



Singapore Business News_

May 2012

Megatrends and Opportunities
**Asia Offers Promising Outlook for
Specialty Chemicals**

Industry Focus

**New research institute to better
understand Asian consumers**

Industry Focus

**A*STAR's aerospace programmes attract
more global players**

Future Ready Today

A Sustainable Response

Asia Offers Promising Outlook for Specialty Chemicals_

The specialty chemicals market in Asia is riding high on evolving megatrends, stellar growth and abundant opportunities over the next few years. However, environmental concerns and evolving customer needs will force the industry to innovate even further with novel solutions.



SUZANNE MCELLIGOTT

Carbon Energy Research's principal, Suzanne McElligott, has been covering global energy issues since 1992. She spent eight years in Hong Kong and Singapore where she analysed, assessed and reported Asian oil, gas and petrochemical news for companies such as the Reuters news agency and *Chemical Week* magazine. Back in the US, Suzanne reported on the US Gulf Coast for *Chemical Week*, and Washington D.C. for Hart Energy Publishing. She has extensive experience covering energy and petrochemical commodity markets around the world and is an editor of several newsletters and periodicals.



SPECIALTY chemicals are generally defined within the chemical industry as niche chemicals and polymers with unique functions to enhance performance. They are used in a variety of industries, including wastewater treatment, textiles, agriculture, oil and gas, electronics, and consumer goods.

Specialty chemicals are usually at the higher end of the chemical value-chain, and are used in smaller amounts compared with commodity-grade chemicals as only minute quantities are required to provide specific functionality and enhance performance.

Asia presents a unique challenge to the industry to keep up with the changing landscape of the market. The region recently displaced North America as the world's largest

specialty chemicals market. It now accounts for more than 30 per cent of the global market and, according to market intelligence firm Datamonitor¹, was worth more than US\$260 billion in 2010.

The importance of Asia to the specialty chemicals industry cannot be underestimated. Asia's large and growing middle class demands better crop yields, more consumer goods and electronics, and improved water treatment, all of which involve the design of advanced, cost-efficient chemical systems. The continuing industrialisation of Asia has also seen the rise of the manufacturing sector. This sector demands huge amounts of specialty chemicals to produce electronics, machinery and a vast assortment of other products both for use within Asia and for export.

¹ <http://www.specialtychems.com/Indprof/SCD/ED01.pdf>



The Asian specialty chemicals industry could be worth more than US\$360 billion by 2015

- Upgrading chemical industries to address the talent shortfall and;
- Upgrading industrial training institutes

China and India, while not the most advanced Asian countries in terms of the specialty chemicals market, are becoming its largest consumers and exporters. These countries' population sizes and economic growth have tremendously increased the use of specialty chemicals.

Asia's advanced chemical markets: Japan and Singapore

Japan currently has one of the most advanced specialty chemicals industries in Asia. Flat screens, solar cells, and cell phones are contributing to Japan's current success. Electronic-quality monosilane is particularly in demand in Asia for an increasing number of applications in thin-film photovoltaics, flat screens, and semi-conductors. Japan is also currently the most sophisticated single market for high-quality bio-plastics in the world and consumption there is expected to grow at a



These drivers mean that the Asian specialty chemicals industry could be worth more than US\$360 billion by 2015.

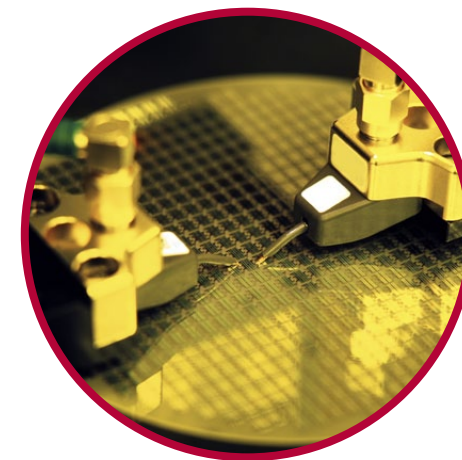
China and India's fast-growing chemical markets

According to *The Economist*, construction, car manufacturing, computers and cosmetics are thriving in China, and each relies on chemical inputs. At this rate, China could bypass the United States to become the world's largest chemicals market as early as next year. As it stands, China already accounts for more than half of Asia's chemicals sales. While base substances, such as petrochemicals and polymers, currently comprise the bulk of China's chemical market share, the demand for specialty products is rising exponentially. Datamonitor predicts that the market value of China's specialty chemicals will increase by 44 per cent to US\$81.6 billion from 2009 to 2014.

