MAMMOET MAIL 34

House magazine of Mammoet Transport B.V. Spring 2000

Millennium issue

Mammoet makes the world go round • Back to the future • Raising the mammoth • Mammoet and Millwright • The perfect chemistry • The girassol Project • Life through Mammoet spectacles • Dredgers for mining

On the cover

The famous British Airways London Eye photographed in October last year from the roof of the Shell building during the final stage of the lifting operation. It was actually one of the last pictures taken with a Nikon F5, body number 3049646, before the camera was stolen the next day at Waterloo Station. If ever you see the camera bearing this number, please notify the London Railway Police or the nearest Mammoet subsidiary.

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2-2000-15000

Introduction

Mammoet makes the world go round

A new millennium, a new century. Enough reasons for a person to take a moment for reflection. However, it is not in my nature to linger much on the past; I would rather look at the future and find out what Mammoet's destiny will be.

Of course, this is largely dictated by our clients, as we are here to fulfil their requirements. As such, we are only a small cog in the machine. However, that little cog – provider of heavy lifting, shipping and transportation services – has matured into one of the leading players in the international heavy lift and heavy transport project market. Be sure, that we will give the best possible performance a company can provide, even better and more geared up than in the past. For this, we are reshaping the Mammoet organisation from a basically operational and technically focussed company towards a more project and market driven organisation. Among other things, we have started a Global Projects Group, a task force of specialists in their line of business. This team thinks and works in the interest of our clients to prepare tailor made solutions and new ways of moving, shifting and lifting the heavy and capital goods of the world. It also means that Mammoet is being transformed into a client-orientated organisation, which emanates a consistent image and a clear strategy. The new uniform Mammoet house style certainly has contributed to that already.

In this Mammoet Mail, we make a trip around the world and review some feats Mammoet has accomplished in 1999. The lift of the Millennium Wheel in London is certainly a record which makes one proud to be part of Mammoet Transport. Whether it becomes a new millennium, century, year or day, the world will always be changing. Change is inevitable and if we do not change with it, the destined path could become a dead-end street. Nineteen ninety nine surely was not a dead-end street for Mammoet – this Mammoet Mail gives evidence of that – and the year two thousand already started promisingly with a spectacular salvage operation executed by our newly built MSG-50 in Denmark.

It is with all the best wishes to our clients that I close this introduction. I hope you will enjoy the trip through our house magazine and I'm sure we can be for you, what you want us to be: reliable providers of heavy lift, transport and shipping services from start to finish.

Frits van Riet – C.E.O. Mammoet Transport

Photo: Jos Vogelzang

MSG-50 crane used for quick salvage operation

Ansatte frygtede værftslukning

***Odense** – Mammoet E & I performed a remarkable salvage job by lifting and removing a wrecked overhead gantry crane at the Odense Steel Shipyard Ltd. in Denmark. The gantry crane had been overturned by a hurricane which passed through Odense on Friday, 3 December, thereby causing extensive damage in the dock area. On 5 December, the yard contracted Mammoet to lift the collapsed gantry crane with their MSG-50 crane. The first container-size equipment arrived at the Shipyard on 8 December and the entire lifting device was assembled in 12 working days. The damaged top beam, weighing 1.550 tonnes, was removed by the MSG-50 in one spectacular lift on 30 December 1999. With its 28 metre outreach, the MSG-50 then took down the remainders of the giant overhead crane and placed them beside the dock, where they could be cut up and recycled. Once Dock 3 was free of the wreckage of the overhead crane, work could resume on the new container vessel which is under construction. Quickly mobilised Mammoet crawler cranes now replace the gantry crane. Five mobile cranes work in Dock 3, until a new gantry crane is constructed and installed.*

Dressed column

"Because the yard of our production company is well-situated at the water front, we are eager to win orders for fully dressed columns of large dimensions such as these. A dressed column means that everything is already placed in and attached to the vessel, such as for instance the insulation and all internals. Platforms, overhead pipes, all cables for instruments and electricity is built up in our own company and under our own supervision. The complete vessel is then rolled onto a barge and brought to England. The main advantage is that most of the hassles and problems are taken off the shipper's hands. The coordination of all subcontractors is done here, at our site, and not at the refinery. This prevents congestion of the different subcontractors at the refinery site, who are all busy with their own jobs and are in each other's way. We take away these worries from the client as the vessel only needs to be erected once it has arrived on the site and placed onto its foundation. As the refinery at Stanlow is a live plant, the client has chosen to have a fully dressed vessel built."

Henk Meijer looks out of the window, where the large vessel is prepared to be driven onto the barge and start its voyage to England. "From a transportation point of view, we can handle large vessels with weights up to 1000 tonnes, lengths of about 100 metres and diameters of some 8.5 metres. This is one of our advantages. Another is, of course, the tremendous experience that we have in using special materials, whereby one may think of high-class steels for high pressures and high temperatures. We are now capable of working with materials of up to 200 mm plate thickness. At the moment we are building a vessel with a plate thickness of 150 mm. It will be used for treatment of natural gas. Our main asset, which we have built up over the years, is the know-how of technical use of all these special materials. In short, working with different types of stainless steel, for instance, by making a rough steel wall for mechanical strength and then overlaying it on the inside with stainless steel for chemical stability. This is necessary, as natural gas usually contains a lot of sulphur and carbon-dioxide, which together with sulfuric acid causes corrosion. As we are well-trained in this field, we have gained a good place in the market. Escher relies on special orders, complex vessels with thick shelled parts; not your ordinary, run of the mill pressure vessel, which are ordered in the East European countries." According to Mr Meijer, all major oil companies are Escher clients and 75% of production is for export. "Transportation forms a substantial part of the price, of course dependent on its destination. We regularly bid for projects in the Far East. I am certain that we can offer good prices, but the distance from here to Singapore is, as you know,

***Ellesmere Port** – At four o'clock in the morning, the Manchester Ship Canal lies empty and desolate. The vessel that delivered the flashy, silver-coloured column on the quay has already left. In the distance, the hazy sky-line of the Shell Stanlow refinery can be perceived in the early morning light. Men in grey and yellow boilersuits move around the huge object and make arrangements for the last leg of its journey to the refinery. Six days before, the transportation started at manufacturer Escher on the industrial estate of Dintelmond near Fijnaart in the Netherlands. Mammoet Mail was invited to attend this "factory to foundation" transport and took the opportunity to ask Escher's Managing Director Henk Meijer for some extra information on this 60 metre long, fully dressed column.*

to the UK

By Aad van Leeuwen

considerable. From Korea or Japan transportation is, obviously, not such a big factor and for us that is a tremendous disadvantage in our quotations. For transportation, quality and reliability are important issues and of course also speed of delivery."
Apart from splitter columns such as transported to England by Mammoet, the 76 year old company also builds gas treatment installations for drying natural gas, which means that water and condensate are removed from the gas. "We have in-house knowledge of the complete process as we have our own process engineers. We can accept such projects world-wide, on turn-key basis and can carry out the complete project, including the civil works, laying of pipes, electricity, power stations, etc. Escher fully acts as E.P.C. contractor."

"A third speciality is the building of flare-stacks. We recently built one of 110 metres high at MSPO, Moerdijk. This consisted of a so-called retractable system, which enables the one tower to be taken down, while the other keeps working. It is a design we once developed together with Shell. By the way, Shell is a very good buyer of ours. We are usually asked for bids on projects world-wide by all manner of Shell companies, as we are a preferred vendor. One example of that is this vessel for Shell Stanlow." ■

The Girassol

By Aad van Leeuwen

According to Mammoet Shipping, the last two years have shown increase in the transportation of offshore related cargoes as turrets, modules, reels, etc. for FPSO projects. According to Marketing Manager Johan Boer, the "Happy R" type vessels and the recently commissioned "Tra" vessels are ideally suited for (project) transportation of offshore cargoes. "Mar Profundo Girassol have booked three voyages through forwarder SCAC for this cargo from Europe, whereby they could completely avail themselves of the entire vessel's space. This means that they chartered a ship which would only carry Girassol cargo. In other words a "dedicated ship", whereby the shipper can decide where the cargo is loaded and even the destination, as MPG was considering various options where to fit the Girassol FPSO hull with the modules. They also have the right to load the ship up to full capacity." According to

***Ulsan** - The Girassol oilfield, discovered in 1996 off the coast of Angola, is an example of a new and promising exploration project in the deep waters off West Africa. The combination of its size and water depth makes it one of the most daunting floating production projects undertaken so far. Girassol choses its own approach to tackle the water depth of 1350 m and intends to produce some 700 million barrels in the first phase, out of the one billion or more said to be recoverable from the field. Operator Elf has decided on development based on a massive steel ship-shaped floater and 40 sub-sea wells, all connected by some 100 km of flow lines and risers. For the FPSO, Mar Profundo has sub-contracted the construction of a 300 m long hull to Hyundai of South Korea. The topside facilities were made at Le Havre, Hull, Gothenburg and Marina di Carrara and Mammoet Shipping was contracted to ship these modules to Ulsan in South Korea.*

project

Mr Boer, the advantages of dedicated shipping are obvious. "Through Mammouth France in Paris, we introduced a concept by which we could ship all Girassol cargo to Korea in three voyages in the quickest way. Ultimately, this was very cost effective and flexible for the consortium."

In fact, this is a back to front way of doing business in heavy lift shipping. Instead of booking a certain cargo on a vessel and combining it with other cargoes of various parties, a complete ship is chartered with the customer deciding what must be loaded and where. According to Mr Boer, this new concept has apparently worked out very well and it is likely that the customer will choose this method again for the next FPSO. "In this project, two factors turned out to be of major importance: the contribution of the Mammoet office in Paris and Mammoet's new generation heavy lift vessels. Because of their lifting capacity, volume and speed, we are able to supply a better product than our competitors, which is beneficial to both the customer and Mammoet Shipping."

Over and above the original three voyages, it turned out to be necessary to make a fourth and even a fifth run. This is not surprising when realising that for the Girassol project cargoes had to be delivered from all manner of places in the world in a very short time-span. Another project which involves Mammoet, both on land with trailers and cranes and on the water, is the Terra Nova project in Canada. The cargoes on offer in the offshore market will, however, decline somewhat in the year 2000 because of the lagging effect of the, by now well recovered, oil price. ■

By Aad van Leeuwen

The United

***Breda** – With a keen eye on the European lifting market, while structural weights become heavier and heavier, Mammoet Stoof have enhanced their position in the market by purchasing two brand-new crawler cranes. One is a Demag CC1800, which is in fact a fully equipped 300 tonne crawler crane with superlift configuration. The other is a Demag CC2800, a 600/1000 tonne crawler crane also fully equipped and also with a superlift configuration. Mammoet Stoof's crane fleet now consists of the following types: two CC1800s, two CC2600s, two CC2800s and a CC/PC4200. In other words: Mammoet Stoof, with their subsidiaries in the Netherlands, Belgium, France, Italy, Spain, Germany, United Kingdom and Norway, operate an altogether flexible fleet in the higher lifting range which can be mobilised throughout Europe.*

Ton Klijn, Mammoet Stoof's Managing Director, informs Mammoet Mail about the latest Breda developments. "Mammoet's most recent office in Europe is set up in Spain. We opened a modest sales office in Madrid, managed by Miguel Florez de la Colina. Our motivation was that Spain takes a good position in the European Union and it is a country which is clearly on the up. A lot of interesting projects can be found here and there is also much export cargo to destinations elsewhere in Europe, and don't forget that the cargo flows to South-America are often controlled from Madrid. Therefore, it is good to have our own sales office there with local people. The country has its own strong culture and one should not insist on steering it all from the Netherlands."

Germany also turns out to be a fairly successful working area, according to Mr Klijn. "In the Eastern part of Germany the old plants have by now been demolished, revamped or upgraded. Almost every plant has been renewed completely. That means that in the eastern countries there are not many large projects at the moment. The economic future highly depends on the political situation, which is quite healthy at the moment. A disadvantage for Mammoet is that Germany has much local crane capacity and that our name is not yet very well known. But we also work hard at that and in the mean-time we have tackled a number of large projects, such as for instance the transportation and positioning of a large number of windmills.

England has had to cope for quite a while with a fairly strong currency and subsequently with stagnating exports. The Mammoet office in Middlesborough had a hand in the Kårstø II project in Norway and for this office the maxim also counts that borders become less and less rigid. "Mammoet Transport U.K. celebrate their twenty-fifth anniversary this year. Traditionally there has always been an offshore-related market in the U.K. with a high volume of load-out activities. Although we will carry out a record load-out for the Shearwater project, we do notice a declining market. Substitutions are found in the steel industry, the chemical and petrochemical industry and don't forget in the power business."

