Embracing Asia

Syntor Fine Chemicals has dealt with the Asian challenge by becoming part of it. We went to find out more

The situation was grim for UK fine chemicals manufacturer Organic Intermediates back in 2003. The firm's relatively limited product range was facing stiff competition from India and China. Not only could it not compete on price, quality was an issue too: the site in Kirkby, Liverpool, was not cGMP and was increasingly unable to meet the standards required by the UK Environment Agency and Health & Safety Executive.

To do this required huge investment, which Organic Intermediates simply could not afford, because sales were falling in the face of Chinese and Indian competition. It was a vicious circle. The solution was radical and painful: to reinvent the firm as one that manufactures in Asia while offering the value-added service that would enable it to continue in the UK.

The Kirkby site has been gradually closed, with most of the jobs there being cut. The remaining UK management functions have been moved to a facility at a new industrial estate near Runcorn, the heart of the chemicals industry of north-west England.

A change of name was inevitable. So it was that Syntor Fine Chemicals was established in August 2004. Over the course of the next three years, IP and operational, plant-based or marketing-based joint ventures have been established with firms in both India and China, culminating in the dedication of a Chinese R&D facility in June 2009.

The range of standard products has not changed much, being headed by chloroalkylamine salts, substituted aceto- and benzophenones, acid chlorides, substituted phenyl piperazines and silyl derivatives. Others include heterocyclics, bromine derivatives, esters and various advanced intermediates.

Inevitably, sales took a major hit at first. However, they stabilised by 2005 and have since nearly trebled to about €10 million/year. Of this, the UK office accounts for about 85%. "We have gone from a manufacturing company with all the necessary functions of a manufacturing company to one that no longer produces," says commercial director, Simon Knowles, who was originally the commercial and marketing director of Organic Intermediates.

Instead, Syntor now offers a fully managed process development and custom synthesis service under technology transfer. Typically, under the project management system it has implemented, a customer process is designed and developed at Runcorn and lab- and pilot-scale development is also carried out there to determine any scale-up issues, followed by small-scale runs to finalise process deign.

Syntor then manages full-scale production at one of its manufacturing partners in Asia. Process evaluation, compliance and regulatory assessment, QC, logistics and raw material sourcing and process optimisation are all part of this. All products made at the partner sites are tested there before import to the UK.

Simon Knowles (right) **in Syntor's UK laboratory**

Here, they can be stored, either in a 500 m^2 temperature-controlled (below 0°C) warehouse in Runcorn or another at Kirkby. They can also be repackaged if necessary - a laminar flow booth is available for this, while there is a 2,000 litre glass-lined blending vessel. They are then given final product QC testing and status before being shipped to customers across the world.

Knowles is one of three main directors of Syntor, alongside technical director Dr Dave Reeves and compliance director Mirea Romeo, Knowles' wife. He is also one of three main shareholders in the privately owned firm, but the only one active in its day-to-day management; the others are entrepreneurs with other investments across the globe.

The first joint venture Syntor established abroad was an IP and operational venture with Dayaram Chemicals in India in March 2005. By far the most significant, however, came four months later with the Shree Ganesh Group, with whom Syntor concluded an IP- and plant-based venture to make its chloroalkylamine salts range and others. A novel trityl chloride process was implemented there in 2007.

Shree Ganesh is based at the gigantic Ankleshwar site in Gujarat state, also home to many of India's largest manufacturers of chemicals, agrochemicals and pharmaceuticals. Here, Knowles estimates, about 90% of Syntor's investment in terms of money, reactors and equipment has been made. However, Shree Ganesh remains privately owned in India - there were both financial and legal reasons for Syntor not to take ownership itself.

"The joint venture is based on confidentiality, exclusivity and lease agreements for plant and equipment," Knowles says. To achieve it, Syntor has sent a huge range of equipment over from Kirby. "It wasn't easy or cheap to do this but we decided it was better to sweat them in Gujarat than scrap them in Liverpool."

