



Taiwan: *'Occidised', but not burnt out!*

This report was compiled by Oliver Campbell and Audrey Villinger of Global Business Reports after having met with a cross section of the main figures of Taiwan's chemical industry. This report looks at the efforts made by Taiwanese companies to adapt to changing global requirements, the rise of China as a low-cost production base and the evolution of Taiwan from a manufacturing base to a high-tech, high-value information hub.

It would defy anyone to think of anything other than 1980s plastic toys and cheap clothes when they see the logo, "Made in Taiwan". We will see what's wrong with that image later, but for now let us simply ask 'what and where is Taiwan?' It sounds like Thailand, but it isn't. In some respects it's similar to Hong Kong, but it isn't. And whilst the idea that it is Chinese is not open for debate; this idea is certainly still debatable. So what is it? Quite simply, Taiwan is Taiwan.

The Republic of China, as it is also known, is in fact a small island formally known by the Portuguese name of

Formosa (beautiful island) and is situated to the east of the People's Republic of China. Confused? You should be. After yet another thrashing in 1895, China was forced to cede Taiwan to Japan. China managed to regain control of the island after World War II and when the Nationalists were chased out of China by the Communists, some 2 million Chinese fled to Taiwan and established control of the island under the Kuomintang nationalist party. The nationalists, over a period of 5 decades, gradually democratized the island and integrated its natives into the ruling system. As recently as 2000, power

was handed over from the Nationalists to the Democratic Progressive Party and to a President who in late-2006 is circling the void of deposition. On top of continual political and economic reform, the larger issue of eventual reunification with China is ever pressing. The similarities between China and Taiwan start and end with a common (spoken) language. The Romulus and Remus of Asia have an antagonistic relationship, manifested by the 800 missiles that China currently aim at Taiwan and the lack of direct flights between the Peoples' Republic of China PRC and the Republic of China ROC.

Taiwan has long been a hub for low cost manufacturing and a land of stable economic growth. Relatively unscathed by the Asian financial crisis of 1997 due to its low foreign debt, Taiwan continues to serve as an attractive destination for foreign companies looking not so much at low-cost manufacturing, but rather at a high-tech industrial hub, boasting many successful brands and with an excellent reputation for IPR. Taiwan is the world's number one investor in China and the 8th trading partner of the USA. One of the "Asian Tigers" or Dragons, Taiwan enjoys an almost unique understanding of the Chinese mentality and way of doing business, facilitated by a common (spoken) language. Taiwan has no significant reserves of raw materials aside from its educated workforce extracted from the highest density of universities in the world. The skills that are nurtured therein are in every way responsible for the astounding statistic that places Taiwan 4th in the world for the 7th year running in number of patents awarded internationally. Again, semi-conductors and flat screen displays play the major role here and not toy cars and teddy bears.

Mangos, Mangroves and Methyl-tertiary-butyl-ether

Today, Taiwan shirks its factory stereotype image, replacing chimneys with green wind generators. However Taiwan must remember how important the upstream petrochemical industry is to the existence of today's celebrated high-tech boom.

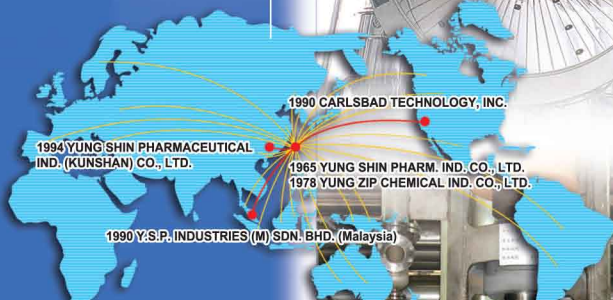
The Taiwanese chemical industry is characterized by its close relationships with fields of industry such as electronics, IT, mechanics and automotives. A more extensive hydrocarbon supply since the 1960's enabled the petroleum industry and its crackers to flourish and hence provide the core and foundation for the midstream and downstream chemical industries that have laid the groundwork for today's high-tech industries. An examination of the recent history of Taiwan's chemical industry will help us to understand how Taiwan has turned from a hotly contested, highly-coveted, farming-based island into today's international technology hub, home to the world's tallest building (Taipei 101) and host to the world's first city-wide WiFi grid.

Being the prominent player in the pharmaceutical industry, you deserve to know who to collaborate with.....

