

Thermal processing: building success from coke to incineration

A background in coke making might sound old fashioned, but for one consultancy/process engineering design company it has opened up opportunities for other thermal processing business. Sean Ottewell spoke to Otto Simon managing director Steve Haywood about where these opportunities.

Ein Hintergrund in der Koksproduktion mag sich altmodisch anhören, aber für ein Beratungsunternehmen im Bereich der Verfahrenstechnik und Entwicklung hat er Chancen für andere Geschäfte thermischer Prozesse erschlossen. Sean Ottewell hat mit dem Geschäftsführer von Otto Simon – Steve Haywood – über diese Chancen gesprochen.

Une expérience en fabrication de coke pourrait sembler quelque peu démodée, mais pour une société spécialisée en conseil/ingénierie des procédés, elle a ouvert les portes à d'autres activités de traitement thermique. Sean Ottewell interroge Steve Haywood, directeur général d'Otto Simon, à propos de ces opportunités.



According to its website, Otto Simon is a young, dynamic company whose aim is to offer excellent long-term service to its customers. Which is quite an objective for an organisation just two years old. However the clue is in the name and many process engineers will be familiar with the Otto Simon Carves company from which Otto Simon was created.

“As you might expect from the name, our technical knowledge is based on a long history of coke making and its wide range of processes for handling dirty product gas and recovering chemicals. These have then been used as a basis for successfully diversifying into related technology areas over the last 20 years,” notes Haywood.

So today the company specialises in consultancy and design/build services for the steel, water and energy industries. Its diverse technological skills all relate to thermal treatment and related technologies and include pyrolysis, gasification, incineration, drying, heat recovery, gas cleaning, wastewater treatment and more.

Fig. 1. Demand from China has created a resurgence in cokemaking activity.

In terms of its traditional business, Otto Simon has a co-operation agreement with Uhde, the world's largest supplier of coke making technology, covering the UK market. In addition, through this partnership the company provides subcontract services on Uhde projects in many other countries.

However, as Haywood explains, the coke market is facing radical changes. “About 20–30 years ago there were many companies working in this area, with several employing thousands of staff. Today, most of these companies are part of the Uhde group and employees in the cokemaking division number in the hundreds. However the recent upturn in the steel industry, the gradual reduction in cokemaking capacity over the years and the demand for coke in China has significantly increased the demand for coke and created a resurgence in cokemaking activity. Many companies are either building new facilities or extending/upgrading existing facilities and the result is

that Uhde and its partners are extremely busy. However, steel is a cyclical industry and while there will always be some work in the sector, we are using our relevant expertise to get involved in other areas of thermal treatment.”

For example, one of the company’s key projects in 2005 was the development for a gasification plant and power generation facility in London that is designed to handle fuel recovered from municipal waste.

“We were involved with the conceptual and basic design, IPPC application and the planning application. You have to remember that cokemaking is a pyrolysis/gasification process and the coking and associated gas cleaning processes for handling dirty gases and recovering coal chemicals are very relevant to gasification.”

The company has also been involved in many other thermal treatment and related energy projects. In the past two years this includes consultancy and design work for several sewage sludge fluidised bed incineration plants in the UK, plus engineering, problem solving and commissioning for sludge drying plants in the UK and a very large facility in the USA. Other related projects



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Managing Director,
Otto Simon**

have included heat recovery and power generation schemes.

“Essentially we are finding that our cokemaking expertise and past experience of designing and building incineration and drying facilities has put us in a unique position to be able to offer significant hands on experience for a range of thermal treatment technologies.”

It’s no surprise, therefore, that Haywood believes the future is going to be much more closely related to incineration and its related technologies.

The case for incineration

“Incineration generally has a poor public perception, but modern fluidised bed incineration is a well proven and reliable process for sludge treatment plus emissions to atmosphere are very low. Also, once it is built, you have a secure facility that gives an inert waste product. In the last 10 years in the UK, for example, a few sewage sludge incinerators have been built for major centres of population such as Manchester, London and Birmingham.

However, outside large urban areas and even in some cities many companies have used sludge drying. Typically the sludge is dried to 90 per cent and the product can be used as a fuel or for agriculture use. The upside is that you get a useful product and the capital cost is lower. The downside is that there is still a product to dispose of and suitable outlets are not guaranteed. In addition drying uses a large amount of energy which is becoming increasingly expensive where as modern incinerators do not require fuel for normal operation and actually recover energy which can be used for heating or to produce electricity.”

“My own view is that although many water companies have tended to go for sludge drying in recent years there will be a tendency to build more incinerators in the future. In addition to the reasons given above it has been found that drying has been more problematic than expected. In general most people thought that drying is a simpler process than incineration. However in practise there have been significant safety issues and the nature of UK sludges has created serious problems for several drying plants.”

So for treatment of sludge cake the options are drying, incineration and gasification: “Gasification is acceptable from a public perception standpoint but compared to incineration it is an expensive alternative



Fig. 2. Otto Simon specialises in consultancy and design/build services for the steel, water and energy industries.



Fig. 3. Otto Simon's technological skills also cover pyrolysis, gasification, incineration, drying, heat recovery and gas cleaning.

for sewage sludge and is not well proven. A typical incineration plant producing 3 t/h of dry material costs €30–50 million. A sludge drying plant of similar capacity costs €10–15 million. A gasification plant still requires drying while the cost of the gasification plant is going to be similar to incineration if it is going to achieve similar energy efficiency and emission standards. In addition if it is true pyrolysis or gasification there is normally still char, tar and ammonia liquors which require treatment or a suitable outlet.”

It's all about reputation

In some European countries, it can be difficult for smaller companies to work directly for the customer and thereby establish a close relationship. Haywood blames this on the framework agreements that clients establish with larger companies.

“Under such agreements, a major contractor is appointed to oversee every aspect of a project, often for many years. This company then subcontracts aspects of the work to others. So like many other small suppliers we no longer have a procurement system under which we can link directly with the actual customer. Ten years ago we would have had many more opportunities to do this.”

Bearing in mind this obstacle to direct customer contact, how then does a small operator such as Otto Simon stay in business? Shouldn't it be absorbed by the big players who want to be able to offer every possible technological expertise a customer might require?

“From our standpoint, the key to success lies in establishing a reputation for know how and technical expertise. This is a matter of marketing, making the right contacts and doing excellent work so that we get repeat business.”

“In several cases we have been able to develop relationships with larger contractors and consultancies

who have been willing to accept that we have specific skills in thermal treatment which compliment their own capabilities. The result is that the end client gets the best service.”

He says there are also signs that the company's expertise is being recognised by other large companies and more doors are opening as a result. At the same time, its track record is now giving more opportunities to work directly with some clients.

Haywood believes that this will continue to happen because his staff offer significant practical experience for consultancy to the water and other industry for thermal processes: “We have designed, built and commissioned these plants. Most of our staff are in their 40s and 50s and have process backgrounds. A lot of other consultants are not able to offer this practical, hands-on experience for thermal treatment.”

As well as the challenge of finding new thermal processing business, Haywood also faces a business theory challenge. Otto Simon currently employs 30 people and management textbooks are littered with case studies of successful companies who expanded beyond this size only to flounder in the face of the increased complexities of organisational structures.

“Our vision is to continue to grow, but not get to the stage where we need another layer of management. We know where we want to be: which is to cover all of our disciplines, have highly capable core skills and service our clients extremely well,” he concluded. ●

*Otto Simon is based in Cheadle, England.
www.ottosimon.co.uk*



Fig. 4. Otto Simon planning to grow in size – but without adding another layer of management.