The equipment now available at Ankleshwar includes four glass-lined semi-batch addition reactors of 6,500 to 13,500 litres operating in the range from -15 to +185°C, plus three 2,000 litre stainless steel hydrogenation reactors that go up to 20 bar pressure, two halar-lined centrifuges, a glass-lined high vacuum short path distillation unit, two 2,250 litre glass-lined double-cone vacuum dryers and one 1,200 mm stainless steel fluid bed dryer. Currently, these are mainly used for multi-purpose production of own products.

Investment is still continuing at Shree Ganesh and a new facility was opened in April 2009. Indeed, at the time of *SCM*'s visit, the largest ever consignment of equipment - 111 separate items, including reactors of over 2,000 litres - was due to be shipped over to Ankleshwar, where a large project was about to come off with two major crop protection companies and one aroma chemicals company.

That said, Knowles admits, Syntor is now at the point where it does not have much more of its own equipment to ship and must find it from other sources, new or second-hand. Finding spare equipment on the market is not unduly difficult, he adds, though importing it into India can be difficult.

"It's nice to be able to rely on home-grown technology," he comments. "For instance, we looked at buying Indian makes of double cone dryers but found the European ones to be much better."

Syntor also has two other unnamed Indian partners, one in Grignard chemistry, the other carrying out chloromethylation. The company has not made equipment investments with them but, as at Shree Ganesh, it has made considerable investment in management systems to make them compliant with ISO 9000:2000 and ISO 14000 and is now working towards health and safety standards.

Doing this ensures that all products are manufactured based on Syntor IP and management systems and all production is compliant with international standards. Thus, Knowles says, the entire supply chain can be monitored from manufacture to delivery and is fully integrated with QA and health and safety standards.

Implementing such systems, he adds, has been a big and time-consuming job, but one that eventually bore fruit. "When we first dealt with Shree Ganesh, we wouldn't have dreamed of inviting a European company around the site. They had no systems in place and poor working and social conditions. Now they have been audited by global pharmaceutical companies and approved by all of them."

After India, Syntor went next into China, where its experience to date has been different, with a different business model. In March 2006, it established an IP and marketing joint venture with pharmaceutical intermediates and fine chemicals firm Hallochem Pharma in Chongqing, Sichuan province.

Since then, Syntor has been marketing various adamantane derivatives made using Hallochem technology and making chemicals for the extraction of metals from ores, plus other products. It is also implementing technology at Hallochem for the manufacture of novel carboxylic acids.

In March 2007, there followed an IP- and plant-based venture with Zhenrong Industry & Trade in Zibo, Shandong province, to make Syntor's acid chlorides range and other products. Zhenrong was already making acid chlorides and Syntor has worked with them to develop the technology, delivering low-volume, high-value products, one of which sells for about €1,000/kg.

There is a third Chinese manufacturing venture with a firm whose name is not being disclosed. With this company, Syntor makes boron tricholoride amine complexes for use as latent catalysts for the manufactures of speciality plastics for the global market.

Undoubtedly the major development in China, however, has been the launch of a dedicated R&D facility managed by the wholly owned subsidiary Syntor (China) last July. Syntor owns 66% of this facility, with the rest divided equally between Chinese trading firm PBE and Volant Fine Chemicals.

The facility, which covers nearly 1,000 m^2, is located on a technology park to the north of Hangzhou, is co-ordinated by operations director Lin Feng and carries out all technical development in China, whereas Runcorn still does this for the Indian operations. Syntor also has two other Chinese offices: a sales and marketing centre in Beijing and another technical centre and outsourcing management centre in Hangzhou.

"It has been very successful, everything went to plan and it gives us a nice blend of own products and custom manufacture," Knowles says. "We needed extra capacity in various projects we are working on and the benefit from the speciality chemicals point of view is that we can now send larger-volume projects to China."