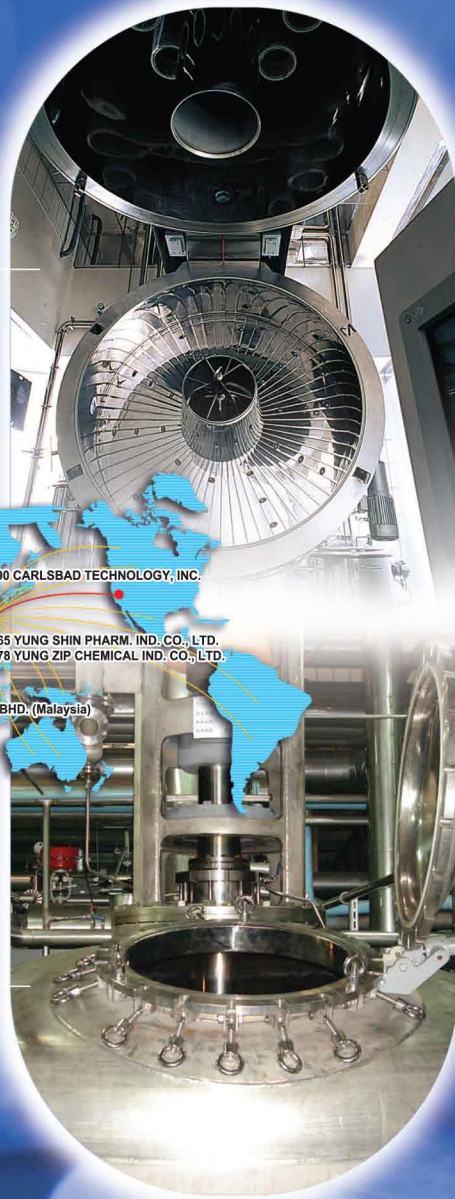
Professionalism Integrity Health

State-of-the-art operational System

Intensive asiawide in-house sales force



API & Special Chemicals



YUNGSHIN YungShin Group

Your Trustworthy Global Partner

www.yungshingroup.com

Backward Integration

The key to the success of Taiwan's chemical industry has been "reverse integration". Devoid of natural resources, the island has had to rely on imports and their subsequent processing. By following a process of backwards integration, involving several investments into naphtha crackers over the past 3 to 4 decades, the country has developed a successful upstream industry allowing for a thriving mid and downstream industry. This is important today, as other industries in Taiwan try to replicate this model.

While China was struggling to get to grips with the end of 5000 years of Dynasty rule and the brief domination of the Nationalist party, the seeds of Taiwan's chemical industry had already been planted. There were seven stages of this development as suggested by Wu Hsun Cheng, General Director of the then Union Labs at ITRI (Industrial Technology Research Institute). 1913-1946 he described as the incubation stage, when Taiwan was still under Japanese rule. At this time, only basic fertilizers and alkaline chlorine sectors emerged. Subsequently, Taiwan Fertilizer was founded and assumed control from the Japanese over a lead based sulphuric plant. The main objective here was to develop fertilizer to serve the domestic agricultural industry. From the end of the Second World War until the early 1950's, export goods consisted mainly of agricultural products. The subsequent period until 1967 represented a key stage of development. Whilst the newly communist China was mulling over its first five year plan, Taiwan's chemical industry had its own four year plan, which by 1953 had entered its third stage. The plan boosted fundamental chemical

industries based on chloro-alkali, inorganic acids and fertilizers. The infrastructure generated here assisted the establishment of the papermaking, MSG, textile and dyeing industries, amongst others. Between 1968 and 1975 the export expansion stage began. 1968 saw the establishment of China Petroleum Corporation's (CPC) first naphtha cracker plant with an ethylene capacity of 54 MTY. This heralded the beginning of locally made low-density polyethylene and dimethyl terephthalate – a raw material for polyester fibre. 1973 saw the establishment of Tou-Fen's natural gas ethane cracker, again with a 54 MTY capacity. 1975 saw a third investment in Kaohsiung into another naphtha cracker, with an ethylene capacity of 230 MTY. Simultaneously, downstream processors were established and subsequently thrived. These developments provided an ideal infrastructure for the further development of the synthetic fibre and downstream petrochemical industries.

This new stable supply from the Taiwanese upstream and mid-stream combined with Taiwan's low-cost labor enabled Taiwan's plastics, rubber and textile industries to flourish. This midstream and upstream development is almost single-handedly responsible for Taiwan's remarkable growth in the latter half of the 20th century and for the success of the clothes, toys and 'Made in Taiwan' logo that we are all so familiar with.

The mid-1970's to mid-1980's stage saw no slowdown in investments. This period was described as one of maturation. This fifth stage saw the construction of a third naphtha cracker in 1978 and a fourth in 1985 bringing Taiwan's total ethylene production to 953 MTY, and ranking in the world's top 12. The establishment of factories dedicated to the production of intermediate raw materials added more value and further contributed to the development of the petrochemical, IT and electronic industries. At this point it was clear that the role of the chemical industry in Taiwan's value-focused output could not be underestimated.