While base substances, such as petrochemicals and polymers, currently comprise the bulk of China's chemical market share, the demand for products made from specialty chemicals is rising exponentially. However, this demand is currently met mainly by multinational firms, rather than Asia-based companies. The vast majority of domestic companies are small firms producing one or two chemical products for consumption locally.

India holds equal potential and promise in the specialty chemicals sector. For the industry to succeed there, global consulting group McKinsey suggests that the sector needs to develop local products at the right price, use mergers and acquisitions and partnerships to grow, and build a strong value proposition to attract talent, among other factors. McKinsey has also urged the government of India to help facilitate success of the specialty chemicals industry. This includes the following measures:

- Encouraging specialty chemicals companies to set up plants in Petroleum, Chemicals and Petrochemicals Investment regions;



Compound Annual Growth Rate (CAGR) of nearly 50 per cent by 2015.

The outlook for specialty chemicals is also ripe with potential in Singapore. Singapore currently plays host to over 100 leading players such as 3M, Huntsman, DuPont and Evonik Degussa. Other notable industry leaders in Singapore include Clariant, a world leader in colours, surfactants and performance chemicals, and DSMY Dyneema, the global supplier of an Ultra High Molecular Weight

Polyethylene (UHMW PE) fibre with versatile applications across industries.

As specialty chemicals companies move from developing products to solutions, Singapore's ability to leverage its various research institutes for cross disciplinary research makes it a conducive location for R&D. The Institute of Chemical and Engineering Services (ICES), for example, is an autonomous national research institute that promotes industry relevant R&D through collaboration with companies. ICES

works closely with companies to develop new products and innovative solutions to their problems.

Many specialty chemicals companies are also strengthening their presence in the region, leveraging on Singapore's well developed capabilities and facilities. These include the country's leading position in refinery, trading and logistics, intellectual property protection, its access to global talent and fundamental R&D capabilities.

Innovating for Asia

The core of the specialty chemicals market is a combination of innovation and customer service. Environmental concerns and evolving customer needs will force the industry to innovate even further with novel solutions.

The specialty chemicals industry must handle the complex challenges of taking into account the needs and budget of the customer, while at the same time producing chemicals



Singapore is conducive for innovation and attractive as a specialty chemicals centre

Many specialty chemicals companies are also strengthening their presence in the region, leveraging on the country's leading position in refinery, trading and logistics, and its advancement in the semiconductor, industrial equipment and chemicals sectors

Companies that succeed will be those that are able to capitalise on the inherent opportunities and growth potential of Asia as they assess the innovation required to be competitive in a uniquely Asian context

that comply with increasingly stringent regulatory and environmental standards. The safe manufacture, use and disposal of various types of chemicals is a growing concern among local, regional and national governments, and will continue to be a key concern for the specialty chemicals industry.

The demand for environmentally friendly solutions has also opened new opportunities for specialty chemicals firms. The growth prospects for emission control catalysts is strong as automotive catalyst consumption has the potential to grow faster than actual automobile production in both developed and developing regions. More stringent emission control legislation and an increased number of catalyst bricks in the catalytic converter, have spurred this demand. The two big waves of energy efficiency and climate control have

also contributed to positive demand for specialty chemicals in the development of products such as photovoltaic solar cells, electrode materials, insulating materials and chemicals that reduce water intensity and improve energy efficiency of production processes.

The demand from end-user industries has increased growth prospects for several specialty chemicals segments in Asia—notably mining chemicals, specialty polymers, and electronic chemicals. The demand for oilfield chemicals is also increasing because of the fast-growing upstream activity in Asia. Specialty chemicals used during oilfield operations have a major impact on well performance and ultimate reserve recovery. Customised products that provide innovative solutions to problems encountered throughout the lifetime of a field are in high demand.