According to Mr Klijn, the heavy-transport activities in Norway will be mainly gas and oil related. "Mammoet Transport Norge is an important link in the chain of load-out activities in that region, but we also notice increasing building of gas and oil related facilities which are being set up, almost without fail, in modular form due to the country's infrastructure. Past projects such as Tjeldbergod-den and Kårstø II (see elsewhere in this issue) are good examples and we expect that they will provide the Mammoet organisation with sufficient work."

Another potential working area for Mammoet, be they outside the EU but no less important, are the countries around the Mediterranean Sea. "Egypt is a good example. We positioned two heavy columns for Toyo Engineering at

States of Europe

an Olefins plant. We used the HydraJack system for this. Our Italian office in Milan, together with Mammoet Seoul, brought in this project and it proves once more that the world-wide network of the Mammoet organisation is important. The project also resulted in some spin-off crane work for a longer period. Countries such as Algeria, Turkey and Greece are presently experiencing economic revival and no doubt, they will be interesting working areas for Mammoet."

Back to the EU, where the common coin, the Euro, will no doubt positively influence inter-union traffic. When export limitations fall away, the sales offices of Mammoet will be able to generate more work and if necessary the structures within the Mammoet organisation are adapted. "A good example may well be the development of the Mammoet Transport branch in Antwerp. This office is now fully dedicated to special road transportation, which is carried out for clients in the whole of Europe (vide Mammoet Mail 33). A deal was struck with colleague crane company Aertssen Kranen N.V., who now see to all occurring crane work up to 250 tonnes. They also act as sales agent for Mammoet. Weights over 250 tonnes are operationally attended to by Mammoet Breda. By this agreement, our clients in Belgium are served in the best way possible, both in the lighter and the heavier lifting segment." ■

Life through

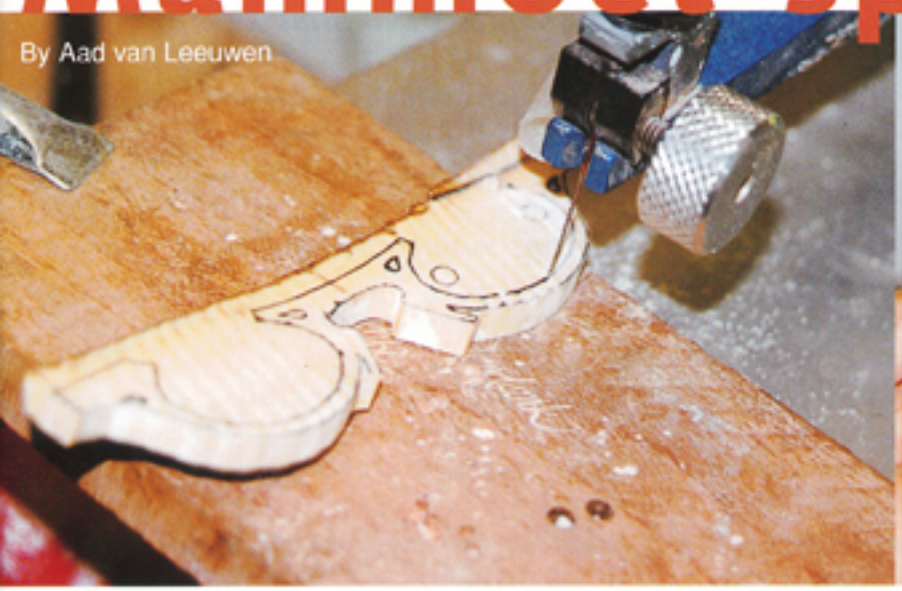
***Amsterdam** – Kees Wennekendonk has been designing and constructing spectacle frames for the last six years. To make these frames, he tries to use woods and horns. Through a German museum he came by a small amount of mammoth ivory. After testing and reading up on ivory work, he made his first frame, which is now part of an exhibition of his spectacle frames in Amsterdam. Thereafter, contact with Mammoet Transport, with headquarters in Amsterdam, was quickly made.*

"Glasses disclose the character of the people who wear them. The frames donned by the Germans, for instance, are totally different from those of the Belgians. From their choice you can deduce that they wish to be considered reliable and businesslike people. Straight lines; a German does not allow for frilly gimmicks. Belgians are much more relaxed in their choice and also more expressive. There you can see people walking around with a stripe across their face with two little glasses attached. It shows their character; where they are very dutiful on the one hand, they show their individualism on the other. The Dutch usually wear a similar model as their neighbour. The form must be relative to something. In this aspect the Dutchman is rather similar to the German. Both show that they can adapt, which is also apparent in their economies. Italians are very conspicuous in their choice of spectacles, lots of style, very beautiful and sensual. Japanese wear clearly focussed glasses and show that they are hard workers. Their glasses are severe and often black-rimmed. Whereas the Americans have a completely different way altogether. They still wear large and wide specs. That gives a wide outlook, from which you can deduce that they live in a vast and wide land. Therefore, you can find the culture of a country in a pair of spectacles and spectacles-behaviour."

Kees Wennekendonk makes frames on request for private people, artists and a growing number of companies also use his services. He tries to go against the flow of things by designing something very special. "I don't only look at the physical side of things, but I also look at someone's character and how he/she associates. I ask my clients to picture their glasses in their mind, even if they do not yet exist, and ask: 'Suppose it were a predator, what does spring to mind.' Or, 'suppose it were a car, what make would it be,' or a transport company or a magazine. They supply me with a whole list of names which I later use when designing the glasses. I draw on a life-size photograph of a face, and then I use the list as an aid to choose shapes. At that stage I'm forever fiddling with details. Later on, when the designs are presented – I make three

Mammoet spectacles

By Aad van Leeuwen



Spectacles were invented some 700 hundred years ago, presumably in Northern Italy. The oldest complete specimens date from sometime around 1350 and were found in the excavation of a nunnery near Celle in Germany. The first glasses were made out of beryl, a semi-precious stone, from which glasses obtained their name in Germanic languages, where they are called bril or Brille.

from which the client can choose – the list can be used again to explain certain details like a kind of story-board."

Through contacts in Germany, Mr Wennekendonk buys natural materials for his frames such as horn. "Through this supplier I received a brochure some four years ago about someone making spectacle frames from mammoth ivory. I immediately called to see if he could let me have some of that ivory, but he rather preferred to keep it to himself."

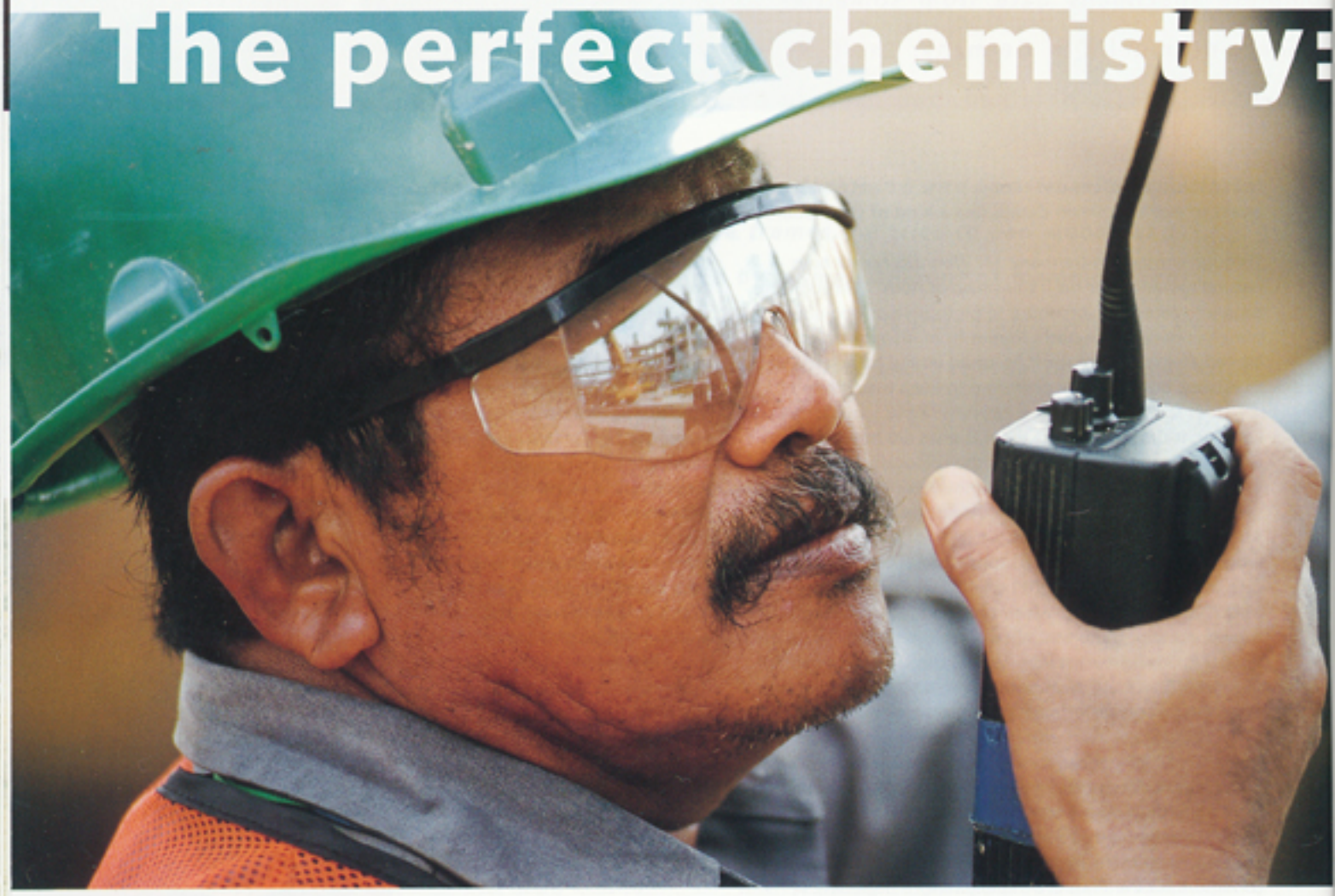
Later on it turned out that these frames did not sell in Germany as the people thought the colour of the material too conspicuous. Personally, I did not think the designs very special either and they were made with black plastic arms. At that time I was experimenting with different layers of wood and horn and I wanted to include other materials such as leather. So I thought I would try again to get some of that mammoth ivory. When I phoned the company, it turned out that some was still available. At about the same time, a Rotterdam artist who looked through my portfolio, suggested that I use mammoth tooth, and shortly thereafter the first order for mammoth glasses came in."

According to Wennekendonk the ivory that went into the permafrost turns out to be well preserved. "Mammoths were ambushed by the last ice-age and in a matter of only a few days they were totally frozen, almost while walking. That is why so many mammoths were found in very good condition. All the finds are initially sent to museums. A small part of what is left over is then brought on the market for jewellery for instance. No really large objects are made of the material. Compared to other materials the tooth structure lengthwise is extraordinarily large. The ivory is built up from the middle, so that the material in the centre is the youngest. That is because the tooth grew from the inside. This makes for a build-up of layers. When the animal had eaten regularly throughout the year, the tooth would build-up very regular. The ivory would be cohesive and without too many cracks. It is very useable and pliable material. Horn has the same usage as a tusk. They were both meant to protect the animal, to scare, but also to be used during the mating season to fight the necessary masculine fights. Therefore, it is an elastic material with incredible sturdiness, and surprisingly, it can be processed very easily. At first I feared that fossilised ivory would give off a terrible smell and issue blue fumes, but nothing of the kind happened. The saw went through it very smoothly, even if mammoth ivory's specific weight is one and a half times that of ordinary elephant ivory." ■

On the screen in one of the magnificent little churches in Norfolk, England, the image can be seen of St. Matthew wearing his reading glasses. The screen was made in about 1500.

***Singapore** – Leading petrochemical companies have joined up on Jurong Island which emerges as a giant petrochemical complex through the joining of seven smaller islands south of Singapore. Illustrious industries such as Exxon, Chevron, Sumitomo, DuPont, Mobil, Mitsui, Celanese and Lonzo have taken their places and they are poised to reap the benefits of being part of an integrated complex for oil, petrochemical and chemical manufacturing on what is called the biggest land reclamation project of the twentieth century.*

The perfect chemistry:



Jurong Town Corporation (JTC) are the key architects of Singapore's Industrial landscape. Established in 1968, their primary role is to develop and manage quality industrial facilities for their customers in Singapore and the region. As Singapore's largest industrial developer, JTC has 33 industrial estates in Singapore under its management, housing more than 6,000 local and foreign companies.

