



ANDUSTRY *news*

NO. 1 | JUNE 2016

ANDUS GROUP SERVING THE INDUSTRY

ANDUS *group* companies:

Manufacturing

FIB Industries

Gouda Refractories

Nedstaal Special Steel

Van Voorden Castings

Services & Maintenance

Gouda Vuurvast Belgium

Gouda Vuurvast Services

Gouda Feuerfest Deutschland

ISS Projects Slovakia

Lengkeek Staalbouw

Contracting

Armada Janse

Armada Mobility

HSM Offshore

HSM Steel Structures

RijnDijk Construction

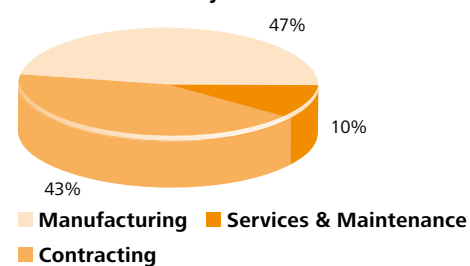
THE STRENGTH OF ANDUS GROUP

We recently presented our 2015 annual report. This Annual Report can be downloaded from our renewed website. In brief, we can say that 2015 was a record year for Andus Group: turnover increased by 50% to its highest level ever, namely € 319 million. The acquisition of Nedstaal Special Steel largely contributed hereto. But HSM Offshore, RijnDijk Construction and Gouda Refractories also achieved a substantial increase in turnover.

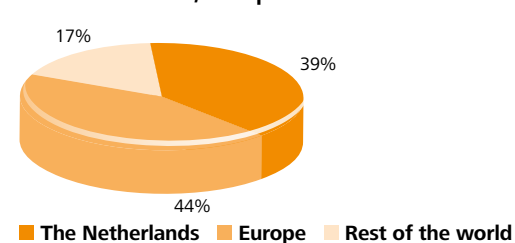
The year 2015 was characterised by a number of large and complex projects, the optimisation of the latest acquisition, some companies who had it more difficult and the very stable performance of the Services & Maintenance division. This shows that our continuity strategy by spreading risks was the correct choice. The order book is well filled and we are working on an abundance of large and smaller quotations, which once again gives us confidence for the year 2016.

In the Andustry news, we regularly give an impression of the splendid projects we are working on. And that's logical because these are often projects of considerable size. But a lot more happens! That's why we dedicate this edition to our workmanship. These projects are by no means our largest ones, but that doesn't mean to say we're no less proud of them! It's precisely the versatility and this particular type of specialised work that is the strength of Andus Group.

Volume of trade by division 2014



The Netherlands, Europe and the world



BRUTE FORCE IN THE BARENTS SEA

Who doesn't know about the Willem Barents expedition, who came to his tragic end on the Novaya Zemlya peninsula. The route via the North would greatly shorten the journey to China. But the 'North-East Passage' is free of ice for only two months of the year. At least that used to be the case. Global warming has made the Arctic Ocean increasingly accessible and new routes have become available. Moreover, a huge natural gas field was discovered on the Yamal Peninsula, which will now be fully exploited. Tankers will be coming and going every day of the year. These will be escorted by icebreakers when needed. And Van Voorden Castings supplies unique stainless steel propellers for these ships!

Ever heard of 'ice milling'? The icebreaker turns its stern towards the ice and uses its propellers to mill its way through the ice. Take a look on YouTube, for example, the video clip about the 'Oblique Icebreaker Baltika'. Such brute

force! You can imagine the huge demands that the Van Voorden propellers have to overcome.

Super hard

In many cases, marine propellers are made of different types of bronze.

But to be able to withstand such forces, a bronze propeller would be much too thick for an icebreaker. This is why Van Voorden started developing a stainless steel propeller six years ago. It is a major challenge in production because the steel must

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be melted at higher temperatures than bronze. And, once cooled, the stainless steel propellers are super hard, which makes machining very difficult. Van Voorden is now able to produce this kind of propeller, partly because of the flexibility in the production process. Quickly switching between bronze and stainless steel in the foundry is only possible for a few manufacturers.

Separate blades system

And Van Voorden has gone even further. If you want to be able to supply propellers for an ice breaker, you have to satisfy another condition. There are no 'docking facilities' in the Arctic where you could repair a damaged propeller blade. When such a propeller blade is damaged, divers will have to replace it underwater. This challenge was a

piece of cake for the Van Voorden propeller designers: together with one of their leading customers, they developed a 'built-up' system where four or five blades are fitted separately around the propeller axis with massive bolts. This is how Van Voorden contributes to safety on the route to the north.



JOINING FORCES

Borealis PEC-Rhin SAS has a factory located not far from Basel in the French commune of Ottmarsheim. It produces raw materials for artificial fertilisers. Gouda Vuurvast Belgium came into contact met Borealis via the Gouda sales office in Germany. It soon became obvious that there was much work to be done. Complicated work. And it was assigned to Gouda Vuurvast Belgium!