1989 was a turning point for the planet with students met their fate in Beijing's Tiananmen Square and the iron curtain began to corrode internationally. In Taiwan, environmental protection, labor costs and the government's own position became serious factors affecting the progress of the chemical industry. Hurdles were placed on the path to establish naphtha crackers 5 and 6. Eventually in 1990, number 5 was opened as number 1 was closed. This caused a shortage in feedstock, forcing downstream industries to adapt, spurring the evolution from a labor and capital intensive industry to a high-value, high technology, low-emission and automated industry. From this point onwards a period of regeneration was underway.

Formosa Plastic's 6th cracker began construction; Tuntex's 7th and CPC's 8th were also proposed. Despite the strength of Taiwan's environmental lobby and ever-rising labor costs, investment remained forthcoming. Not quickly enough, however, to offset the shifting of many of the downstream (chemical and otherwise) industries to China and other parts of South East Asia.

Integration backwards or forwards can only be successful with integration into Taiwan and East Asia. Credit here must surely go to Degussa who recognize Taiwan for what it is, Taiwanese. The efforts to respect cultural and climatic differences are notable in the efforts to localize websites. After all, what is the point of simplified Chinese characters on a Taiwanese website or traditional characters on a PRC site? It's this kind of attention to details that is necessary for domestic as well as multi-national firms' success in such a diverse region.

degussa.
creating essentials

Two words
about our global
market position:
number one.

臺灣德固薩股份有限公司 Degussa Taiwan Ltd. 9F, 133, Min Sheng E.Rd., Sec.3,
Taipei 105, Taiwan, TEL: +886-2-2717-1242 FAX: +886-2-2717-2106

www.degussa.com.tw

Degussa is the world's number one in specialty chemicals. www.degussa.com

Big Brother's Little Brother

In 2005 Taiwan reached an economic growth rate of 4.09%, a figure somewhat unremarkable when compared to the heady days of the mid-1990s or the current statistics for Taiwan's Big Brother, China. Underperforming compared to the 4 Asian dragons, last year's domestic political turmoil continued (amidst what can only be seen as a healthy democracy when compared to an apathetic West) and several major government developments were boycotted by opposition legislators. On the other hand, strong international sales maintain the health of the economy as does increasing levels of trade across the straits with China. The new low levels of unemployment tied to a booming international market for TFT/LCD displays, as well as the rapid progress of the construction of the two colossal petrochemical complexes in Dafa and Mailiao reveal that there is still warm blood in these veins.

The upstream industry in Taiwan is dominated by two players; CPC (Chinese Petroleum Corporation) and Formosa Group. CPC is a national company plagued by unrealistically and artificially low retail gasoline prices, whereas Formosa is a company that truly represents the strengths of this entrepreneurial island.

The total ethylene production in Taiwan reached a new high of 2.9 million tons in 2005, representing a 1% increase on the previous year. Propylene production increased by a similar proportion, whilst benzene and zylenes output were boosted by 10% each. The production of the five major plastic polymers saw a slight increase. The production of ABS, styrene, vinyl chloride and PVC exceeded 1 million tons respectively, ranking number one in the world. Production for synthetic fibre intermediaries, PTA and EG, stayed flat. Caprolactum recorded a growth rate of 14% whilst acrylonitrile showed only minor increases. In terms of key synthetic rubbers, TPE showed strong momentum. The export ratio of some of the ten major petrochemical products was over 60% and some individual products breached 80%. The domestic demand for petrochemicals reached 25 million tons. Specifically olefins and aromatics accounted for around 50%, plastics polymers 24%, synthetic fibre intermediaries 19%, synthetic rubbers 1%

and others, including detergent raw materials 6%.

So what's happened recently to catalyse the reaction of Taiwan's chemical industry to these step-changes? In the eyes of Taiwan's Petrochemical Association, the most important development of the last year is the 4th phase expansion of Formosa Group's naphtha cracker 6 (NC6). This expansion consists of a 3rd naphtha cracker with a 1.2 MTY capacity and a 3rd aromatic unit which is capable of producing some 1.1 million tons annually. These constructions and expansions will be completed by the end of this year. In addition to this, the CCP Group has started its new phenol/acetone plant in Dafa Industrial Park in the south of the island. Dairen Chemical's large scale VAM unit and other investments at Mailiao are also of note. As a result of the environmental lobby in Taiwan, CPC's NC3 'build-and-scrap' project has made no progress. The goal of this project had been the establishment of a new cracker with a 1 million ton capacity and the simultaneous retirement of the old cracker which has been in operation for over 30 years.