Jurong Island

History was made on 31 March 1999. For the first time, one could travel from mainland Singapore – Walter Wright Mammoet's mainstay – to Jurong Island over land. Only a few years ago a group of smaller islands formed the basis of most of Singapore's refining and petrochemical industry off the South-West coast. The cluster of islands could only be reached from the mainland by a array of ferry boats. To get there, it often took up to an hour. Today, a causeway carries a modern highway right into the heart of the island and it takes just 10 minutes to travel there. Four lanes of a projected eight-lane road linking the Jurong Island highway have been completed to Pulau Sakra. From January 1999 to March 2000 Walter Wright Mammoet has executed six heavy lift projects on the island with a total installed weight of 35,110 tonnes.

Jurong Island has come a long way since its humble beginnings as an arrangement of islands south of Singapore. Pulau Merlimau, Pulau Ayer Chawan, Pulau Merbau, Pulau Seraya, Pulau Sakra and Pulau Pesek became home to several large refineries. Linking the islands and reclaiming land began in March 1995. Phases 1, 2 and 3a, over a total area of 1680 hectares, were completed early 1999. Under phase 3b a total of 977 hectares will be reclaimed. With the completion of this phase, at the end of 2001 the total land area of Jurong Island will be 2,650 hectares. This is some three times the original surface, which consisted of 991 hectares for the original seven islands. Jurong Island is currently home to 36 leading petroleum, petrochemical and chemical companies, with committed fixed assets of S$20 billion. When phase 3b is completed, Jurong Island can support up to five cracker plants and about 150 companies providing employment to some 30,000 people.

Exxon Chemicals Singapore are a major presence on Jurong Island. They started to expand a few years ago by building the Singapore Aromatics Complex. A multi-billion dollar complex which contains, among others, an Olefins complex, an OXO Alcohol plant and the Singapore Polyethylene plant (SPE). The latter project had been contracted to Bechtel International Inc. and consisted of the installation of a 290 tonne reactor, a 90 tonne purge bin, a 75 tonne compressor skid and a 100 m tall flare stack. After a careful tender process Bechtel chose Mammoet to transport and install these heavy items, for the reason that Mammoet was already active on many projects on and around Jurong Island and because of Mammoet's outstanding safety record.

A Demag CC3800-SSL was dispatched and assembled with a 60m boom configuration. In the meantime the reactor had been received onto the Mammoet barge and transferred from the heavy lift ship to the site. The roll-off operation and further inland transportation was carried out with Mammoet's well-known SPMTs. The actual lift took place in a rather confined area whereby a 200 tonne superlift attachment was used. Any doubts of proper execution were quelled by extensive engineering and the 42 metre long reactor was placed in a smooth operation, to be followed by the purge bin. The 30 metre long purge bin was received on conventional trailers in Pasir Gudang in Malaysia and loaded out at the Port. The load-in at Jurong Island was again at the Brown & Root jetty after which transportation to the site followed. For the installation of the bin, the CC3800's boom length was increased to 84 metres. The bin could be installed without the need for any superlift counterweight even if it had to be lifted over a 23 metre high steel construction.

Photo: Britoil Offshore Services

The M250-SII was used as a tailing crane and Bechtel's M4100-SII hoisted a man basket to allow releasing of the shackles. The M250 was later mobilised to the flare stack area where it positioned the stack in five sections. All heavy items were installed safely and in time thanks to an excellent co-operation between Mammoet, Bechtel and Exxon. A total weight of 770 tonnes was installed.

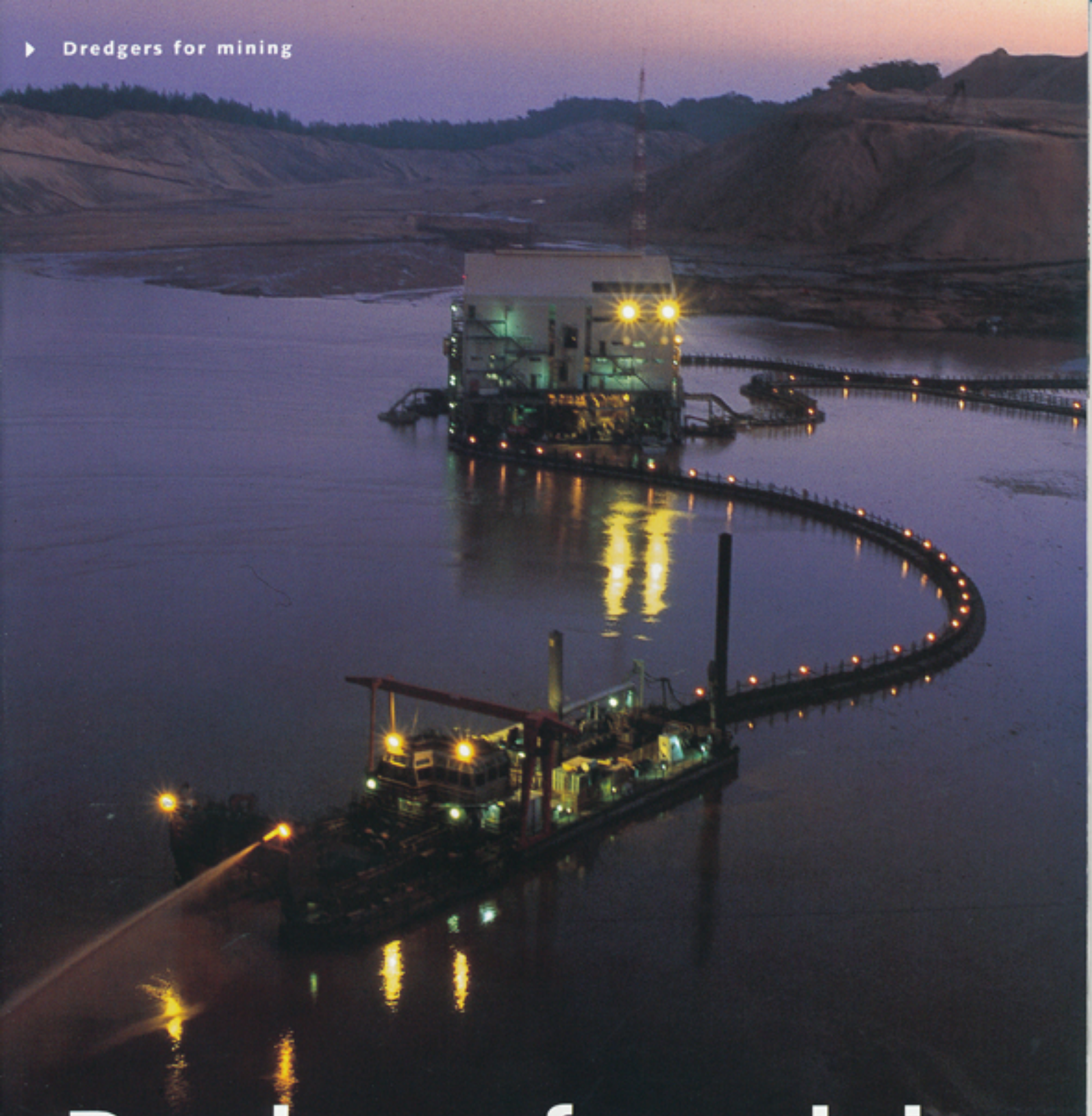
The largest project in terms of installed weight was the Singapore Olefins Project (SOP) executed for various contractors. For this project Walter Wright Mammoet carried out shipping, transportation and installation of 74 pipe-rack modules from the AG&P yard in Batangas, Philippines to Jurong Island. Britoil Offshore Services provided the barges and tugs for the ocean transportation. In total 19 shipments of heavy cargo, with a total weight 7,900 tonnes, were barged from the Philippines to Singapore. Another part of this contract consisted of 52 modules and columns, of which the heaviest piece was an 842 tonne splitter column, which was erected and positioned by WWM's M1200 Ringer crane. Almost a complete range of WWM cranes was mobilised for this project, as well as 32-axle lines of SPMTs. A total weight of 10,500 tonnes was moved and installed on site.

Shuttling between various projects on Jurong Island, the M1200R ringer crane carried out several lifts for the Singapore Gasification Hub (SYNGAS), amongst others a 362 tonne cold box, a main heat exchanger and a 105 tonne distillation tower. At the end of the project, towards the end of 1999, the M1200R was stripped down to a M250 crawler crane in order to install a flare installation. Fifty heavy lifts with a total weight of 3,050 tonnes were installed. Moreover, 17 piperacks ranging from 22 to 117 tonnes were moved by 24-axle lines of SPMTs and installed with a M250 crane. Total weight 1,110 tonnes.

For the CELANESE – Singapore Acetyls project 14 major items were moved and installed varying in weight from 10 to 150 tonnes. Apart from the M250, a CC3800 crawler crane and an RT980 were mobilised, as well as 18-axle lines of SPMTs. Total weight the installations was 900 tonnes.

The IPG ASU Plant also consisted of 14 items ranging from 26 to 208 tonnes. The heaviest piece was a cold box of 208 tonnes and the total weight moved was 1,270 tonnes. A CC3800 crawler crane and an M888 crawler crane were mobilised as were 14-axle lines of SPMTs.

Again for Exxon, nine heavy lifts, ranging in weight from 220 to 2200 tonnes were moved and installed for another part of the SOP project. A 72 m long piperack of 500 tonnes and four ethylene cracking furnaces, two weighing 1,720 tonnes and two weighing 2,200 tonnes, were moved on 80-axle lines of SPMTs. Installation onto foundation was executed by WWM's jacking system. In total 9,610 tonnes were handled and installed.■



Dredgers for mining

Richards Bay – In South Africa mountains of sand are moved to mine heavy minerals in an environmentally friendly way. Once the project is finished, ilmenite, rutile (titanium ore) and zircon are mined, while the dunes look as ecologically sound as if nothing ever happened to them.

Ilmenite, rutile and zircon are common materials, found all over the world, but not always in economic concentrations. One of the exceptions is the coastal area of northern KwaZulu-Natal along the Zululand coast. Richards Bay Minerals (RBM) was formed in 1976 to extract these heavy minerals from the dunes north and south of Richards Bay. When RBM started operations, the company was aware that the mining and amelioration process would have to be carefully managed to minimise its impact on the environment and to ensure, as far as possible, that it can sustain itself. This is one of the guiding principles for any industry which utilises the earth's resources for the benefit of mankind. RBM's policy is to repair any negative impact its processes may have. The dune rehabilitation programme is a fitting example of this.

RBM uses an ingenious dredge mining operation, pioneered in the Netherlands and Australia, to extract and separate the heavy minerals, about 5% in volume, from the sand. Mammoet shipped two dredgers, made in the Netherlands, from Rotterdam to Richards Bay. The dredgers, weighing 700 tonnes each, were moved in about ten segments of 140 tonnes at the most. Mammoet Southern Africa signed for the onward transportation of the dredgers and their in-situ assembling. The dredging system is used to create large artificial ponds in the dunes wherein both the dredger and the concentrator plant float. Burrowing into the mining face of the dune, the dredger advances at two to three metres per day. Ahead of the slowly advancing mining plant, the vegetation is cleared and the topsoil removed for later use. Behind the pond, the tailings (remaining sand) are shaped and contoured to resemble the original topography as closely as possible. For restoration of the original landscape aerial photography is being used as reference.
The first step in the rehabilitation process is to spread the topsoil, which was removed earlier and contains seeds and plant nutrients, over the mined sand in a layer of about 10 to 15 cm. Into the topsoil a mixture of cereal seeds, combined with a large variety of indigenous seeds is sown, which will form the cover crop. Germination takes only a few days and soon the dunes are shrouded in a carpet of green. The cover crop provides protection for the indigenous seeds, which germinate slower, and dies off after about a year leaving the indigenous species behind. This 'kick start' speeds up the natural process, and within a few months the area is covered with Acacia karroo pioneer trees. When the 12-15 metre Acacia karroo trees begin to die-off, they leave gaps in the canopy which let in sunlight. These are soon filled with vigorously growing secondary coastal dune forest trees like Red Milkwood (Mimusops caffra) and Natal Mahogany (Trichilia emetica) which have germinated under the forest canopy. After only ten months these trees, signs of a mature coastal forest, begin to appear. At fifteen years, the rehabilitating forest contains a wide diversity of plant and animal species.