Asia's growing middle class has also demanded greater variety, customisation and innovation from suppliers. New Asian consumer segments will create opportunities for chemical companies to expand and customise their offerings. From a company that used to produce in Asia for export to Western markets, DuPont has now stepped up production for local markets. In 1999, it acquired a South Korean firm that makes a product similar to Lycra to suit the South Korean market, and formed a joint venture



with Japan's Toray Industries to build three Lycra plants in Singapore to satisfy Asian consumer demands.

Understanding the importance of innovation, more companies are establishing R&D facilities in Asia in order to be closer to the growing markets they serve. Clariant and DMSY Dyneema both have innovation centres located in Singapore. Clariant relocated its global textile application technology laboratory to Singapore, to develop new solutions based on sustainable chemistries. With more than 60 per cent of global textile production in the Asia-Pacific region, the senior Textile Chemicals management team will be located in Singapore to strengthen customer relationships and oversee the company's strategic priorities. Clariant's Singapore head office also hosts the SAP Competence Centre for Asia. Another industry player, DSM Dyneema, launched a S\$8.9 million APAC Technical Centre in Singapore in 2011 to house the region's first independent ballistic-testing centre with

technology that will drive DSM Dyneema's innovation activities in Asia-Pacific.

Conclusion

The astronomical growth and all-important need for innovation, as well as industry consolidation, are predicted to cause upheaval in all aspects of traditional Asian manufacturing, transport and use of specialty chemicals, but stellar economic growth and better living standards will ensure a bright future for the specialty chemicals industry as a whole in the region. Companies that succeed will be those that are able to capitalise on the inherent opportunities and growth potential of Asia as they assess the innovation required to be competitive in a uniquely Asian context.


SUZANNE MCELLIGOTT





New research institute to better understand Asian consumers

MARCH witnessed the official launch of Singapore's Institute on Asian Consumer Insight (ACI), a national institute jointly established by the Singapore Economic Development Board (EDB) and Nanyang Technological University (NTU). The institute, the first of its kind to focus on Asian consumers, will receive funding of up to S\$77 million over five years and intends to be the leading research centre for companies looking to grow their businesses in Asia.

The institute will host a series of events, education programmes — including a Master of Science in Marketing programme held in tandem with Nanyang Business School — and facilitate industry collaborations between public and private sector organisations. All of which will help businesses create products, services and brands purposely designed for Asian consumers.

At the forefront of the institute's activities will be its annual flagship event, the Asia Consumer Summit, staged in partnership with the *Financial Times*. Modelled after the World Economic Forum held in Davos, the summit will be the world's premier platform to examine Asian consumer trends and showcase best practices to capitalise on opportunities that arise from them. The inaugural event is scheduled for October 2012, and will be attended by global business leaders, such as Acer founder Stan Shih.

In addition, ACI will stage a series of conferences, seminars and executive programmes aimed at addressing specific business challenges, such as doing business in a particular country or sector. The institute is



led by Executive Director Bernd Schmitt, who is currently in residence at NTU as a Nanyang Visiting Professor.

"The Asian consumers are set to become the number one priority for companies around the world. Vibrant economies and youthful demographics are creating the world's fastest growing middle class. Firms that are seeking that next phase of growth cannot ignore this region and I'm most excited for this opportunity to lead this pioneering work at the frontier of the global consumer franchise," said Professor Schmitt.

At the institute's opening ceremony, held at the Mandarin Orchard hotel in Singapore, S.

Iswaran, Minister in the Prime Minister's Office and Second Minister for Home Affairs and Trade and Industry said, "The flagship initiative of Singapore's consumer insights strategy is the ACI. This institute represents Singapore's resolute commitment to building a strong pool of consumer insights talent, and to being the thought leader in pan-Asian consumer insights."

Supporting the ACI's opening ceremony were top executives from global brands, keen to increase their understanding of Asia's vast markets. They included Unilever, ADK, Kraft Foods, RIM, and Nielsen, all of which have committed to collaborating with ACI on various initiatives.

Industry Focus

We spotlight the business initiatives and regulatory policies that support inter-firm linkages and develop the nation's leading and most promising industries.