Kuo Kuang Reflects the Ambitions of Taiwan

Kuo Kuang is one of the most ambitious developments to take place recently and corresponds to one of the largest investments in Asia. Specifically this is the establishment of the Kuo Kuang Petrochemical Co. Kuo Kuang represents a total investment of NT\$ 600 billion (USD\$18 billion). In a display of Taiwan's international ambitions, some NT\$200 billion (USD\$6 billion) of this is to constitute the construction of a new petrochemical complex in the UAE. The remaining amount will fund a refinery, a naphtha cracker (1.2 MTY ethylene production), an aromatic plant, an industrial harbor and other various downstream plants at Taisi in Yunlin county. The state company CPC is the major player in this, holding 43% of the stake, whilst a consortium of 6 other Taiwanese companies owns the rest. This project alone should leave people in no doubt as to Taiwan's ambitions for the upstream industry, as the constructions in Taiwan will take some 10 years to complete.

Your Biotech Partner in Taiwan

DCB advances the biotechnology industry in Taiwan through its

R&D activities in:

- Biopharmaceutical technology
- Small - molecule drug development
- Herbal medicines
- Environmental biotechnology



Contract services for:

- Preclinical studies (AAALAC-accredited animal facility)
- Protein drug production & process development (cGMP pilot plant, FDA drug master file, bioreactors up to 500L)
- GPCR drug development
- Formulation and dosage preparation

Industrial promotion mechanisms for:

- International partnering — BioFronts
- Technology transfer — BioFronts
- Capital investment — BPIPO
- Information service — ITIS
- Start-up Incubation — NBIC



For more information:

- www.dcb.org.tw
- Tel: +886-2-2695-6933*2218
- Fax: +886-2-6615-1110
- e-mail: prservice@mail.dcb.org.tw



Development Center for Biotechnology

www.dcb.org.tw

2006 Petrochemical Outlook

Sidney Chow of the Taiwanese Petrochemical Association believes that despite several hurdles in the shape of image problems and a very strong environmental lobby, the outlook for 2006-2007 is good. Production and demand should remain fairly stable. Following some capacity build-ups, the output levels of some specific products will see increases. The export of major petrochemicals will continue to rise and this should perpetuate a prosperous business cycle. The high crude prices have only served to catalyse the impact of other challenges such as attempts to reduce CO₂ emissions and the government's keenness to lower unit energy consumption.

Dye Another Day

Taiwan's chemistry is moving toward more high-tech industries. Everlight is Taiwan's best known dye company, which have branched out into cosmetics, electronic dyes, light stabilisers and even anti-carcinogenic health products at a retail level. WeiWang Chen, Everlight's GM explains Taiwan's evolving dye industry: "Over the last ten years the production volume of dyes in Taiwan has decreased gradually as a result of competition from Chinese dyes and the fact that dyeing mills are moving out of Taiwan and into China. In the future we will have some formulation done outside of Taiwan in order to get closer to our markets and customers." Everlight are a perfect example of how Taiwan would like to see its established industry players evolve: production

can shift, but the island can be the technology hub. This idea is reflected in Chen's plans for Everlight; "the idea is that the dyes production and the preparation can be separated into the synthesis and the formulation. The synthesis really reflects the ultimate quality of the performance. My idea is to have the synthesis done in Taiwan to ensure the highest and most stable quality. But in terms of development and formulations, we want to do it closer to our customers."

Air Products are an international company that has also reacted to the changing circumstances. Air Products in Taiwan has a very successful joint venture with Taiwanese company, San Fu, demonstrating the ease of an international company working with a local Taiwanese partner. Corning Painter, the newly appointed Global Head of Electronics, and Allen Chien, the President of San Fu, explain their interest in Taiwan: "Our initial interest in Taiwan was the attractive market, roughly 80-85% of which is in electronics. We have endeavored to get closer to our customers. This is why we have such an extensive network across the island. Central Taiwan is growing very, very fast. I would say, in terms of sales, the average has been growing by over 15% a year. Air Products' extensive product list extends to electronic chemicals, gasses to serve the electronics industries and specialty products for Taiwan's ever-mature display market. These capabilities combined with the regional knowledge of a local partner make for a formidable presence." Painter expands further: "I think the other thing that distinguishes Taiwan from other Asian business is that it is very easy to do business here. The regulatory environment is in line with the rest of the world, its certainly moving towards international standards for transparency. It's very straightforward

