



ANDUSTRY *news*

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PROUD OF GOUDA

This preface is being written as the Golden Carriage rides through The Hague. It's 'Prinsjesdag' or 'Prince's Day'. The Netherlands is tightening its belt. And we're hearing a lot of gloom and doom from the government. However, the mood in Andus Group is different.

Exactly five years ago, we were busy completing the acquisition of Gouda Vuurvast. At that time, the company's future wasn't looking so bright. The order book was a little thin and confidence in the company's future was gradually dwindling. However, we believed in this company's strength and potential. Gouda had been an expert in the field of refractory bricks and castables for over 100 years, providing unique products for similar customers to those of the Andus Group; global leaders in the chemicals and

petrochemicals, aluminium industry, waste incineration and energy sectors.

Following the necessary restructuring processes, the company began to get a new impulse. This was emphasised by the award of a substantial order, guaranteeing over a year's worth of production. At the same time—in early 2011—an opportunity arose to acquire 2.3 hectares of land on the adjacent premises. It was an excellent opportunity to invest in expanding production capacity by building a new tunnel kiln. This involved a multi million-euro investment in a period that the credit crunch had turned into an all-encompassing economic crisis. With a strong faith in our own abilities, the decision to proceed was made. In this special edition of the Andustry news,

we celebrate five years of Gouda Refractories belonging to Andus Group. I am incredibly proud of what the Gouda companies have achieved in recent years. They are now healthy companies with considerable clout. They are leaders in their market segment and ready for the future. And they fit seamlessly into a healthy group because I am also proud to announce that Dun & Bradstreet awarded Andus Group the D&B Rating 1—the highest credit rating—once again this August. In short, we are feeling very positive.

Tom van Rijn
CEO



TRIED AND TESTED CONCEPT, LATEST TECHNOLOGY

From October 2013, 'tunnel kiln 3' will be put into service at Gouda Refractories. This involves more than just 'quickly lighting a kiln'. It actually takes several months for this new kiln to be dried out, heated up and ready for production.

The expansion of production capacity with a new kiln involved the construction of a new factory. The total length of the kiln is a

whopping 125 metres and about 1.5 metres wide and two meters high inside. An 'outer shell' has been built and there are immense

supply systems for oxygen, gas and controls as well as drainage channels for flue gases. A completely new factory has been built to

accommodate the new tunnel kiln.

The challenge

Because tunnel kiln 3 needed to

be integrated into the existing production processes and produce identical bricks to those produced by tunnel kilns 1 and 2, tunnel kiln 2 was used as the basis for its construction: tried and tested technology in a new guise. After all, this kiln has been in operation for decades and has been running

24/7 for eight years since the last production stoppage. Speaking of operational reliability and continuity—this was also the biggest challenge for the kiln constructor, Lingl, and the engineers at Gouda. How can we still improve a kiln concept, which is continuously fired up, and equip it with the

latest technologies? And there was another factor to consider: Tunnel kiln 2 can reach temperatures of up to 1600°C. However, the chemical and petrochemical market has developed such that there is an emerging need for refractory bricks that have been baked at temperatures of 1650–1700°C. Tunnel kiln 3 will be one of very few tunnel kilns in the world to satisfy this need.

Unique design

What followed was over a year of teasing our brains and engaging in development. Special burners were designed to ensure that the flame would adhere directly to the kiln wall; state-of-the-art measurement and control technology was used to create an optimal ratio between gas and oxygen supply, which also had an impact on energy consumption.

A new refractory wall structure was created and—most importantly—an ingenious, vaulted roof construction was designed. Whereas contemporary kilns use a flat kiln roof hanging from steel fasteners, which requires continuous cooling, Gouda wanted a new type of roof structure. This was especially due to the high temperatures at which burning was taking place. And the results are in: the roof vault—with special spring structures to absorb any effect—ensures that the flue gases are removed above the load and that there is optimum circulation in the kiln. This unique kiln—unequalled anywhere in the world—is nearing completion. And another important fact to mention is that Gouda Refractories has produced all the refractory material for the new kiln themselves.