A*STAR's Aerospace Programme adds more global players to groundbreaking research consortium

MORE global players are collaborating with A*STAR to deepen capabilities and combine resources in aerospace research. In February, A*STAR's (Agency for Science, Technology and Research) Aerospace Programme added a further six organisations to its groundbreaking research consortium, which now combines its expertise with the know-how of eighteen global players from eight countries.

The consortium was formed in 2008 to allow aerospace industry peers to jointly share technology risks and costs in pre-competitive research and development (R&D). The group now consists of the world's four largest commercial aircraft manufacturers, top three aircraft engine producers, and leading aircraft systems providers, including Singapore's foremost organisations from the aviation sector.

International members include Boeing, General Electric, Honeywell, and Pratt and Whitney from the United States, Brazil's Embraer, Canada's Bombardier Aerospace, France's Safran, Germany's Rösler Group, and the United Kingdom's Rolls-Royce. Local members include SIA Engineering, ST Aerospace, the nation's Defense, Science and Technology Agency, and several small and medium size enterprises.

Since 1990, Singapore's aerospace industry has grown at a compounded rate of over 10 per cent per annum. Furthermore, in 2011, the industry achieved a record S\$7.9 billion in output and employed over 19,000 workers (source: *EDB Research and Statistics Unit*). Seeking to enhance future industry competitiveness, the aerospace research consortium has already undertaken a total of

37 multidisciplinary research projects since 2008. These are in the fields of materials and coatings, inspection and data analytics, communications and electronics, and manufacturing and repair. The broad spectrum of topics is reflective of A*STAR's capabilities, which span seven research institutions in the field of physical sciences and engineering.

Speaking about the aerospace programme, its Chairman Tay Kok Khiang said, "The consortium platform offers a unique and attractive proposition for leading aviation industry players to realise the value of collaborative research in the pre-competitive arena."

Already, the research undertaken by the consortium has started to bear fruit. For example, Boeing announced in February that it would transfer 10 A*STAR-developed technologies from research areas such as non-destructive testing, materials, and coatings that will contribute towards enhancing airline value and improving factory operations.

"Boeing has been actively involved in A*STAR's Aerospace Programme as a Tier 1 member since 2007," said Peter L. Hoffman, Director, Global R&D Strategy, Boeing Research & Technology. "The A*STAR Aerospace Programme is attractive in that you get a good critical mass in research funds for a common benefit. The increase in membership has effectively opened up new research areas such as inspection techniques, coatings and machining. For Boeing, finding the right partners to conduct R&D and to co-invest with



other industries and government agencies like A*STAR helps us make the best use of our R&D resources."

Local start-up and consortium member, Flight Focus, has also found value in the R&D undertaken by the consortium. The flight-operations solutions provider signed a research agreement with A*STAR's Institute for Infocomm Research to develop a next-generation cabin communication platform, which will allow passengers to send and receive text messages using their own mobile handsets whilst on a flight.

A*STAR's aerospace R&D is not limited to the consortium, and also takes place on a bilateral basis with companies. In 2009, Rolls-Royce teamed up with A*STAR's Singapore Institute of Manufacturing Technology (SIMTech), to set up a surface-finishing laboratory for enhancing manufacturing productivity. In total, SIMTech and Rolls-Royce have since collaborated on over 75 projects.



Distinguished panel speakers (L-R) from ST Aerospace, Embraer, A*STAR, EADS, Boeing and Bombardier Aerospace, at the A*STAR Aerospace Technology Leadership Forum, 13 Feb 2012.



A*STAR (continued)

Boeing's Network Enabled Manufacturing team has also found value in its partnership with A*STAR's Institute for Infocomm Research (I2R), improving its manufacturing and assembly processes via the development of an integrated sensor platform. Based on this platform, a jointly-developed Intelligent Factory Alert System has been successfully deployed in the production of Boeing 777 aeroplanes and now enables mechanics to summon for immediate help from Ship Side Support teams, eliminating unnecessary delay in contacting and searching for support personnel.

Complementing the above research activities is A*STAR's biannual Aerospace Technology Leadership Forum. Held in conjunction with the Singapore Airshow, the forum features the thought leadership of Chief Technology Officers drawn from the consortium membership. This year's forum in February focussed on "Aerospace Technology Directions and R&D Investments in Highly Uncertain Times". With its various initiatives, A*STAR's Aerospace Programme is taking strides to make a name for Singapore as one of Asia's foremost centres for aerospace research, enhancing the city-state's aviation hub status.