At the core of forest rehabilitation lies the initiation of an ecological process which will result in the development of a dune system similar to that which existed prior to mining. In a more ecological sense, after rehabilitation the area must be a viable biological system similar to that of adjacent indigenous coastal dune areas. If rehabilitation is successful, plants, animals and people will not notice any difference between mined and unmined areas and the only imperfection will be a slight topographical change and the loss of mined minerals which build assets elsewhere. ■

Visit the RBM website:
http://www.richardsbayminerals.co.za

Courtesy: Richards Bay Minerals

Dredgers safely arrived in Richards Bay

By Aad van Leeuwen

***Richards Bay** – It is the last project for Dudley Fraser, Director MUP 2000 at Richards Bay Minerals. After the commissioning of the two dredgers he will retire this year. "When I started at RBM in 1983 as Chief Engineer projects we had two furnaces and two mining plants in operation, with a capacity of 220.000 tons slag per year. Now we have four furnaces with a combined output of up to of 1 million tons of slag and 550.000 tons of iron per annum. This project is not meant to increase the furnace capacity, but the grades in the ground are going down, so we need these new dredgers to get more mining capacity to stay at the same level."*

In order to meet long term contracts, RBM has to maintain its yearly output. "Mining in the early days was concentrated around high-grade ore bodies and leaving the lower grade bodies for the later years. As you will see, the mining operation is moving to the North, so the management of the mining operation is moving north as well. The ore body in the South is largely mined out and is coming to the end of its life span soon."

Mr Fraser is satisfied with the services rendered by Mammoet, both for the shipping from Rotterdam to Richards Bay and the in-land transportation from the port to the mining area. "It was very useful that it was all done by one company. Mammoet has total control over the transportation. They did things very efficient and effective. Also the assistance they gave us during the assembling of the main components went very smoothly. The first dredger is now assembled for the greater part, while the second one has arrived today. It has all been fascinating to me; this was the first time that I was involved in shipping major dredging components over such a distance. It is certainly something we have never done before and for me it has been an amazing experience. But then, Mammoet has probably been doing that for a thousand years, because it went absolutely like clock work." ■

IHC, or how to build dredgers successfully

By Aad van Leeuwen

***Sliedrecht** – The good relationship between RBM and IHC, who built and delivered a wheel dredger and a cutter suction dredger, is the result of a long-standing cooperation. Engineer Kees Jan Verkaik, who is Manager Design Department at IHC Holland N.V. Beaver Dredgers, maintains close contact with RBM and knows the specific requirements of this South-African mining company.*

"This client is extremely innovative in its field and that is one of the reasons why RBM and IHC match so well. Since these are not the first dredgers we built for this client, we thought it important to develop a certain level of standardisation in the components. Mining companies such as RBM are active for 24 hours every day, 365 (or 366) days per year with a number of dredgers and as the investment in spare parts is huge, it will be financially beneficial not to deviate too much in that area. This determines what should or should not be redeveloped which makes the contract with RBM extremely interesting."

The dredgers that were moved by Mammoet are fully geared to the mining conditions as found at RBM in South Africa and are different from dredgers that are put to work in more regular dredging jobs. "These dredgers are used to mine heavy minerals. They work in an enclosed lake in a dune environment. The dunes are sometimes 100 metres above water level and this combined with a dredging depth of 15 metres means they must dredge 115 metres in total. That in itself makes them special. They have therefore been equipped with all kinds of devices so that if a large dune collapses uncontrollably, the dredger can retreat quickly. Furthermore, they are electrically powered and, therefore, have no diesel engines on board. Electrical propulsion is usual in dredge mining as the entire mining plant is electrically driven. The dredgers are never more than 300 metres away from the contractor plant which is also afloat and trails behind the dredgers. This is a different world compared to regular dredging works, which are traditionally diesel-powered, because of the different locations in which they work."

The majority of the equipment IHC builds, moves abroad. They build for all continents. Presently, their main market is Asia, especially China, who are important buyers of regular suction dredgers. A decline was observed because of the economical crisis, but the market is slowly but surely improving. At the IHC yard it is clear that the company has a good order book. It is also obvious that IHC's demands for the transportation of these capital goods are high. "We try to find people who can handle our goods the correct way. Their work must be of good quality. We must be able to rely on agreements and delivery dates."

"Transportation is often part of the contract, but not in this case, as the client went to Mammoet directly. We did play a intermediary role based on our past experience, which has always been good with Mammoet."

"Price is always an important issue, but more urgently is the reliability of the transport company. After all, one move is more complicated than another. The more suitable a transport company's ships, the more convenient they are for IHC, as we don't have to disassemble as much, so that there is less building to be done at destination. The ultimate running time is then reduced which results in .... a satisfied customer." ■

Kårstø Utb

"We are going more and more into margina
fields, we don't have that huge bank of gas an
oil volumes anymore. So, this requires a differen
attitude and technology. And shorter lead times."

***Stavanger** – The Kårstø gas treatment plant operated by Statoil and located north of Stavanger in Norway, was established to handle rich gas. After treatment, lean gas is piped on to continental Europe while natural gas liquids (NGLs) are shipped out in carriers. In 1984 Mammoet took care of the integrated transport of the modular components for the plant. Gas first arrived at the complex on 25 July 1985. A major development project is currently under way at Kårstø to accept gas from fields off mid-Norway via the Åsgard pipeline. This expansion also includes a plant for separation, storage and export of ethane with an annual capacity of 600,000 tonnes. Furthermore, two large rock caverns are being constructed for storage. They will be able to store more than 250,000 cubic metres of liquefied propane at a temperature of -42 degrees Celsius.*

yggings Prosjekt

By Aad van Leeuwen

"They are huge, cathedral-like caves. We call them Europe's biggest deep freezer." Svein Atle Bratbakk from Statoil shows Mammoet Mail pictures of the giant storage facilities for liquid propane, which were created by blasting away solid rock to a depth of 50 metres below sea level. "Each of them has a capacity of 125,000 cbm; they are 200 metres long, 20 metres wide in the foot and 30 metres high. Presently, one cave is filled with water for pressure and leakage testing. When that one is okay and accepted, we will pump the water over into the other cave. The big issue for any hydrocarbon storage facility is to keep the oxygen out. Hydrocarbon and oxygen form an explosive atmosphere when mixed. When we start transferring water to the other cave we will put gas on top of the water. Once the water is gone, we will have the hydrocarbon, which is liquid propane, stored at minus 42 degrees Celsius. This is actually the same temperature as when it is shipped in gas tankers. Outside the cavern Mammoet has installed a big chilling module to keep this temperature at the required level."

According to Mr Bratbakk it took exactly ten months to make the caverns, including a 600 metre long access tunnel and several side tunnels. These separate caverns are also part of a commercial strategy to obtain the best possible price for the product.
"One of them is what we call the spec cavern. All the production going into that cave is exactly according to specification. So, if we have any upsets in the production, the off-spec product goes into another cavern. It is a commercial matter: if a little bit of the off-spec would get into the spec, it would spoil the entire volume of the whole cavern. So our clients are getting the best they can get, if they so wish and we will get the best price for it."

The first gas treatment plant at Kårstø had already been constructed in modules in the eighties and the extension of the plant is now built in the same manner. On the question posed by Mammoet Mail that the transport costs involved must surely be higher, Mr Bratbakk answers: "One thing of course is that we save man hours here at Kårstø. On the other hand, we can build a module inside a hall anywhere in Norway or elsewhere in Europe. The modules are being built under optimum conditions, not only for the paintwork but also for the workers. To live in a camp and be outside in the rain, which is usual in these Western Norwegian weather conditions, does not add to high quality work. So, it is as much a way of getting costs down as it is of having control over the quality; they are the key elements for modular construction and make the costs involved in heavy transport worthwhile."

Without modularisation it couldn't be done

Peter Lansley is the Project Construction Manager of M.W. Kellogg Limited at the Kårstø site. He co-ordinates the transport and lifting matters with John Short, Mammoet's project manager, on a daily basis. "We have to do that, because we are working in a life plant here; a factory in operation. We are moving heavy gear through this gas treatment plant, which is quite a complicated operation. Every morning at eight o'clock we have a meeting and everybody involved in the operation, even if only peripheral, is invited. As a result, everybody knows exactly what to do and when it will happen. When the area is cleared for Mammoet, they all know the route along which the transport will move. The existing plant is not really designed to give access to modules of this kind. The original plant was modularised as well but not to the extent we are doing now. A lot of the roads had to be widened, road furniture and lamp posts had to be taken down and as part of the safety policy, everything on a life plant is under permit. You can't move unless you've got a permit to work, and before you start rolling equipment we have to clear out everything and make sure every permit is in place, even for removal of the smallest lamp stand. Fortunately, we receive extremely good co-operation from Statoil." Mr Lansley points towards the skyline of the plant extension and explains: "Six weeks ago there was nothing there. So you literally see it growing. It is growing tremendously fast and by the end of this month we should have all the modules in place. Just as we planned it."

Without modularisation it could not be done. Preassembled pipe racks, preassembled units, preassembled racks and fully dressed columns came from Belgium, the Netherlands and the U.K. Mr Lansley: "It didn't come in sequence because the manufacturing time varied from piece to piece. So what we did upon arrival was to park it all here outside the plant, because there is not enough storage area at the quay side. Whenever they are needed, we pick them up and pull them out."
Statoil and Kellogg work together in a combined management team. "That works well and it functions as an integrated team. My counterpart Svein Bratbakk is fully aware of what I'm working on, so when I'm out, he can take over at any time. We more or less complement each other. In a way, that counts for Mammoet too, they are doing very well. Companies like Mammoet will be very busy in the future with shrinking time schedules and all the connected work." ■

The Kårstø gas treatment plant will be sent gas from the Åsgard field. This field lies on the Halten Bank in the Norwegian Sea, about 200 km from mid-Norway and 50 km south of Statoil's Heidrun field.

Photo: Huib de Jonge

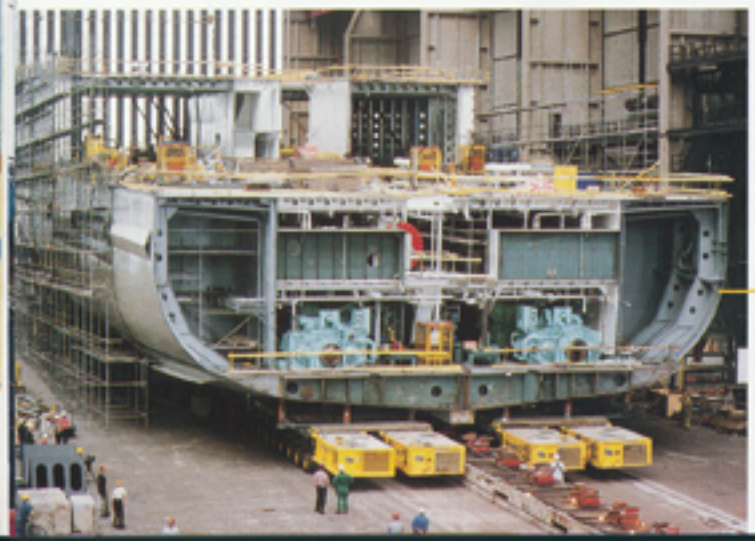
Terneuzen – After 30 years loyal service with Dow-Benelux N.V. in Terneuzen two columns were taken down from the Styrene 1 and 2 plant. The picture shows the 45 metre long column which weighs 265 tonnes. The job was executed for client Schotte Sloopwerken in Nieuwerkerk aan de IJssel. Mammoet's CC2600 crawler crane with a 60 metre main mast had been provided with 200 tonnes extra ballast just this once. The tailing crane was a 500 tonne hydraulic crane. To replace the old columns, Mammoet Stoof Terneuzen recently positioned a 220 tonne column with their newly acquired CC2800.

Ouddorp – Mammoet Transport Belgium of Antwerp moved three antique tram coaches from the Zillertal in Austria to the museum of the Rotterdam Tram company in Ouddorp, the Netherlands. Mammoet in Antwerp is the specialist in transportation throughout Europe of such remarkable and out-size items. (Vide Mammoet Mail 33, "On the Road").