In the production process, 220 steel (radiant) pipes filled with catalyst hydrogen pass through a large oven to eventually come together on a so-called transfer line: a system of heavy steel pipes provided on the inside with refractory (insulation) castable. This transfer line was worn out and

needed replacing. Gouda Vuurvast Belgium was brought in to advise.

Puzzle work

The drawings of the transfer line were sent to Wijnegem for further examination. It was not going to be easy. The original drawings from 1969 were not available, just poor scans that were sometimes in an unreadable format. Unfortunately, there were no better copies. Solving the big puzzle could begin! For weeks, the Gouda experts sat behind the drawing board reconstructing the transfer line on paper. And that was appreciated. Fives Nordon in Nancy, that would carry out all the piping work, gave Gouda Vuurvast Belgium the definitive assignment to provide the steel pipes with refractory material.

Ingenious work

A lot of consultations took place between Borealis, Fives Nordon and Gouda until eventually every detail was drawn and described. In total, Fives Nordon was to deliver 70 pipe pieces in Belgium in phases so that the inner wall could be lined with refractory (insulation) castable. Perfect workmanship was required as well as ingenious filling techniques. And then you see the strength of Andus Group: a mould maker from Van Voorden Castings was also engaged. The filling required extremely meticulous and labour intensive work and there was tremendous time pressure. Because after the pouring sufficient time must be taken for the castable to dry out to 450°C, checked by using electrical

resistances. In addition, it was necessary to meticulously determine whether each pipe section was completely and perfectly filled. Gouda Vuurvast Belgium also contributed to the solution for this: infrared cameras were used to continuously determine whether the quality standards were achieved. Of course.

After some 1,500 e-mails about planning, logistics and progress, and about eight weeks of intense continuous work, including Saturdays and Sundays, the job was finally finished. The amount of castable (ten tons) might not seem very impressive, but the workmanship demonstrated in 4,500(!) man-hours is awe-inspiring.



AN ALMOST MILITARY OPERATION IN PERNIS

For many years, the steel construction company Lengkeek Staalbouw has been focusing on the petrochemical industry and in particular on specialist projects. The 'Lengkeek staff' also feel at home at major refineries, including Shell Pernis. They know exactly how to safely and professionally carry out maintenance work at a fully-operational 'installation'. Clients trust their knowledge and experience. That certainly appeared to be the case with 'a job' at Pernis.

A drive along the Petroleumweg in Pernis always impresses: all around you, you will see storage tanks, complex installations and a tangle of pipes that seem to go everywhere and nowhere at the same time. Pipes also cross over the road on a long

bridge. And this is where Lengkeek's expertise came in handy.

Quite a mess

One pipe on the bridge was a hot high-pressure steam pipe. In a few months, it would be temporarily

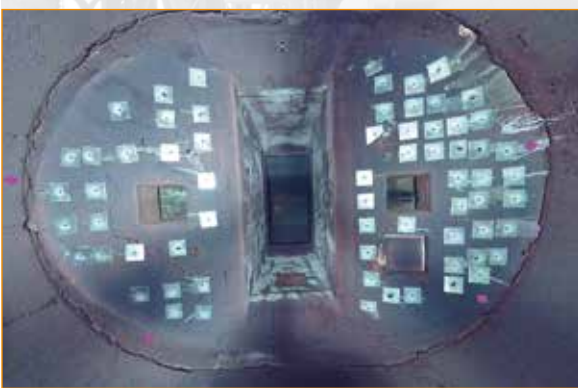
taken out of service, which would cause it to cool off. And we all know that cooling material contracts. In theory it should not have been a problem because this is calculated into its construction: the pipes run on so-called slide plates, which

provide the space needed for expansion and contraction. However, the pipes were rusted and stuck onto these plates. Contraction might cause the pipes to crack or even break apart the entire bridge!

Meticulous planning

Lengkeek was called in, performed an inspection and drew up a work plan and the work arrangements. This may sound simple, but... 'In practical terms, it involved six weeks of consultations with the three Shell safety districts, ProRail (the bridge also runs over a railway track), the municipality of Rotterdam, the Ministry of Transport, Public Works and Water Management (due

to road closures, etc.), the crane company, the boom lift workers, the fire brigade and... well, you name it. Eventually everyone was aligned towards the objective and 'the job' was ready to be carried out safely and responsibly. The 'go' was given and all wheels started turning smoothly. In a single day, the job was completed almost like a military operation and the pipes were once again free. A job perfectly executed!



SMART SOLUTION PROLONGS LIFESPAN

Slibverwerking Noord-Brabant (SNB) in Moerdijk processes sewage sludge for different organisations, including six district water boards. Annually, SNB burns more than 430,000 tons of sludge. This is almost 30% of the total supply in the Netherlands, which makes SNB the largest sludge processor in the Netherlands. Four so-called fluidised bed incinerators are used for the combustion. These colossal steel structures are lined with refractory material... and the steel has a corrosion problem. Gouda Vuurvast Services was consulted for advice.