Singapore third-best global city and Asia's number one city, says *Economist* report

ACCORDING to a report commissioned by Citigroup and researched by the Economist Intelligence Unit (EIU), Singapore was identified as the world's third most competitive city and Asia's number one city out of a field of 120 global cities.

The report, entitled *Hot Spots: Benchmarking Global City Competitiveness* examined the ability of cities to draw capital, business, talent and visitors. A total of 21 qualitative and 10 quantitative indicators were used in the assessment of each city, including economic strength; human capital institutional effectiveness; financial maturity; global appeal; physical capital; environment and natural hazards; and social and cultural character. With its dynamic economic environment and its entry point into growing Asian markets, Singapore topped rankings among other Asian cities like Hong Kong, Shanghai and Tokyo. Only New York City and London finished above the city-state globally, in first and second places, respectively.

Commenting on Singapore's performance, Leo Yip, Chairman of the Singapore Economic Development Board, said, "Singapore's favourable ranking is testament to our appeal as a global business location, plugged into the heart of a growing Asia. Our strong attributes of trust, knowledge, connectivity and liveability have underpinned our ability to attract investments, business, talent and ideas."

Yip continued, "Singapore's competitiveness has made it attractive as a strategic location for [multinational corporations] and global mid-sized companies to manage their business,

innovation and talent, in order to pursue growth in Asia. It is also becoming a strategic location for Asian enterprises to build capability to grow in international markets."

With a land area of just 704 square kilometres and a population of over five million, Singapore exemplifies the EIU's finding that population density spurs a city's competitiveness.

In addition, Singapore has managed to attract the strong presence of global multinational companies such as Procter & Gamble and Rolls-Royce, alongside a large number of

innovative start-up companies and world-class research institutions.

Together with government-backed private-public partnerships, Singapore's economic advantages have ensured the city-state is the number one destination for international companies looking to enter Asia's vast markets. Among the key findings of the EIU report, the ability to develop talent, standards of quality of life and top-notch education systems — all areas in which Singapore is seeking to further develop — are also necessary to secure the global economy's attractiveness to tomorrow's talent.



Jurong Lake District named as IBM Smarter Cities Challenge grant recipient

SINGAPORE'S Jurong Lake District, a 360-hectare mixed-use district in the west of the island, has been named a recipient of IBM's Smarter Cities Challenge grant for 2012.

Launched in 2011, the grant is a three-year, US\$50 million philanthropic initiative shared between 100 cities globally. It funds the services of leading IBM consultants, who explore innovative solutions aimed at transforming urban areas into sustainable and technologically-sophisticated districts.

Jurong Lake District will become one of the nation's connected high-density districts. The district will decentralise commercial activities out of Singapore's city centre to bring jobs closer to where people live, and reduce the



Urban areas will be transformed into sustainable and technologically-sophisticated districts

commute — making it the largest commercial hub outside of Singapore's city centre. The district will also enhance the quality of life for its workers, residents and visitors.

Jurong Lake District was selected based on the country's ability to clearly articulate strategic issues with tangible impact on its citizens in addition to the nation's track record of innovative problem-solving, and its commitment to the use of technology and open data.

The Smarter Cities Challenge grant will allow Singapore Urban Redevelopment Authority (URA), EDB and their partner agencies, to work with a team of IBM experts to explore innovative solutions that enhance Jurong Lake District as a smart, sustainable, and connected district. URA, EDB, and their partner agencies, look forward to working with the IBM team in the later half of this year when a team of specially selected IBM experts from different smarter city disciplines will immerse themselves for three weeks in local issues and provide city leaders



with recommendations to support the objectives of the Jurong Lake District initiative in building a smarter business city.

IBM's selection was based on Singapore's long-established track record of continually improving the lives of its citizens, as well as its rich history of innovative problem-solving and investing in cutting-edge technology. The district will support the city's economic growth for the next 10 to 15 years, and will optimise the use of land and natural resources. Ultimately, it will enhance the quality of life for residents, workers and visitors, alike.