THE IMPACT OF AN IMMENSE PROJECT

It is Gouda Refractories' ambition to grow and there are opportunities to do so. The company provides high-quality refractories that the market needs. But how can you grow if the two tunnel kilns that you already have are producing 24 hours a day, 7 days a week, 365 days a year? The answer is simple: by building a new kiln.

The introduction of tunnel kiln 3 will serve to expand Gouda Refractories' kiln capacity by 60%. This provides Gouda with greater flexibility and the ability to serve even more customers. The new tunnel kiln also provides customers with guaranteed continuity. Any unlikely glitches in the kilns can now be absorbed more easily.

New horizons

And there's more: the new tunnel kiln can reach temperatures of up to 1700°C, which opens up the door to new markets and uses. For example, there is already a specific need in the market for bricks that are fired at temperatures of around 1650°C. Not many manufacturers in the world that can produce refractory bricks at these high temperatures. Gouda would like to go even further: by vigorously pursuing R&D, the company is looking into what kinds of new products can be developed at these temperatures. Gouda will be pushing the boundaries—that's for sure.

Heavy traffic

The expansion of the tunnel kiln capacity does of course have direct consequences for the rest of the production process, such as the table cars transporting the refractory bricks through the kiln. Traffic will increase by 60%! This is why the tracks have been automated and marshalling yards have been installed. 170 new table cars have also been purchased since passing through a kiln at temperatures of 1700°C demands a bit more from these cars. Another logistical consequence is the supply of raw materials, and the storage and transport of finished products. Once again, there will be a 60% increase in traffic and use of space. A ring road is being installed on the premises and an immense storage area will also be built in the foreseeable future, where refractory bricks can be kept until they are shipped.

Bravo!

But that's not all the impact that tunnel kiln 3 will have. In the



mixing plant—where the raw materials are mixed—a complete metamorphosis has been in the making for over a year. The entire system has been updated and the process has been structured differently. The pressing plant has also responded to the anticipated expansion in production. Whereas the unbaked, pressed refractory bricks were previously stacked onto one of the main presses by hand, a

robot called 'Andy' now takes care of this. He automatically picks up each brick and loads it onto the table cars. Needless to say, the construction of tunnel kiln 3 has required a lot of time and effort for a number of people. It's not really something you can just do on the side—and yet, that's exactly what happened. So hats off to all our colleagues at Gouda. You have worked extremely hard!

MORE BRICKS? MORE CASTABLES!

Although our focus here is on Gouda Refractories as a supplier of high-quality refractory bricks, we don't want to forget one special part of the company: the castables factory in Geldermalsen.

Gouda's range of refractory products would not be complete if it were not able to access refractory castables. As early as 1981, an existing refractory brick factory in Geldermalsen was transformed into a refractory castables factory. This factory now produces over 20,000 tonnes of special refractory castables every year, in hundreds of varieties. These are not only produced as assembly or coating materials in conjunction with 'a refractory brick order', but are also often used by the service companies in our Refractories division—namely, Gouda Vuurvast Services and Gouda Vuurvast Belgium. These refractory castables also act as the raw material for the Gouda Refractories Prefab Division. This division produces non-standard pre-cast refractory shapes which

are very large or have a very complex shape and which require integrated metal anchors or frames of which often limited quantities are needed.

Focus

One of the castables factory's strengths—alongside its high-quality products of course—is its flexibility. This is partly due to the nature of the work in which the refractory castables are used. If a client experiences an emergency stop, certain types of refractory castables need to be delivered almost instantly. The thirty-odd employees do everything in their power to produce the required materials quickly.

Introducing the robot

The castables factory will certainly

feel the effects of the introduction of tunnel kiln 3, because the more refractory bricks are sold and produced, the more refractory castables are needed. This is a challenge in itself, because the factory currently runs for an average of 47 hours a week and scaling up to a full two-shift system has significant implications. This is why Gouda has chosen to further automate the labour-intensive packaging line. Wherever the bags of refractory castables are still filled either by hand or semi-automatically, further robotisation will ensure increased efficiency. The first robot is already in house and working at full capacity! Optimising the mixing lines will also lead to an increase in production. As such, Geldermalsen is also well-prepared for the future.