Furnaces wear out, which will surprise no one. Which is why (meticulous) maintenance and replacement schedules are required. Nevertheless, unexpected problems do occur that are difficult to spot even with preventive measures. Just such a problem occurred for SNB, a client for whom Gouda Vuurvast Services has carried out small repairs over the last two years. An

inspection showed that the steel of the furnaces was corroding from the inside out. This meant there was a danger of the refractory lining coming loose. In particular, the roof was at risk. Gouda was asked to solve this problem and presented a solution that was unprecedented for SNB.

In collaboration with SNB, the Gouda Vuurvast Services engineers

devised an ingenious drill-through anchor system. Holes were drilled in the roof of the furnace and special anchor pins were used to secure the refractory lining. The danger of 'collapse' was resolved and the lifespan of the furnace extended. Unfortunately, one of the other furnaces could not be saved. It was completely replaced, both the steel as well as the lining.

3D scanning is now used regularly to check that the refractory lining of the roof and walls does not require further inspection or repair. This method allows SNB to work towards a definitive solution for the entire system and with less risk involved. The first furnace is due for complete renovation. The refractory lining will be supplied and installed by Gouda Vuurvast Services.

FITTING AND MEASURING

The sales offices of Gouda and FIB in Bochum, Germany are running at full tilt! They not only put Gouda Vuurvast Belgium in contact with Borealis, but also brought in a complex job for FIB Industries. The FIB staff can now show their true value to new client Bilfinger, an international engineering firm!

A major chemical producer has a heavy-duty mixing machine in which ingredients are blended using extreme forces. The middle section of this machine must be replaced and FIB is ready to take on this challenge. And it was most certainly a challenge. Very little documentation was available. In fact, there was only a single drawing showing the major dimensions! Moreover, the existing mixing machine was still in operation and the interior mechanism, the blenders and the driver of the

operational machine would soon have to be placed seamlessly into new interior mechanism. And this under great time pressure. Because you cannot bring such a production line to a standstill for very long.

Old and new together

It is not just the complexity of the job that would make this a real accomplishment. The dimensions had to be very, very precise, a complicated job with that wall thickness! The involved parties are in constant communication with

one another and every two weeks the TÜV carries out an inspection round. Nothing is left to chance. It is a question of continuous fitting and measuring. It will not take long for the decisive moment to arrive... The machine will then be dismantled in Germany and the heads and the cover brought to Leeuwarden to be fitted to the new middle section. The heads and the cover will then be installed and the entire housing will be transported as quick as lightning back to the factory. A record accomplishment!



A LOGO TO BE PROUD OF

If you drive by the High Tech Campus in Eindhoven, you will see the well-known blue Philips logo shield adorning one of the buildings. Drive by in the evening and you then see that the blue part of the logo shines with a clear white light and what was white now shines with a blue glow. This is “light art” created by Armada Janse.

For decades, Armada Janse has supplied the lighted Philips logo as well as signposting for many locations through the Netherlands and

Europe. On this occasion, Armada Janse received a special assignment where the experts could indulge all their creativity and expertise:

develop a prototype for the newly redesigned Philips logo and install it on one of the tallest buildings in the High Tech Campus (HTC34). And that’s exactly what happened. They installed a striking Philips sign with a back panel with a surface area of 28 m²! The use of a special foil solution means that the sign is blue on the front during the day. And, when it gets dark and the internal LED lighting lights up, the logo shines with a clear white light.

A wonderful sight

The sign is mounted on the white back plate using spacers, such that the RGB LED lighting indirectly lights the back panel. This makes it appear as if the logo is ‘floating’

and is separate from its surroundings. And, this creates a lighted object that shines with ‘ambient lighting’. The end result is a stunning landmark that fits in perfectly in the series of the famous Philips illuminated signs in Eindhoven, such as the Witte Dame and the Klokgebouw building at Strijp-S, known as the cultural centre of Eindhoven. These signs were also supplied by Armada Janse. And as pictures speak a thousand words... you can watch this video:

www.youtube.com/armadajanse.

An entertaining mini-documentary will take you through the production, assembly and end result in all but a few minutes.



CONFIDENT ABOUT THE FUTURE

On 1 January 2016, Armada Rail B.V. merged with its affiliate company Armada Mobility B.V., which was established in July 2014 at the same location in Nieuwegein. This was a logical step given the developments in both companies and the shifts in the market. This expanded the existing collaboration.

Combining forces to create the new organisation puts it in a better position to take advantage of market demands.

In particular, both companies will reinforce each other in the following areas: electrical applications, project management,

assembly and on-site installations. This will create opportunities to develop new products and expand the product portfolio in the near future. The board and management look towards the future of the new Armada Mobility B.V. with great confidence.



SWIMMING FOR THE ALS FOUNDATION NETHERLANDS

Andus Group is social sponsor of the Amsterdam City Swim! For more information, see www.amsterdamcityswim.nl



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