Dr Beh Swan Gin, Managing Director of EDB, highlighted the interconnectivity, instrumentation and intelligence of the Jurong Lake District.

He said, "The Jurong Lake District project represents an exciting opportunity to realise our vision of Singapore as a 'living laboratory' where companies and research institutes can collaborate with the [Singapore] government to create, prove, demonstrate, and commercialise innovative urban solutions in a real life environment."

IBM Singapore Managing Director, Janet Ang, commended the country's feat in being named a grant recipient, "We are particularly pleased that the Jurong Lake District has been awarded this grant and we look forward to working closely with the Singapore team to create an innovative approach to city-building that will help Singapore's goal of maintaining our global-city status."

A Sustainable Response_

As businesses and consumers around the world become more environmentally conscious, they are demanding that partners and suppliers pay greater attention to reducing energy consumption and adopting “green” practices. In the chemicals industry, this is driving companies to find innovative solutions to improve the sustainability of their operations and products.

Overview

CLIMATE change is seen by many as one of the greatest challenges civilisation has ever faced. From changing weather patterns to rising sea levels, there is increasing awareness that the huge and growing amounts of greenhouse gases that are pumped into the atmosphere every day are having a significant impact on planet Earth. The fear that these changes may be both highly detrimental to the environment and irreversible is driving greater awareness of the need to safeguard our environment.





Reducing energy consumption reduces operating cost while new markets open potential markets and new revenue streams

As one of the largest consumers of energy, the chemicals industry has the opportunity to take the lead in efforts to reduce greenhouse gas emissions. A study by the International Council of Chemical Associations estimates that innovations in process efficiency and new technologies have the potential to cut the industry's emissions by two to four times, or even more, by 2030. This in turn is estimated to have a significant impact on the reduction of global greenhouse gas emissions. At the same time, the chemicals industry also plays a key role as a supplier of the basic material building blocks for a wide range of industries. From plastics and rubber to fuels and consumer products, the industry is an important source of the raw materials that are used to create these products. This presents opportunities for the industry to contribute by providing innovative new chemical products that are more environmentally friendly.

The industry could adopt a two-pronged approach — to innovate and develop new and better solutions to reduce its energy usage, and to develop products that can enable consumers to do their part too. Success will have a considerably positive impact on the environment. It will also richly reward those that rise to the challenge, but this will not come without a significant investment of resources, time and effort.

Facts on the Ground

Unsurprisingly, many chemicals companies could see the commercial case in becoming more environmentally friendly. Reducing energy consumption reduces operating costs, while new products open up potential markets and new revenue streams. There is also value to be

The industry could adopt a two-pronged approach — to innovate and develop new and better solutions to reduce its energy usage, and to develop products that can enable consumers to do their part too



found in developing a brand reputation of being a 'pro-green' business. Consumers and businesses are increasingly looking for ways to act more sustainably, and buying from or partnering with environmentally friendly businesses is one way to do this.

The above trends point towards more innovation in the chemicals industry as companies strive to adopt sustainable practices and develop 'green' products. There are many examples of such companies operating in Singapore. These include Shell, a global energy and petrochemicals giant;

Singapore Oxygen Air Liquide Pte Ltd (SOXAL), Southeast Asia's largest supplier of industrial gas; and Lanxess, the world's largest manufacturer of synthetic rubber, to name but a few.

Shell is an example of how R&D efforts can lead to significant improvements in efficiency and sustainability. Its new 750,000 tonne MEG (mono-ethylene glycol) plant in Singapore is one of the largest in the world, and uses the innovative OMEGA process to improve conversion efficiency. Developed by Shell Global Solutions, the company's technology arm, OMEGA requires

20 per cent less steam and produces about 30 per cent less wastewater than conventional processes. This results in a significant reduction in carbon dioxide emissions per tonne of MEG produced. In recognition of its exciting promises, Shell won the Institution of Chemical Engineers (IChemE) award in recognition of the OMEGA technology.