The plan is to introduce products to the new facility for which Syntor has developed the technology at laboratory scale but which need to be scaled up to pilot quantities. Among these are cyclobutyl carboxaldehyde, cyclopropyl methyl bromide and various intermediates for high potency narcotics.

"The investment was made essentially in response to demand from customers who are already buying products from China and having to refine it themselves. We can thus offer the advantage of technology that very few others have," says Knowles.

Meanwhile, Syntor has also been busy in the UK. The Kirkby site will be completely decommissioned once all of the equipment has been removed, after which the remaining buildings will be demolished and most of the site sold for redevelopment. The warehouse will be retained, however, as more will be needed as sales grow. Currently 70% of the stock is held here, the rest at Runcorn.

The Runcorn site, meanwhile, employs 15 people but will grow with the need for more storage and testing capabilities. The R&D facility and QC laboratory were expanded last summer, the latter now including GC, GC-MS, FT-IR, UV, HPLC and auto-titration. Some €70,000 was spent recently to add new Shimadzu GC-MS and FT-IR equipment.

There are various options for future expansion. Syntor has been in negotiations with Shree Ganesh about building another new plant at Ankleshwar, while also mulling over the options of acquiring a facility on a newly established chemical park in China or taking up spare capacity at Bourgoin-Jaillieu near Lyon, where PCAS is turning some of its site into a chemical park. A decision will be made in the next year.

"We have a group of low-volume products that could grow significantly in value over the next couple of years," says Knowles, "in which case, we will take up the option in China first. These are all three-stage syntheses where we, in partnership with a UK firm that has no manufacturing experience, take a crude process and turn it into a viable one."

Syntor has entered a partnership with Shree Ganesh in India

Business has been pretty good in the past few years, Knowles adds. Pharmaceutical projects in particular take a long time to come to fruition but the last two years have seen some previous spadework deliver results.

There are about 20 projects in the laboratory, 20 more in assessment and six going into the plants, so Syntor believes it has a healthy pipeline. These are a mixture of 'me too' products and new products that fit its existing technology, such as 4-methoxy benzoyl chloride and 1-alkene-3-ol products, with applications in aroma chemicals and new pharmaceutical blockbusters based on novel synthesis routes. Both of these were being worked on in the fume cupboards at Runcorn when *SCM* visited.

From 2009 onwards, Syntor is planning a major change to its business mix. In 2008, 72% of sales had gone into pharmaceuticals, with the rest spread at 4-8% between various other industries. 95% had been own products, the remainder custom and toll manufacture, and Europe accounted for 85% of exports.

The aim now is to diversify. Pharma is to take only 50% of sales, with the other major businesses all stepping up, bar the declining photographic and reprographic markets, where Syntor has some own products based on acryloyl and methacryloyl chloride. Thus, aroma chemicals should take 15%, agrochemicals, polymers and electronics each 10%. Based on current projects, Knowles says, that should occur within the current fiscal year to the end of March.

Meanwhile, Europe should fall back to 71% of exports, with stronger growth in Asia and the Americas. Most strikingly, custom and toll manufacturing should account for 40% instead of 5%, as custom manufacturing projects are introduced to the joint venture plants in China.

Other key targets include introducing a minimum of three advanced chemical intermediates to each plant in 2009 and 2010 and implementing its integrated business management systems at all plants by mid-2010, along the lines already achieved at Runcorn and Shree Ganesh.

Knowles is comfortable with Syntor's business model. "Our advantage over the traders we compete with," he says "is that our products are made in Asia but tested both there and again in the UK, as well as being repackaged in some instances. They aren't all high value products and customers know they could buy it in India directly but they don't want the risk of importing off-spec material. We offer an extra level of security."

For more information, please contact:
Simon Knowles
Syntor Fine Chemicals Ltd.
11 Boleyn Court
Manor Park
Runcorn
WA7 1SR
UK
Tel: +44 1928 579865
E-mail: simon.knowles@syntor.co.uk
Website: www.syntor.co.uk