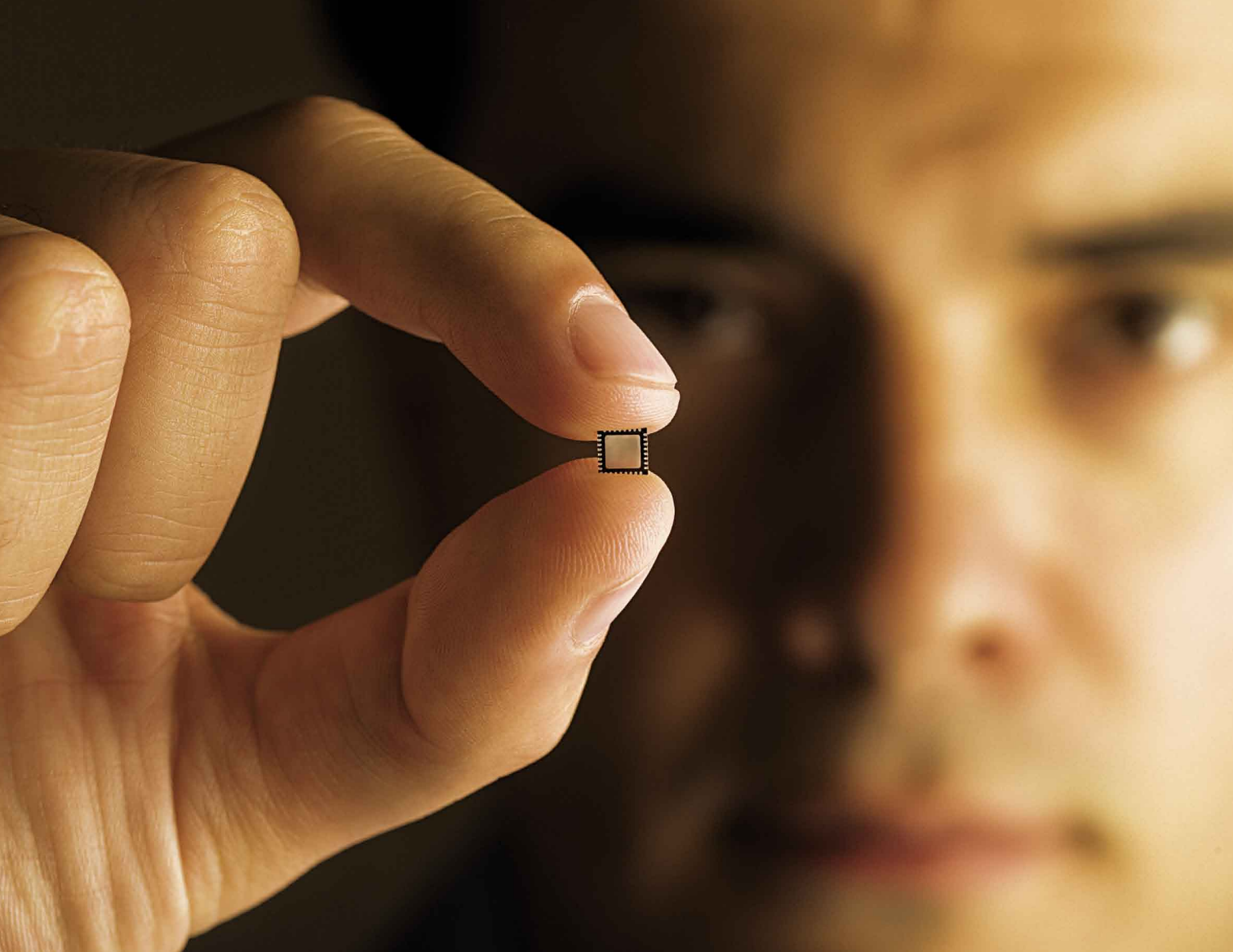
Everlight Chemical High-Tech Chemical Manufacturer



Product Portfolio

- Dyes ,Functional Dyes, Ink-Jet Inks, Laser Toners
- Light Stabilizers, UV Absorbers
- Prostaglandin APIs ,Cardiovascular APIs, Intermediates
- Photoresists & Related Electronic Chemicals
- Nano-materials, Sol-Gel Coatings

www.ecic.com



What have we contributed to the electronics industry? About this much.



Our key global electronics business leaders are based in Taiwan. Our team members use their experience and understanding to deliver efficient and innovative solutions to customers in Asia.

In this business, small is huge. That's why, for over 30 years, companies throughout the world have counted on Air Products' materials, equipment and integration expertise.

We offer the broadest range of bulk and specialty materials in the industry, including those from Schumacher,[®] ACT[®] and Solkatronic.[®] Our experienced team will thoroughly integrate our gas and chemical materials into your manufacturing processes to optimize results. You can

even tap into our experience online at www.airproducts.com/focused12. Register there for our free e-newsletter, Solution Updates, and get a free USB drive filled with in-depth technical papers and industry information. It's just one more way we're doing big things for you.



tell me more

www.airproducts.com/focused12

to do business here .”

Hopax Chemicals have managed to diversify their product range with an ambitious 6-7% reinvestment into R&D. Established in 1975 as a manufacturer of papermaking chemicals, Hopax from an early age placed a huge focus on reinvesting in research to the point where today, they have now become a global leader in science and technology, providing diversified chemical products in areas of specialty chemicals, fine chemicals and repositionable self-adhesive products. Hopax Chairman, Alex Kuo, is a man who believes in responsible and sustainable growth: “Taiwan is a small country which in the past has established excellent contacts with the rest of the world. Education here is very good indeed, and Taiwan presents excellent opportunities to make things happen. I look back 60 years and remember Taiwan then and I wonder in another 60 years what could be achieved!”