Mammoet

Photo: Ingrid van Beek

Flushing – With five hydraulic cranes a 184 metre long steel water pipe was placed in the rich clay of the province of Zeeland in the Netherlands. The 55 tonne pipe replaced an old section which was unlikely to withstand the pressure of traffic on the main road. When ready, this road will connect with the Westerschelde tunnel which is also under construction and for which Mammoet delivered the drilling machines.



Krimpen aan de IJssel – A 4200 tonne ship section was moved for shipyard Van der Giessen de Noord by Mammoet's SPMTs. The mid-section of a ferry under construction for a Greek ship owner was moved over a distance of about 200 metres on a slope of some 5%. The ship, which has meanwhile been finished, was launched in December and now maintains a ferry service in Greek waters.

in Focus

Etten Leur – A 120 metre high radio/tv tower was taken down with a 400 tonne lattice boom crane with 77 metres main boom and 84 metres luffing jib, as well as an 500 tonne hydraulic crane, the latter with 45 metres main boom and 90 metres luffing jib, so both cranes used their maximum boom lengths. The picture shows the top section, which received foreign television programmes for the local cable tv system. Once the old mast was removed, Mammoet installed a new, much smaller mast with the same capacity for receiving and broadcasting.

Leiden – By order of sculptor Frans de Wit, Mammoet moved a number of his works of art from his workshop in Velzen to the Naturalis museum in Leiden. They are two steel gate-like sculptures of some 70 tonnes in total and with a maximum length of 10 metres. The gates were positioned by a 80 tonne hydraulic crane at the road junction in front of the Naturalis museum. Three more gate sculptures will follow. The column-like structures will be placed at regular intervals and symbolically make up a Leiden Forum Romanum.

Almere – Positioning concrete sections is a growing market for Mammoet Stoof. In the Flevopolder (the Netherlands) a complete fly-over was installed with two hydraulic cranes.

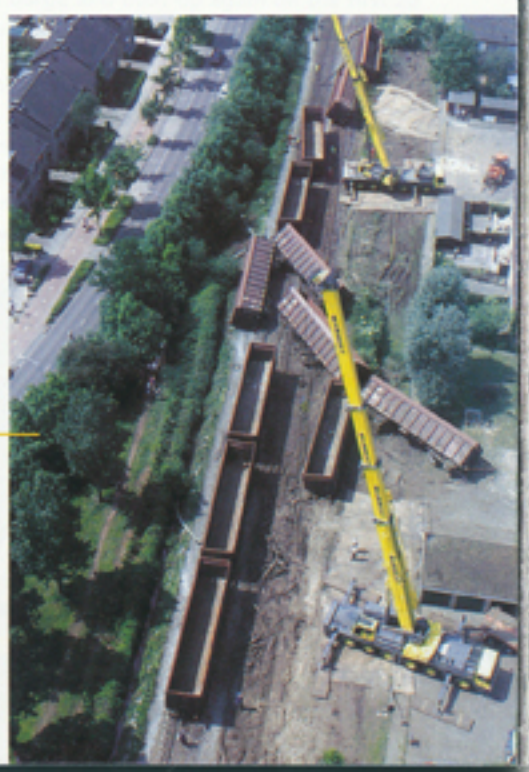


Photo: Brabants Nieuwsblad/ De Stem

Etten Leur – A nightly derailment of 19 empty open railway wagons caused a tremendous pile-up and one of the wagons ended up in the back yard of a house alongside the railway. Fortunately, no personal injuries occurred. Immediately after the accident, Mammoet Stoof was asked to plan salvage of the wagons, which weighed 22 tonnes per piece and were 14 metres long. That same night a battle plan was drawn up and the Dutch Railways gave their consent. As soon as the area had been levelled, steel plates were layed down which could bear both a 200 tonne and a 110 tonne telescope crane. The salvage work by Mammoet Stoof was carried out so smoothly that the track was free for traffic again 24 hours sooner than envisaged.

South El Monte – Mammoet Western's new outfit in the right Mammoet house style colours with part of the proud staff in front. The company is specialised in millwright and rigging as featured on page 56 of this magazine.

Dubai – Mammoet Gulf positioned a complete roof section for a shopping centre in the emirate of Ras al Khaimah. The "mammoth space frame" weighed 45 tonnes with a diameter of 65 metres. The Mannar Mall is expected to be ready by the third quarter of 2000 and is said to be the largest single-storey shopping mall in the UAE.

Guanta – For a fertiliser project, Mammoet Venezuela moved a 230 tonne vessel of 23 metres long on 14 lines Cometta trailers. The transport project entailed several columns which were shipped from Italy and after roll off unloading were brought from Guanta to Jose until under the crane's hook by Mammoet Venezuela.

Photo: Aertssen Kranen

Antwerp port – A so-called coal stacker which had run out of its rails, was lifted and put back in its track. The lifting job was carried out with cranes of Aertssen Kranen and Mammoet Stoof. Aertssen Kranen NV has a cooperation agreement with Mammoet in Belgium to rent out cranes with capacities over 250 tonnes. In this case, the Aertssen Krupp KMK6200 and both Mammoet's Demag AC1600 and AC400 joined forces for this highly interesting salvage job.

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By Aad van Leeuwen

Concrete cranage on water

Richards Bay – Group Five/Grinaker and Mammoet Southern Africa have been busy constructing a dry bulk jetty and gallery for Portnet in the Port of Richards Bay. Numerous precast concrete beams, with weights of 55 and 63 tonnes, were positioned by Mammoet's M4100R at a maximum radius of 44 metres. To make the job even more exciting, the first supporting concrete members were placed with the M4100R sitting on top of a barge; a floating ringer crane!

Glen Blackmore, Contracts Manager for the joint venture Group Five/Grinaker, can recite all the accurate details of this most interesting project in his dreams. "I already lived with this job for quite a while before it started. The overall concept of the jetty is a piled reinforced monolithic structure. That means that 116 piles have been installed with diameters of 1.8 and 1.2 metres. They are driven down to about 71 metres, starting at the quay wall at 55 metres to 71 metres in the harbour. The tricky part of the construction was how to gain access, how to build a surface to work on. That was designed in conjunction with Mammoet. They came up with the solution to use a Manitowoc 4100 crane as a ringer and mount it on a 3900 ton displacement barge with a length of 70 metres. The crane was rigged up on the barge in a nearby harbour, towed around to our site and anchored in position. It was then drawn backwards on the anchor lines and forward along the quay wall to collect the precast piles. In short, the crane placed the entire lower level bridge construction and the first two bays of the jetty deck from the barge. The major part was constructed from the eastern side. Our transporters brought the precast elements to the quay wall, they were then picked up by the Mammoet crane and put on the deck – 8 to 10 members at a time – pulled out in position and positioned. Once all these precast members had been placed – from the barge 55 in total – the M4100R was removed from the barge and built up again on the first 20 metres of the jetty deck, which was now complete."

According to Mr Blackmore, the creation of a land platform from which it was possible to carry on working in a much friendlier environment, was the critical path of the project, especially where the jetty had to be built in open, unprotected waters. "Whenever the wind blew over the water, the waves came up very quickly. Because of the large radii and the heavy weights, we then had to stop working. Once the Manitowoc was mounted on the jetty deck, the crane had enough capacity to place sufficient precast members and beam connections in a 44 metre circle, whereafter we could cast the concrete deck straight on top. Once the deck was sufficiently strong, the crane could be moved forward onto the new concrete and so continue its progress all the way up the jetty."

The jetty is built for Portnet to provide sufficient access mainly for bulk products. Behind the jetty deck construction is the gallery, which connects the jetty with the storage and supply facilities on shore. ■

By Aad van Leeuwen

A farewell tribute

***Zuidoostbeemster** – For the magical year 2000, Jan Sanders has this time given a extraordinary interpretation to the Mammoet planning calendar. Extraordinary, as the, by now familiar, drawing is situated in outer-space and special since it is the last calendar drawing of a series which Jan Sanders made over the years for Mammoet.*

My favourite Jan Sanders drawing is the one where the leaning tower of Pisa is put to rights. This drawing has special colours, very many beautiful pastel shades and it is an endless discovery of little things. The drawing is literally a feast for the eyes, and one could look at it for a whole year without getting bored. In this drawing Mammoet dared to pull their own leg. I think this can only be pulled off by companies who are very skilled in their line of business. As the plate depicted a fictitious situation, where no actual "Mammoet" equipment is used in straightening out the tower, the problem was to incorporate the different disciplines. The solution was the merry-go-round, in which the "real" equipment can be seen.

Editor-in-Chief Mammoet Mail

to Jan Sanders

For a number of years, Jan Sanders has determined the face of the Mammoet calendar. He already had a world claim to fame for the insurpassable way in which he managed to picture the adventures of an old ship and her crew. These had been published on calendars issued by a paint manufacturer and lateron in separate volumes. There is a famous anecdote of the paint manufacturer receiving a telex from the Far East about an order. The paint had been received but not the accompanying calendars by Jan Sanders. The clients were very cross and refused to take delivery of the paint. Jan Sander's running gag in his paintings were the adventures of a ship's crew on or about an ancient liberty-type ship, headed by a tiny captain with an inversely proportionally large ego. Many of these events were situated in the "hot spots" of ports where the sailors unavoidably ended up in dubious situations.

It was obvious from the start, that such situations would be impossible for the Mammoet calendars. They are being sent to all kind of places world-wide, including the Middle East. How sensitive pictures can be, became apparent when a supply of Mammoet calendars was confiscated by customs at an airport. The bone of contention turned out to be a cross on a church spire and depictions like that are prohibited in that country. Only by a narrow margin could it be prevented that the whole lot was destroyed, but quick intervention of the local Mammoet office saved the calendars from this fate. The solution was to put masking tape on the forbidden subject. Someone was busy with this for the next couple of days.

Quite regularly some "corrections" had to be made. At one time it happened, for instance, that a green tin was made blue as it greatly resembled a well-known Dutch brand of beer. Safety and respectability above anything else in the Mammoet drawings, perhaps to the detriment of the artist, who nevertheless always succeeded in presenting a fully original drawing. The Mammoet calendar was extremely popular with all clients because of Jan Sanders's contribution, nationally as well as internationally. Even in Japan the man is quite famous. At one time, at the traditional Mammoet party in Tokyo the company gift for those present was a Jan Sanders album.

It can hardly be a coincidence that the last drawing, which he made for the Mammoet 2000 calendar, has a highly symbolic content. The setting is outer-space, where an inter-galactic Mammoet Transport is busy with the modular transportation of a space station. A recreation module, containing a small piece of the planet earth, is on its way to the space station. Through the transparent dome a park is visible, drawn in the typical Jan Sanders manner. The drawing "Mammoet in Space" connects the down-to-earth future with the nostalgic past and is also a farewell tribute to a man who expects to celebrate his eightieth birthday this year. ■

Fleet particulars

Happy Buccaneer 1984

length o.a.	145.89	m
length p.p.	134.00	m
breadth mld	28.30	m
depth u.d.	14.80	m
deadweight	13,740	mt
underdeck	19,800	cbm
ondeck	2210	sqm
teu capacity	1050	m
heavy lift gear	2	cranes
	each 550	mt
ro-ro width	20.30	m
ro-ro ramp capacity	2500	mt
class	Lloyd's ✠ 100A1 ✠ LMC-UMS	

Project Europa 1983

length o.a.	139.00	m
length p.p.	128.90	m
breadth mld	22.86	m
depth u.d.	13.00	m
deadweight	13,400	mt
underdeck	13,690	cbm
ondeck	1879	sqm
teu capacity	650	m
heavy lift gear	2	derricks
	each 350	mt
ro-ro width	10.00	m
ro-ro ramp capacity	1000	mt
class	GL+100A4 +MC AUT	

Envoyager 1985

length o.a.	152.63	m
length p.p.	145.00	m
breadth mld	26.80	m
depth u.d.	13.80	m
deadweight	21,183	mt
underdeck	24,891	cbm
ondeck	2112	sqm
teu capacity	237	m
heavy lift gear	1	crane
	426	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	NK+NS*+ MNS*+MO-A	

Titan Scan 1982

length o.a.	123.42	m
length p.p.	112.35	m
breadth mld	20.60	m
depth u.d.	10.30	m
deadweight	9,800	mt
underdeck	11,140	cbm
ondeck	1520	sqm
teu capacity	584	m
heavy lift gear	2	derricks
	each 175	mt
ro-ro width	15.00	m
ro-ro ramp capacity	400	mt
class	GL+100A4 +MC AUT	

