected to these markets – even up and coming countries like Myanmar and Cambodia can easily be served from here. Cleaning in China, for example, is not the same as cleaning in Indonesia; climate and habits are different. Similarly, varying levels of humidity affect the durability of paints and coatings," explains Suiniaty Basirun, country manager for Singapore at Dow Chemical Pacific.

Tailoring solutions for specific markets and climactic conditions is a key component to achieve valuable market share and brand-reputation with an emerging consumer class in ASEAN countries. Reaching these new consumers will take tailoring solutions as well, Asian consumers are particularly discerning of the brands they choose.

"WHAT IS NEXT?"

The question "what is next?" is persistently on the mind of Singapore's decision-makers, including Eugene Leong and his team at the EDB. This forward thinking perspective backed up with policy action has enabled JIv2.0 to fire on all cylinders despite increased regional competition and concerns over rising operating costs. Ultimately, regional chemicals hubs serve more to complement rather than compete with Singapore as the pie in Southeast Asia stands to double in the coming decade.

The stability and interconnectivity Singapore affords multinational companies a low-risk platform from where they can penetrate emerging markets. This gives boards confidence to invest in long-term strategies in the ASEAN region while leaving room for quick adaptability if individual market conditions change. When compared to other emerging markets in Africa and Latin America, the stable platform Singapore provides is unparalleled and provides ASEAN a major advantage over these developing regions. Thus, despite its small size, Singapore's regional leadership role both economically and politically should not be discounted because of the unparalleled platform it provides companies in Asia.

Given all these factors, Singapore's chemicals industry has a strong and versatile hand in the medium term. "The outlook for Singapore's chemicals industry is positive. Driven by the burgeoning Asian markets, regional demand for petrochemicals is also growing strongly. Singapore has the right ingredients to continue to be an attractive investment location for companies, as can be seen by the recent projects announced," contends Eugene Leong.

Although new investments are cause for a positive outlook, Singapore is never content to rest on its laurels. As JIv2.0 attracts the desired investment into Singapore's economy, the question once again beckons: "what is next?" for the Lion City.