“Star-Tech” The Development Of The Biotech Industry

The petrochemical industry in Taiwan, as successful as it is essential, is simply not popular. Taiwan has been championing its IT and high-tech industries over the past 10 years, and now it looks as if there might be another success story just around the corner in the field of biotechnology.

But what is biotechnology? Dr Wu, the new President of the DCB (Development Centre of Biotechnology) explains, “it is hard to define biotech exactly, but quite simply, it’s anything that is related to bio!” David Silver, the President of Biotech East, agrees that attempting one single definition is as impossible as it is implausible. The Biotechnology and Pharmaceutical Industries Program Office, part of the Ministry of Economic Affairs, has put forward the following definitions: “Biotechnology is a set of powerful tools that employ living organisms or parts of organisms to make or modify products, improve plants or animals, or develop micro-organisms for specific uses.” Examples of this

new ‘biotechnology’ include industrial use of recombinant DNA, cell fusion, and novel bio processing. It is generally understood in Taiwan as the application of technological principles in life sciences.

Taiwan’s advantages over regional neighbors are clear. Firstly, Taiwan already has a relationship with high-technology. This is easily transferable to biotechnological research. Secondly, Taiwan’s 157 universities provide an ample flow of skilled labor. This, matched with possibly the most vibrant venture capital industry, makes Taiwan a very exciting place for investment. Any doubts over IPR can be dispatched as Taiwan’s respect for intellectual property has been acknowledged by many, including AMCHAM’s (American Chamber of Commerce) President Tom Johnson. The Taiwanese government has had big plans for Taiwan’s biotech industry which stretch back to 1995 when the the government released a road-map outlining national industry goals and the necessary actions to make sure that these goals were achieved. The most recent amendments made to this plan were released in 2003 in ‘The Promotion Plan for the Biotechnology Industry’. These goals aim: ‘To establish Taiwan as the centre for genomic research and development in Asia, to establish Taiwan as the leading location for human clinical trials in Asia, to establish Taiwan as a worldwide subtropical floriculture centre, to establish in Taiwan the most vibrant biotech-focused venture capital industry in Asia.’

These goals can be more specifically explained through targets. Targets which would like to see US\$4.5 billion invested in new biotech/pharmaceutical industry by 2010 and at least 18 international-standard biotech companies established in Taiwan, consisting of either locally owned or mixed local-overseas ownership joint ventures or collaborations.

Taiwan’s biotech industry is certainly ready for international cooperation. As Dr Wu, proclaims: “The DCB is, after many years of experience, realizing that it is time to bloom. We are seeking any international opportunities for cooperation, especially with those who have experience and good practice. They can really take advantage of Taiwan’s financial strength. I think this will secure the success of our industries. We would like to exhibit a couple



Biotechnology and Pharmaceutical Industries Program Office, MOEA, TAIWAN

Why BPIPO, MOEA?

Looking for biotech business opportunities in Taiwan

- Products manufacturing / Marketing Investment
- Technology transfer
- Joint venture
- R&D Cooperation
- Others

Please contact One-stop service office

www.biopharm.org.tw/en

email: services@biopharm.org.tw
 TEL: +886-2-2655-8135 FAX: +886-2-2655-8134
 Address: Room A, 17F, No. 3, YuanQu St., Nangang District, Taipei 115, Taiwan

of success stories.” These invitations are backed up by another Dr Wu, who is President of DCB: “Most of our companies are on the medium to small size, and in this area we can compete with anyone in the world. We want collaboration; we have a R&D unit and an incubator. SME’s can actually go through the incubator, and if you can invest a product then you can take it from there.” In this way SME’s without the capital for this kind of research can have access to upstream research and receive help in commercializing their results through the DCB.

The Director of the Ministry of Economic Affairs’ Biotech & Pharmaceutical Industries Program Office, Chei-Hsiang Chen explains: “20 years ago the government announced biotech as a strategic area for growth. We set up several major research institutes. We now want to build up this infrastructure from research to technology development capabilities.” The challenge to Taiwan will be to galvanize the forces of the myriad SME’s that are spread across the bio-tech industry spectrum. This is where research areas and organizations such as DCB or Nangang Biotech Plaza will really come into their own by providing a ‘leg-up’ to the private sector, and then helping them commercialize their research. Chen adds, “we are trying to convert Taiwan into a R&D, biotech operations centre. We don’t yet have one manufacturing plant which can produce a biological product. We will need some manufacturing capacity too as being a knowledge hub alone is not enough. So we are looking for international partners. We also want to attract multi-nationals to Taiwan to set up their R&D activities here.” The evidence in the past has been that if Taiwan wants something to happen, it tends to happen. With the government’s ambitions for the biotech sector well documented, the opportunity for international participation is apparent.