Thor Scan 1982

length o.a.	123.42	m
length p.p.	112.35	m
breadth mld	20.60	m
depth u.d.	10.30	m
deadweight	9,800	mt
underdeck	11,140	cbm
ondeck	1520	sqm
teu capacity	584	m
heavy lift gear	2	derricks
	each 175	mt
ro-ro width	15.00	m
ro-ro ramp capacity	400	mt
class	GL+100A4 +MC AUT	

Tramper 1999

length o.a.	100.50	m
length p.p.	96.57	m
breadth mld	20.40	m
depth u.d.	8.20	m
deadweight	8,200	mt
underdeck	10,579	cbm
ondeck	1330	sqm
teu capacity	646	m
heavy lift gear	2	cranes
	each 275	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	DNV+1A1, EO, W1-OC, Ice class 1C	

heavy lift vessels

Happy River 1997

length o.a.	138.00	m
length p.p.	127.14	m
breadth mld	22.80	m
depth u.d.	12.95	m
deadweight	16,050	mt
underdeck	18,055	cbm
ondeck	2500	sqm
teu capacity	1050	m
heavy lift gear	2	cranes
	each 400	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	Lloyd's ✠ 100A1 ✠ LMC-UMS LA LNC AA Finish iceclass 1A	

Happy Rover 1997

length o.a.	138.00	m
length p.p.	127.14	m
breadth mld	22.80	m
depth u.d.	12.95	m
deadweight	16,050	mt
underdeck	18,055	cbm
ondeck	2500	sqm
teu capacity	1050	m
heavy lift gear	2	cranes
	each 400	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	Lloyd's ✠ 100A1 ✠ LMC-UMS LA LNC AA Finish iceclass 1A	

Happy Ranger 1998

length o.a.	138.00	m
length p.p.	127.14	m
breadth mld	22.80	m
depth u.d.	12.95	m
deadweight	16,050	mt
underdeck	18,055	cbm
ondeck	2500	sqm
teu capacity	1050	m
heavy lift gear	2	cranes
	each 400	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	Lloyd's ✠ 100A1 ✠ LMC-UMS LA LNC AA Finish iceclass 1A	

Enchanter 1998

length o.a.	138.00	m
length p.p.	127.14	m
breadth mld	22.80	m
depth u.d.	12.95	m
deadweight	16,050	mt
underdeck	18,055	cbm
ondeck	2500	sqm
teu capacity	1050	m
heavy lift gear	2	cranes
	each 400	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	Lloyd's ✠ 100A1 ✠ LMC-UMS LA LNC AA Finish iceclass 1A	

Tracer 1999

length o.a.	100.50	m
length p.p.	96.52	m
breadth mld	20.40	m
depth u.d.	8.20	m
deadweight	8,200	mt
underdeck	10,579	cbm
ondeck	1330	sqm
teu capacity	646	m
heavy lift gear	2	cranes
	each 275	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	DNV+1A1, EO, W1-OC, Ice class 1C	

Transporter 1999

length o.a.	100.50	m
length p.p.	96.52	m
breadth mld	20.40	m
depth u.d.	8.20	m
deadweight	8,200	mt
underdeck	10,579	cbm
ondeck	1330	sqm
teu capacity	646	m
heavy lift gear	2	cranes
	each 275	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	BV 1 ⅓ E Ice class 1C	

Traveller 2000

length o.a.	100.50	m
length p.p.	96.52	m
breadth mld	20.40	m
depth u.d.	8.20	m
deadweight	8,200	mt
underdeck	10,579	cbm
ondeck	1330	sqm
teu capacity	646	m
heavy lift gear	2	cranes
	each 275	mt
ro-ro width	-	m
ro-ro ramp capacity	-	mt
class	BV 1 ⅓ E Ice class 1C	

MAMMOET

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MAMMOET

Mammoet makes the world go round...

By Aad van Leeuwen

***London** – One of the most appealing projects in 1999 was the uplift of the biggest Ferris Wheel of the world. Mammoet teamed up with Fabricator Hollandia for this magnificent operation at the river Thames, opposite the Houses of Parliament, which was referred to as the lifting operation of the year. The world watched with bated breath.*

The first attempt to elevate the British Airways London Eye, as the huge carousel is officially named, was suspended because of technical problems in the connections of the auxiliary support cables. In the afternoon of September 10, when the full weight of the 1500 tonne Ferris Wheel was hanging from the MSG A-frame, the unfortunate incident happened. The Mammoet lifting engineers took the immediate decision to abort the lifting operation and lower the entire structure so that further damage could be prevented. Within moments the shaft and wheel were back on their construction supports and secured. As was clearly stated by British Airways spokesman Jamie Bowden, the auxiliary cables which came loose were not part of Mammoet's lifting system.

The second attempt to elevate the Wheel was started on Saturday 9 October and proved to be more successful. The "mammoth" Ferris Wheel was soon away from its foundations and during the day the Mammoet crew conscientiously hauled up the Wheel by means of four combined MSG lifting units positioned on top of an A-frame. At snail's pace the wheel inched its way towards an upright position, being watched by a multitude. On Saturday evening an angle of 35 degrees was achieved, thereby overcoming the most critical part of the lifting operation. Early Sunday morning, the second stage of the lifting operation began, through which the London Eye slowly became part of the London skyline. At sunset an angle of 66 degrees was reached, which was as far as Mammoet's lifting system was to take it. Only imagine for a moment the sheer size of the object. It is higher than Big Ben or St. Paul's Cathedral and in fact it weighs as much as four fully-laden jumbo jets.

Once in position, the Wheel was secured with cables, the Mammoet A-frame was lowered and a floating derrick of Smit Tak installed the propulsion system underneath the wheel. With an hydraulic system in the central hub of the Wheel, the construction was hauled up further to its fully upright position. A major lifting operation, which was reported world-wide by every kind of media, underlines once again Mammoet's leading role in specialised heavy lifting and transportation.

The British London Eye is one of quite a number of spectacular Millennium projects. Daily, some 15,000 people can enjoy the round trip in the glass capsules of the ferris wheel and marvel at the spectacular view.

Mammoet's MSG lifting system

Mammoet Transport operates two complete MSG-50 lifting systems, comparable to large standard cranes, capable of lifting 3,600 tonnes each, with a load moment of about 60,000 t.m. Both lifting systems were developed, designed, fabricated and tested "in house". They are the biggest land-based cranes in the world. Meanwhile patent rights have been applied for, because of their construction and the way they can be transported. The entire lifting system can be sized down to 85 twenty foot containers and transported by regular liner services or trucks. For assembly and dismantling, relatively small cranes can be used, whereas the 2,500 tonnes counter weight is made up from locally available sand or aggregate which avoids expensive transportation of steel counter weights.

Slewing is performed by hydraulic suspended skidding units, located in steps of one metre. The system moves by sliding over a supporting ring. Vertical hydraulic cylinders ensure that the forces are equally distributed into the ground. Hoisting or lowering and derricking in and out is done with strand jacks with lifting capacities of 900 tonnes each. The gripper mechanism with multiple strands mounted on top of the hydraulic cylinders lifts or lowers in steps of 400 mm.

This new development for single heavy lifts is the best solution for lifting and installing heavy items such as reactor vessels at refineries and petrochemical plants, exchanging heads of cat crackers when extremely heavy loads at large heights with substantial outreach are lifted. The MSG lifting device is designed as a multi-functional piece of equipment, which means that all components can be used independently in different configurations.

Examples of projects such as the raising of the Millennium Wheel in London and the lifting of two complete, 8,000 tonne offshore decks in Brest demonstrate the versatility of the MSG-50 lifting system and its components. Mammoet presently operates two of these machines, which can both lift 3,600 tonnes.

Raising the deck

***Brest** – Our French partner Montalev obtained the contract for the main load out, marine transportation and lifting operations to build two catamaran-type oil rigs. In accordance with our co-operation agreements, Montalev and Mammoet jointly raised two 8,000 tonne offshore decks with the new MSG-50 lifting device in a specially engineered configuration. The decks were installed on top of the floaters in a dry dock. It was the first time that an operation like this was carried out for such oilrigs.*

These works were carried out under fully controlled conditions on behalf of Sedco Forex, a daughter company of the French American company Schlumberger. The job required eight lifting towers, six of them equipped with two 900 tonne capacity strand jacks each and two freestanding towers which supported a long beam with two strand jacks. The result was an impressive lifting frame capable of lifting a combined load of more than 12,000 tonnes. The lifting operation was a so-called "static undetermined lift", whereby the vertical towers were positioned in and around the deck asymmetrically. This meant that all lifting towers would carry a different load, which was all monitored and supervised from a central control room. Montalev and Mammoet performed the 30 metre lift within a maximum difference in weight of 5% between the individual lifting tower loads. The main box was raised up to the calculated height, whereafter the dry dock was filled with water and the hull pulled under the deck with winches. The lifting operations were executed with the world's strongest singular strand jacks in combination with the slimmest towers, all standard components of the MSG-50 lifting device.

Montalev and Mammoet Engineering & Innovation took care of this specific lifting engineering including the design of the spreading structures needed on the 14 lifting points and the full stresses and deflexions calculation of the decks during load out, transportation and lifting operations. In an earlier stage, the main boxes, which measured 80 x 70 metres each, were loaded out at the construction yard of Chantier de l'Atlantique at St. Nazaire. The subsequent lifting operations were carried out at Brest Shipyard "Direction des Constructions Navales" (DCN). Jean-Louis Favre – Managing Director of Montalev – points out the lay-out of the MSG masts, while giving a tour of the huge dry dock, one of the largest in France. "At an early stage we started studies for this project with our client DCN, who had the contract for the construction of two semi-submersible drilling platforms, the SFX1 and the SFX2. The main boxes were to be built in St. Nazaire and shipped by barge from St. Nazaire to Brest. At that time, it was not exactly clear how to put them on top of the floating catamaran. The mating definitely posed a problem. Several proposals were worked out. One suggestion was to do the mating along the coast with the main box on big barges and the floaters submerged 18 metres into the Atlantic Ocean. This would be a major marine operation. One problem was that the catamarans were not really suitable for such an operation. Another idea was to stack several barges on top of one another and put the main deck on top, then enter the drydock and place the construction over the hulls."

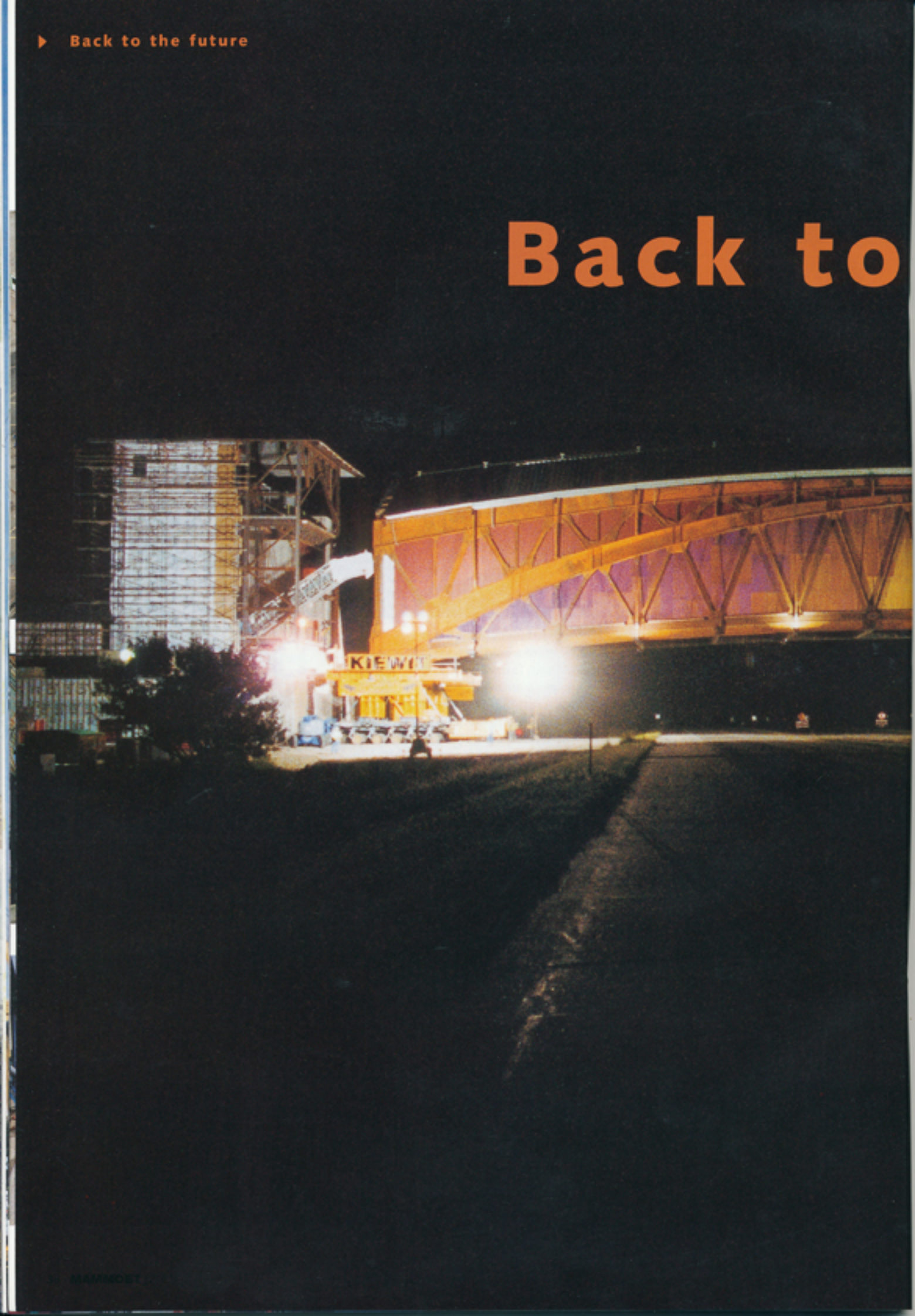
Sequence of activities:

1. Eight vertical towers are placed in Dry Dock number 3. Two of them support a gantry beam so that two lifting points are above the heaviest parts of the main box in which the living quarter is situated.
2. On every vertical tower, two strand-jacks of 900 tonne lifting capacity are placed which provide a maximum symmetric tower lift of 1,800 tonnes each. Two 600 tonne strand jacks are positioned on the gantry beam.
3. Dry dock is flooded in order to give access for the barge carrying the main box.
4. Strand jacks are connected to the main box. These connections were designed by Montalev.
5. Lifting operation starts. When the main box is lifted to its designated height, 30 metres, the barge is pulled out of the dry dock.
6. Subsequently the catamaran is pulled into position underneath the main box.
7. The main box is lowered about one metre and 30% of its weight is released onto the catamaran. After preliminary welding Dry Dock 3 is emptied of water with the catamaran resting on supports and welding starts.
8. After completion of welding the total weight is released from the MSG to the catamaran, whereafter the lifting system is dismantled.

As it turned out that these mating methods were not very feasible, Montalev and Mammoet jointly introduced a proposal in which a configuration of the MSG lifting device was built up in Dry Dock 3, supplying the lifting force required for the mating in a protected environment. This solution was accepted and approved by DCN.

"The lift took approximately ten hours. Then we could fill the drydock with water and let the catamaran float in and be pulled underneath the main box. After that we had to adjust the ballasting so that the main columns would make the connection between the main box and the catamaran. When the dry dock is dry again, some 70% of the load will still be in the MSG lifting system for some three days or so, so that the welding can be done. Then, the lifting equipment can be released and dismantled." ■

Back to



the future

By Aad van Leeuwen

***Kearney** – The Great Platte River Road Archway Monument rises above the Nebraska plains, evoking memories of the timeless West of song and legend. Interstate-80 travellers stop at the Archway less out of need than out of curiosity to inspect the huge structure towering over the lanes of the highway. Here they can put into perspective their own Westward migration along the busiest transcontinental interstate highway today, look at it in the context of the thousands of pioneers who had gone before them, to seek land, riches, religious freedom; a quest for self-discovery or of knowledge of the United States of America and its roots. When the Archway is opened in April 2000, the three-story high and 309 ft. (100 metre) long structure will house two floors of interactive exhibits about the most narrated human migration in history. On the night of August 16 in 1999, Mammoet transported the Great Platte River Road Memorial.*

Before the start of the construction of the monumental Archway, the Kiewit Construction Company spent several weeks analysing different methods to move the Archway across Interstate-80. The outcome was that the self-propelled modular transporters (SPMTs) from Davenport Mammoet in Rosharon (TX) were the best solution for the roll-out. However, moving the Archway across the Interstate was just part of the effort. The task started by lifting the structure 22 feet (7 metres) with hydraulic jacks and placing it on a temporary cribbing and sliding beam. Once in position, the Archway could be skidded horizontally onto Mammoet's SPMTs. Donald Wrieth, Manager Business Development of Kiewit, finds time between interviews and addressing the gathered media, to explain to Mammoet Mail about the details. "Kiewit engineers started working on this project about two years ago. Originally it was a 700 tonne steel structure, which was going to be built at the roadside. Through changes in the design, the structure has moved up to 1,500 tonnes and because it increased in size, the construction technique has changed somewhat. Nevertheless it stayed within budget."

Contractor of choice

Denny Whitfield, the Project Manager on site, explains that Kiewit normally builds directly onto the structure's foundation in situ. Building a structure away from the site and moving it across the Highway is something new. That also made it a difficult project. "When our client selected us to be their contractor of choice, we had to find the right solution with respect to the clear, unsupported span over the Highway. That's why the structure ended up in the shape of an arch. At the same time, our engineers looked at different possibilities to transport it. It took us a lot of engineering analyses, but it turned out that Mammoet offered the best option." Donald Wrieth takes over and explains that the structure is designed to represent a bridge from the past to the future. "It is a structure that has a rustic look about it, resembling the past, yet it is a futuristic design. The Archway Monument combines a little of the past and something of the future; and that is what the structure is designed to do." Whitfield explains the structure this way, "We like to explain it as a building within a bridge."

Interstate-80 runs from coast to coast and is one of the busiest highways in the USA. It is a major East-West route and it follows the old Lincoln Highway, running from New Jersey all the way to San Francisco. For the 'once in a life time' transport operation, Interstate-80 had to be closed down for all traffic for one night.

"We have pulled together four different offices to assemble a team to build this structure. We utilised the expertise from the Kiewit Underground Division to develop the horizontal jacking system. The knowledge of Kiewit Engineering Co. was called upon to develop and analyse the structural load design. Our people from Aker Gulf Marine, who worked with Mammoet before, were utilised for their horizontal and vertical jacking experience and transporting expertise and we used our building group to build the thing." Donald has to go now for the rehearsal of the baptising ceremony.

1700 parts and 53,000 bolts

Kiewit is responsible for the concrete work to be done on the abutments as well as the steel construction. "We are in charge of everything: the concrete, the structural steel all the way to the finishing of the building. The main truss girder is made of corten steel, everything else is regular steel. When you look at it, the basic building is columns and floor beams, and we hook this outside exterior thrust to it, which supports the building. The facade is of a special stainless steel, glass bead blasted and acid dipped to give it its special colour. There are over 1700 structural parts, held together with 53,000 bolts. For the transportation of the Arch we have removed a little bit of the top soil from the shoulders and medians of the interstate to get to the firm sand layer of the Platte valley. These areas were then backfilled with imported clay to help supporting the SPMT's tyre pressures. Steel plates will give us sufficient bearing for the transporters, and crossing the concrete Highway will not give any problems either. Tonight's movement will be something special, you may see things like this at the East and West coast but you really don't normally come across this in the Midwest. It is built as the largest structure ever to be moved in the State of Nebraska". ■

The Archway Monument site is near the place where the Oregon Trail, the California Trail and the Mormon Trail all converged in the push West that linked America from coast to coast. It was the largest peaceful migration of people in the history of man.

Mammoet Ferry Trans at the heart of Ferry

By Lorraine Stanton / Aad van Leeuwen

***Desford/Colmar** – Signals for the ferry trailer operators are 'turned on red' for a couple of years. The ever increasing costs coupled to the strength of the Pound Sterling hampers the U.K. export market, and results in the international trailer business are under pressure. This is causing an imbalance of freight between the Continent and the U.K. More cargo is shipped Westbound nowadays and more and more trailers return empty Eastwards, potentially meaning operators incur a 'negative result'. However, because Mammoet Ferry Transport is an independent, moderate sized operator they cope with this situation very well.*

Their trailer fleet of some 400 units is manageable in terms of transport capacity and the motivated, client orientated staff enjoy the benefit of a 'direct access' computer system that embraces their business totally. The implementation of this new system is the culmination of two years of development in conjunction with Continental Software Services. To mitigate the negative 'market influences', efforts are constantly focussed on securing new business and this aspect continues to be successful. Mammoet Mail visits Timken at their premises in the U.K. and Colmar in France to find out how things are going.

"In 1999 Timken decided to restructure significant elements of its European production facilities to reduce the cost of the finished bearings in order to meet the strict targets set by the Automotive and Mobile Industrial Equipment Manufacturers. A part of this restructuring was also the acquisition of the former Desford Steel Tubes in Leicestershire UK, a key supplier of raw material to the Timken bearing plants across Europe." Explaining the new structure of Timken Europe, Mr Christopher Williams, Senior Buyer at Timken Colmar ties in the importance of reliable and on time delivery of the raw materials and finished products. "As a key transport supplier to Timken, we approached Mammoet Ferry Transport to provide a totally revamped package for transport that would meet Timken's revised supply chain needs. A pre-requisite of the contract would be '100% dedicated service', as the entire Timken production across Europe would soon grind to a halt if traffic flows were not correctly managed and delivery targets achieved. By their past performance, Mammoet had proved their ability to meet our requirements and be responsive to changing demand. This was certainly a key factor in awarding them the contract to manage the supply chain transport of the steel tubing". According to Mr Williams, both Timken Colmar and Timken Desford Steel are quite satisfied with the performance of Mammoet and their ability to serve the client since the transition.

On the other site of the North Sea located in a small Leicestershire village, Timken Desford Steel have been producing steel tubes for almost 60 years. More recently they have been merged into the vast Timken organisation and Mr Alan Padgett, Director of Purchasing and Logistics underlines the high standards which are required in respect of service both in manufacturing and in transport. "The nature of our business is the manufacture of seamless steel tube from solid bar. The tubes are tailor made to high tolerances to meet the specific application of the customer. A significant proportion

Following on from the building of totally new facilities in Europoort, The Netherlands, approval for a similar investment in the U.K. has be secured. The construction of a purpose built facility will include offices, warehousing and a trailer park. In order that Mammoet Ferry Transpo can continue to meet the ever changing needs of the business on both sides of the North Sea, it was necessary to invest in transhipment faci ties that would enable the company to operate in conjunction with the established FTL service, an effective LTL service. The significant growt in this sector of the market represents a major opportunity for Mammoet Ferry Transport. The demands on them to develop such a service h been so great that further investment was essential to ensure that the right facilities are available. The new UK head office and wareho facilities will be located at Warrington, a strategic location close to all major motorway routes and will be operational by this summer.

port, specialists
Trailer Transport

MAMMOET

of the Timken Desford production is fed into Timken plants at Duston and Colmar. The tube is machined into bearings for the Automotive and Agricultural Industries. Whilst this is 'inter-company traffic', the same high standards are required as would be afforded to 'external clients' and in essence, the 'spotlight' can sometimes be greater. Expectations of a carrier's performance are high, they must be efficient, competitive and above all deliver on time, every time." Another 'issue' lies in the fact that tonnages may vary considerably. According to Mr Padgett, "Our business can be difficult to predict with extreme peaks and troughs: some weeks it can be relatively quiet, other weeks it is extremely busy. From a carrier's point of view we can give little advance notice of how many trailers can be required, on some days it could be nothing, on another day it might be seven trailers. We cannot accept a carrier's performance in which these seven trailers are not available tomorrow, but only the day after tomorrow. That difference could mean that we are late with the delivery of the product. Given the flexibility we require, Mammoet Ferry Transport have proved to be a reliable partner, ensuring product is transported to the Timken plant in Colmar in an efficient and timely manner. They came back in as principle carrier at a very testing time and have been a worthy choice."

Mr Padgett refers to the last quarter of 1999 when business for Timken became extremely busy. "Particularly up to the Christmas period we had to get large volumes over to France. In that last week before the Christmas break we were actually shifting six or seven trailers each day. Production was at a very high level and we were extremely concerned to get it over to France in time. After all, we were pretty successful in achieving that and Mammoet helped us tremendously in a pro-active manner. Their performance was well above average and consequently we enjoyed a good Christmas."