Another path to sustainability is to develop products that could enable others to be more environmentally friendly. A case study for this sustainability would be Lanxess. As the world's leading producer of synthetic rubber, its butyl and



Consumers and businesses are increasingly looking for ways to act more sustainably, and buying from or partnering with environmentally friendly businesses is one way to do this



halogenated rubber products are an increasingly important component in the production of tyres. Their unique properties allow tyres to maintain pressure longer, translating to improved fuel consumption and reduced emissions. Given the growing population of vehicles on the road, there is potential for Lanxess's products to hence contribute positively from an environmental perspective.

In addition, Lanxess has also focussed on making its operations more environmentally friendly. When the company broke ground on its new US\$575 million butyl rubber plant in Singapore in 2010, it allocated some 10 per cent to 15 per cent of the total investment to environmental protection measures. Using cutting-edge technology, Lanxess' manufacturing process will require significantly less steam, thereby lowering the facility's overall energy consumption.

Other companies, such as SOXAL, have worked with energy services companies to develop and implement various energy conservation measures to optimise energy usage in their plants. As a result of its efforts, SOXAL is currently enjoying cost savings of \$324,000 per year and avoiding 2,160,000 kWh per year of electricity consumption. These efforts translate to direct cost savings for chemical companies.

Made by Lanxess, their products' unique properties allow tyres to maintain their pressure longer, translating to improved fuel consumption and reduced emissions

Chemical companies are working with energy ones to implement and develop energy conservation measures





Singapore is an ideal destination for chemicals companies because of its extensive supporting infrastructure, pro-business policies and growing focus on environmental sustainability

The Singapore Difference

Today, Singapore is home not only to major production facilities, but also to the R&D and innovation centres of key chemicals companies, making Singapore a global hub for the chemicals industry. A strong pro-business environment and robust infrastructure on Jurong Island have played critical role in attracting the world's largest chemical companies here. Singapore has long recognised the importance of providing an ecosystem that supports and promotes innovation. In addition to a robust legal system and excellent track record in intellectual property

(IP) protection, companies can also benefit from tapping on a deep talent pool.

As Singapore steps up our focus on innovation that can contribute to environmental sustainability, there are new opportunities for companies to establish partnerships with research institutes in Singapore. For instance, the Institute of Chemical and Engineering Services (ICES) has been active in supporting companies to drive innovation in the chemicals sector. One of ICES's landmark initiatives has been a partnership with Japan's Mitsui Chemicals to establish the company's first R&D centre outside of Japan in Singapore. The centre focuses on catalysis and asymmetric synthesis, developing new processes and

materials that will, among other things, enable companies to operate more efficiently and in a more environmentally-friendly way.

As the chemicals industry rises to the challenge of operating in a more sustainable manner, such partnerships will play a critical role in breaking new ground. Singapore offers many such opportunities which, together with its extensive supporting infrastructure, pro-business policies and growing focus on environmental sustainability, make it the ideal destination for chemicals companies looking to innovate for the future-both their own and the environment's.



Singapore Business News

Singapore Business News is a monthly publication that updates readers on the latest industry trends in Asia, with a uniquely Singaporean perspective. Highlights include Singaporean business stories and special opinion pieces on opportunities in Asia, how global companies are leveraging Singapore to tap into pan-Asian growth opportunities, and how Asian enterprises are globalising via Singapore. **Singapore Business News** also provides case studies on how Singapore partners businesses to deliver future-ready solutions.

Singapore Business News is a publication of the Singapore Economic Development Board.

Singapore: Future Ready articulates the nation's aspirations to be a partner for global businesses as they develop their ideas for tomorrow's solutions. Singapore does so by recognising the value of long term partnerships, adopting a forward-looking approach, demonstrating ingenuity, and taking on challenges with a can-do spirit.

About EDB

The **Singapore Economic Development Board (EDB)** is the lead government agency for planning and executing strategies to enhance Singapore's position as a global business centre. EDB dreams, designs and delivers solutions that create value for investors and companies in Singapore. Our mission is to create for Singapore, sustainable economic growth with vibrant business and good job opportunities.

EDB's 'Host to Home' strategy articulates how we are positioning Singapore for the future. It is about extending Singapore's value proposition to businesses not just to help them improve their bottom line, but also to help them grow their top line through establishing and deepening strategic activities in Singapore to drive their business, innovation and talent objectives in Asia and globally.



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