From Farmer to Pharma in 30 years

Taiwan’s pharmaceuticals are split into two categories: Western and Eastern. The island has around 250 registered Chinese herbal medicine producers, among whom around 70 are Good Manufacturing Practices (GMP) manufacturers. There are also around 280 Western medicine manufacturers in Taiwan. Of this number around 30 focus on producing bulk pharmaceutical chemicals. Total production volume of Western medicine topped US\$ 1.5 billion at the turn of the century and this figure is expected to skyrocket.

Jo Shen, President and CEO of Scinopharm, a Taiwanese company focusing on custom synthesis activities, API manufacturing and brand company outsourcing services explains the difference a few years made to the area in Tainan where her facilities are situated: “Having started construction on the site in August 1998, we opened the first manufacturing line by January 2000; nearly 18 months later. Show me another location on the planet where a world class facility such as this can be approved and built in such a short space of time.” If the speed of construction reflects the willingness of the government to promote this area of industry, then the speed of growth in this area will be truly breathtaking. Scinopharm focus on taking the inventions of others (new drugs, new compounds and new chemical entities) and subsequently delivers a manufacturing process. “Investors ask, ‘why Taiwan?’ and I answer: it’s our experience in high quality manufacturing. It’s been reflected in the high-tech electronics facilities. The construction speed is fast, the quality is excellent and the infrastructure – air handling and the satellite, supporting

ScinoPharm Taiwan
CRO/CMO of APIs
Your Best Partner in Drug Development



Special Capabilities

- High potency & cytotoxic compounds
- APIs for injectables
- Production-scale column chromatography
- Chemically difficult APIs
- Peptides
- Nucleic Acids

Contact Us:
<http://www.scinopharm.com>
 E-mail: ScinoPharm@scinopharm.com.tw

台湾神隆股份有限公司
 ScinoPharm Taiwan, Ltd.

- * Biological Buffers
- * Protein Preparation Additives
- * Additives for Electroplating Formulations
- * Monomer for water-borne polyurethane
- * Aqueous polyacrylate
- * Surfactant, Intermediates

HOPAX
 FINE CHEMICAL
Join your ideas

Oil Recovery, Pigment, Textile, Nanotechnology,
 Personal Care & Cosmetics, Lithium Battery...

Find more HOPAX involve.
www.hopaxfc.com
 GMP IN HOPAX, COMING SOON

industries are here - the service is excellent here. And one thing we can never underline enough is the quality of people.”

Fang Chen Lee of Yung Shin Pharmaceutical (YSP) highlights some of the changes of the past 20 years: “Taiwan started to implement GMP in pharmaceutical manufacturing years ago and it has been updated since then. Our regulations are pretty much like those in the USA. Many Taiwanese companies have experience exporting their products to industrialized countries.” Lee takes a much more pragmatic and calculated approach to China than most: “Developing in Taiwan, we can show them how to do business, or use some surplus money and their people or materials, try to vertically integrate our business, which could go from a mere API to a chemical intermediary. We will use our experience here in how to manufacture pharmaceuticals to FDA guidelines and then the last stage is going to the USA. We would be integrated from China, Taiwan to the US.” This resourcefulness and approach to China perfectly highlights the strength of a Taiwanese company as a pharmaceutical partner.

Dr. Steve H Chang, President of Chunghwa Chemical Synthesis Biotech (CCSB), reiterates those feelings as to why Taiwan provides such excellent partnership potential: “Taiwan has been dealing with the West for many decades now and is more accepting of general business rules, with integrity as the most important factor. Everybody in Taiwan knows this. If you want to develop a long-term relationship with any company you have to follow such rules.” Chang also explains the fragmented nature of the industry: “Yung Shin which has its own API subsidiary could be better described as being a competitor of CCPC, our parent company. There are three main pharmaceutical companies in Taiwan, CCPC, Yung Shin and ScinoPharm, located respectively in the North, Middle and South of the country. However, no one controls more than 10% of the market share. There are over 100 pharmaceutical companies in Taiwan but most are too small to grow further.” These characteristics are noticeable up and down the industry, and provide some excellent opportunities for investment and partnership in Taiwan.

There is No Future for Commodity Production in Taiwan

The geographic shape and size of Taiwan, combined with its rising labor costs and impeccable environmental standards have resulted in a change in the investment environment. Witnessing the exodus of capital to Mainland China, the government’s strategy has been to advance technology, to add value and increase product competitiveness – essentially to find a new niche or groove for Taiwan. Placing hurdles in the way of Mainland investments has only slowed the inevitable as business continues to leapfrog politics. As long as the British Virgin Islands and Hong Kong’s airport exist, Taiwan’s ever growing business in China is a forgone conclusion.