THE SPECIAL FORCES AT GOUDA VUURVAST BELGIUM

Besides Gouda Refractories, two operating companies also belong to the Andus Group's Refractories division, namely Gouda Vuurvast Belgium and Gouda Vuurvast Services. These are two special service companies that focus on the maintenance and installation of refractory and erosion-resistant linings—regardless of the manufacturer.

Gouda Vuurvast Belgium is located just minutes away from Antwerp, near major petrochemical companies. As such, the company has specialised in this field throughout the years. So much so that 'the experts' at Gouda Belgium receive maintenance requests from all over Europe—even as far as Turkmenistan. If a refinery goes 'down' unexpectedly, the 'Special Forces' at Gouda are flown in because of their expertise, experience and ability to respond quickly.

Unique experience

There are several ways in which crude oil can be processed into

high-quality oil. Some refineries—more than 400 worldwide—use a Fluid Catalytic Cracking Unit, or an FCC Unit to do so. This is at the heart of the production process. There are three of these units in Belgium, a few in the Netherlands, and so on. They are few and far between. These systems are stopped every four to six years for major maintenance works at which point their interiors are also given a facelift. This is a gigantic task involving a lot of demolition work and complicated steel and refractory work. This process has to meet the highest American standards and safety regulations. Not to mention the time pressure, because every day



of downtime costs about \$1–1.5 million. As such, there are only a few companies that are able to take on a job like that: it's hard to gain experience in this area because you don't see FCCs going down every week. Gouda Belgium has, however, managed to become the expert in this field. But the

team at Gouda Belgium don't just receive requests for scheduled maintenance—they also need to be adequately prepared for unexpected downtime: 24/7, all year round. And if a problem arises, they work around the clock to fix it. It's work that requires tenacity and specialist expertise.

GOUDA VUURVAST SERVICES TAKES THE LEAD

Gouda Vuurvast Services is convinced that technological developments are going to lead to a great deal of change in the next 10 years, even in the somewhat conservative refractory market. You can do one of two things: stand and watch from the side-lines or take the lead. Gouda Vuurvast Services has opted for the latter.

Innovation is a popular concept. After all—no change, no progress. But innovation needs to be more than just a marketing term. It needs to be a kind of adventurous spirit in a company's genes. It involves looking critically at existing routines and daring to dream, all in the interest of your clients and with the aim of push downing their final total cost of ownership. Yes, innovation must serve an operational purpose.

Latest scanning methods

Gouda Vuurvast Services remains innovative thanks to numerous original and useful developments. What about the latest 3D scanning technology? It's ideal for inspecting

boilers and all kinds of equipment—quickly and safely. The signs of wear and tear will become apparent in no time at all, which in turn means valuable input for the product developers at Gouda Refractories. And just imagine flying one of those scanners into the equipment on an unmanned aircraft...a prospect for the future?

Startling developments

Or how about rope access? Should we keep on erecting scaffolding around equipment? Or are we going to jump into them like accomplished abseilers? It's possible. Are we going to keep sandblasting and dealing with all the excess dust that it produces?

Or are we going to blast with sponges? Yes, sponge—that soft absorbent material we use to wash our cars. Gouda Vuurvast Services is doing it! A clean and effective technique. The ultimate research project launched by Gouda is 'the learning stone'. We are looking to establish a partnership with the Duurzaamheidsfabriek (Sustainability factory) and the Delft University of Technology with the aim of developing a stone that registers all the process data 'live'. That will provide amazing insights providing the basis for new product developments and ultimately leading to even longer service lives and lower maintenance costs.



FIRED UP? READY TO GO!

Gouda Vuurvast Services used this motto to challenge members of its network to attend the Client Day held on 19 September. The theme was 'Innovation & inspiration' and over 150 enthusiastic clients and partners participated in a very inspiring day in the Fabrique in Utrecht. It quickly became clear that we are on the brink of a new era and that Gouda would very much like to lead the way on this journey of discovery.



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