That said, there are still plenty of opportunities for Taiwan’s chemical industry. The use of sufficient or excessive base petrochemical raw materials will help develop key petrochemical intermediates which will meet the needs of the local downstream consumers, and then serve regional export markets. As other manufacturing industries in Taiwan shift towards high-tech and high-value production, such as textile’s composite and non-woven fibres, the chemical industry will have to adapt accordingly. A

market orientation and not a product focus are as important for all streams of Taiwan’s chemical industry as ever. If Taiwan’s chemical industry or foreign investors are to look for niche markets, then they need look no further than the semi-conductor and IC-packaging materials industries. The country’s focus on IT, electronics, communications and optics/optoelectronics combined with a colossal international demand ensure that there will always be a need for base materials, chemicals and gasses and as long as local suppliers can remain competitive, then they will play a key role in Taiwan’s evolution. There will be no future in Taiwan for those who remain focused on simple textiles, basic fertilizers, commodity products and the surrounding industries.

Given the initial emergence, sustained presence and government backing of the biotech and bio-pharma industries, there will also be an increasing local market for engineering chemicals, specialty chemicals, fine chemicals, electronic chemicals and medical chemicals.

Taiwan’s Board of Foreign Trade attempts to develop and assist Taiwanese brands overseas and to ensure that as long as companies such as BenQ and Acer have successful retail products internationally, the regional demand for high-tech chemicals on an industrial level will remain. Let us not forget that even if these brands focus on China as a production hub, Taiwanese chemical companies are still perfectly positioned to supply them – either by moving their own production offshore to China or by supplying from Taiwanese production bases. It’s still Taiwanese companies working with Taiwanese companies, wherever it may be.

Asia’s health has been plagued by misfortune over the past 4 years, in terms of SARS and Avian Flu particularly. This fact combined with Taiwan’s ageing population ensures not only a market for medical chemistry, vascular medicine and psychological chemicals, but also places Taiwan in an ideal position to serve as a sourcing destination for API production. Scinopharm, Yung Shin and CCSB could serve as formidable partners for custom synthesis, API manufacturing and OEM.

We have seen and continue to see the transformation towards a high-end, value-based Taiwanese chemical industry. Taiwan is possibly the finest example of forwards and backwards integration, reflecting dynamism over 2 decades that will prove essential for success in the 21st century if China is ever to provide the opportunities and competition with which it teases and threatens the global economy. Taiwan’s emphasis on green-production, albeit threatening to competitiveness initially, has given Taiwanese companies an understanding of corporate responsibility, sustainable development and responsible care that the world will thank them for when they impose these standards on investments in Mainland China. Taiwan’s supply chains and ever-emerging brand image will enable Taiwanese companies to continue to compete with low-cost and labor intensive areas. If you want to find a “Made in Taiwan” logo today, it’s better to check your laptop than your son’s Christmas present. The flight from the West to Taiwan may have you resetting your watch forward by hours, but arrive in Taipei and you will reset it by years!

The beauty of this wonderful island extends beyond aesthetics. Taiwan’s appeal is in its sustained cultural identity despite its historical interactions with all of the Eastern Asian countries. Taiwan can only be described as Taiwanese.

So if you are planning to enter the murky and seemingly random world of partnerships and investments in China and South East Asia, Taiwan will be your flashlight –batteries are included!



CCSB Always a Team Player

With 75% of our business in North America and Europe, CCSB has been collaborating on API and advanced intermediate development and production with leading Brand and Generic drug companies for years. Founded in 1964, CCSB's successful track record includes commercializing several APIs of Statin, Immunosuppressant, Muscle Relaxant and ACE inhibitor with complete DMFs. Innovative, adaptable and conscientious, our contract manufacturing team like our resources are state-of-the-art. You can trust CCSB to always provide the best value at lower total cost.

Validated Experience

**Contract manufacturing
from lab to commercial scales**

- 40 years experience in API manufacturing
- First FDA approved factory in Taiwan (1984)
- Last FDA Inspection in Dec 2005
- cGMP certified by authorities
- Regularly working with customers in regulated countries

Coordinated Support

**Integrated solution from our
experts (R&D, QA and business)**

- Highly skilled R&D support
- QA /Regulatory knowledge
- DMF and technical package
- Synthesis & Biotech Production

Since 1964 in Taiwan

CHUNGHWA CHEMICAL SYNTHESIS & BIOTECH CO., LTD.

1 TUNG-HSING STREET, SHU-LIN 238, TAIPEI HSIEN, TAIWAN, R.O.C TEL: 886-2-8684-3318 FAX: 886-2-8684-3202
E-mail: cm@ccsb.com.tw www.ccsb.com.tw For NAFTA region, E-mail: info@pharmaports.com TEL: 1-800-203-1340