On both sides of the Channel, Mr Williams and Mr Padgett agree that Timken feels very upbeat about the future. 1999 was somewhat recessionary for the industry as a whole but the signs are that there is some improvement. There will certainly be further challenges for the year 2000 to overcome. It is a process of continuous improvement and the benefits will be evident providing Timken and Mammoet continue to work on key areas related to customers and competitiveness. ■

Timken are an organisation very much orientated towards their products and customers. Their market is the highly specialised bearing manufacturing industry. They invest huge amounts of effort and resources into ensuring quality of products and reliable delivery to their customers. They work closely at all times with suppliers across a range of services to ensure their goals are achieved on a consistent basis. Mammoet Ferry Transport is the largest UK supplier of transport to Timken.

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Another development in Mammoet Ferry Transport is the opening of a new office in Austria. Since the 3rd of January Branch Manager Gerart Puchberger and Operations Manager Renate Hackle started the new millennium by informing the already existing MFT client base in Austria that Mammoet's ferry trailer activities will be continued as usual. The reason for extending the European MFT network in Europe with an office in Traun with a staff of four people is to obtain closer communication lines and be of even better service. Thanks to the effort of parent company Royal Nedlloyd the legal registration of the company was realised in a very short time. The complete address is:

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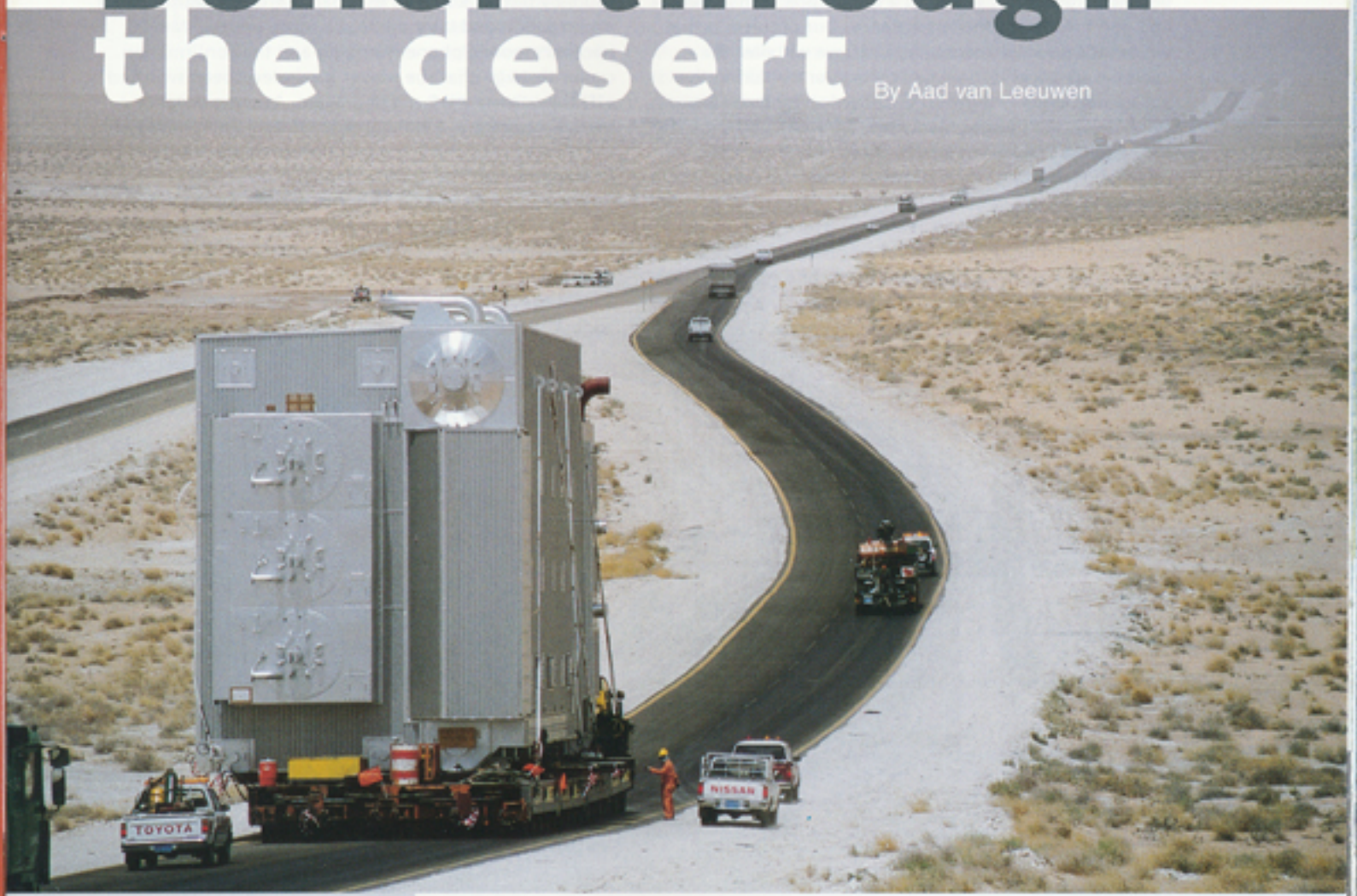
Boiler through the desert

By Aad van Leeuwen



Abqaiq – *Pole number AB 364, supporting power lines running across the road, marks the spot where an unusual scene is unfolding. In the blistering heat of the Saudi desert a giant silver-coloured square contraption on a multi-wheel platform trailer has halted and sits in the middle of the road.*

Boiler through the desert

Police cars immediately secure the tail of the heavy transport convoy and diverge traffic to the divider section of the road. Mr Mohamed Haddad, Alatas Mammoet's Government Relations Officer, contacts the power line authorities to check whether the power has been cut off. "You have to be absolutely sure that everything arranged with the power authorities has been executed at the right time and in the right place. With a height of 11 metres you are not likely to touch the cables, but lightning strikes fast and with a deadly precision when you don't respect sufficient distance. Our problem is that we cannot give the exact time when we will pass the cables. It all depends on what we encounter during the voyage. A tyre may blow up or other factors may cause some delay." For Alatas Mammoet, Mr Haddad deals with the required transport permits, entry permits to sites, removal or shutting down of power lines and coordination with the traffic police for this project. He was also instrumental in suggesting and investigating an alternative route for the heavy, 350 tonne Aramco boiler to Riyadh. Mr Haddad, "We could not take the normal express way to Riyadh as there are too many viaducts and bridges, which are either too low for passage or too weak to support the load. Moreover, it is a Highway and with the limited speed with which we are progressing, we would hold up the traffic for too long. Because I'm Saudi by birth, I know all the roads here, so I started an investigation and later on held a route survey." Mr Haddad's mobile phone is ringing and the confirmation comes through that the power has indeed been switched off. The convoy starts moving again. At some distance a herd of camels has halted and gazes with amazement at the slowly moving, shining cube which continues its journey through the endless desert.

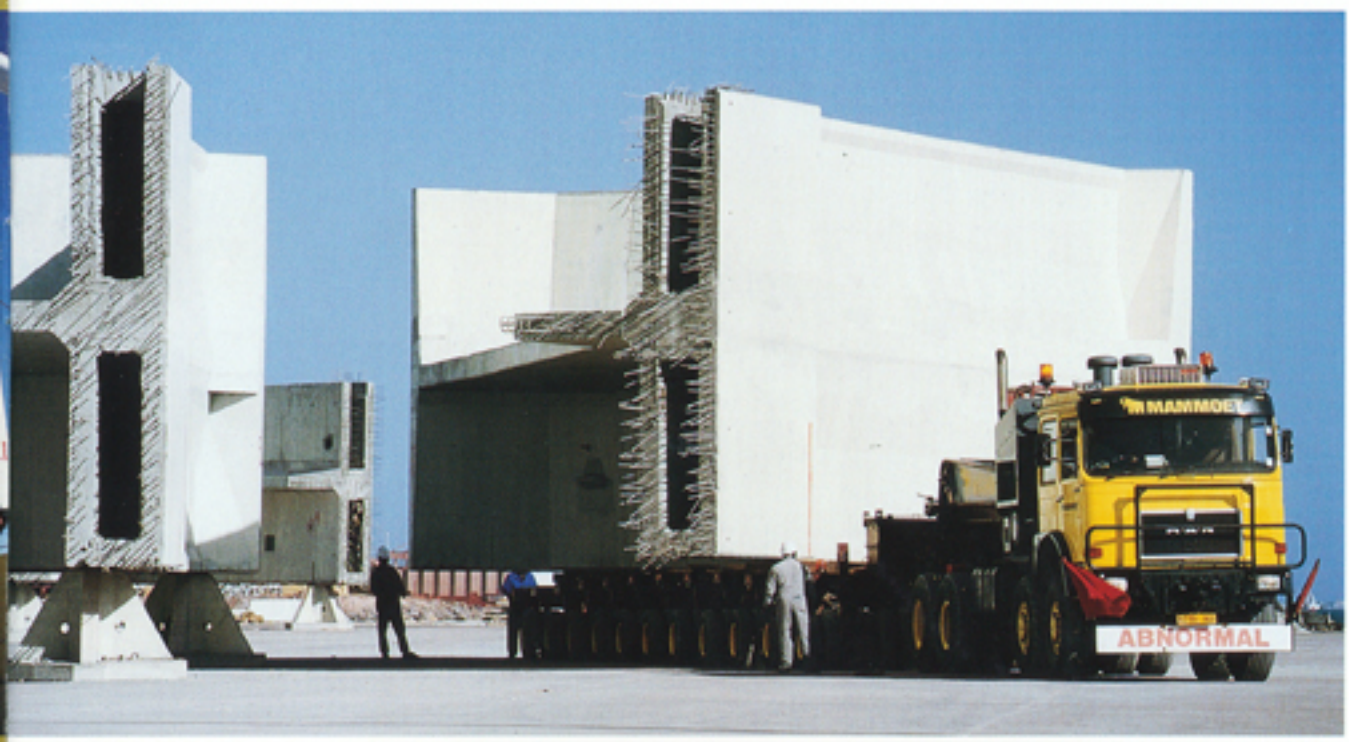
The Saudi Arabian Oil Company, known as Saudi Aramco, is a world leader in the production of crude oil and natural liquids. Saudi Aramco was established in 1988 to succeed the Arabian American Oil Company (Aramco). Saudi Aramco is responsible for virtually all the Kingdom of Saudi Arabia's petroleum activities, from exploration and production through refining, transportation and marketing. The story of the company dates back to 1933. Although exploration began in that year, drilling did not bear fruit until 1938 when Damman Well No. 7 struck oil in commercial quantities near Dhahran. Crude oil production reached 500,000 barrels per day (bpd) at the end of 1949 and approximately 3,5 million bpd by 1970. In 1980, the company produced a record 9,631,366 bpd. Presently, Saudi Aramco is capable of producing 10 million bpd on a sustained basis. The company operates terminals in the Arabian Gulf and the Red Sea for crude oil, refined products and NGL exports. Domestic refineries at Riyadh, Ras Tanura, Rabigh, Yanbu and Jeddah have a total capacity of more than 1 million bpd.

In office building number 1965, room number 753, we are welcomed by Mr Khalid S. Al-Khanferi, Traffic Planner at the Marine Traffic Group in the Traffic Operations Division. Following well-known Arabian hospitality, we are offered a cup of coffee, whereafter Mr Al-Khanferi takes ample time to satisfy the curiosity of Mammoet Mail's Editor-in-Chief. "This department is responsible for the Saudi Aramco transport projects and we do that throughout the Kingdom" he explains. "Our Saudi Aramco office in Tokyo arranged the shipment of the 350 tonne boiler and its accompanying economiser unit to Jubail. We received the equipment at the port, took care of customs clearance and arranged transportation to the Riyadh refinery. The equipment was shipped from Japan on a specialised heavy lift vessel. To handle the complicated over-land journey in Saudi Arabia we used an alternative to the express way to Riyadh, because its bridges were not constructed to take such oversize loads. For an alternative route, as surveyed by Alatas Mammoet, we worked with the Ministry of Communications and the Ministry of Industry and Electricity. A lot of logistics are involved in the transportation of such heavy equipment. We modified some gates at the refinery and built a special access road to the site. Elaborate planning started in good cooperation with Alatas Mammoet even before the shipment left Japan."

Mr Al-Khanferi remarks that compared to the 1970s and the early 1980s, the need for heavy lift facilities has diminished. Huge construction projects are less frequent today. He mentions that he grew up when life was changing fast in the Middle East. "I was born after oil was discovered," he says. "My family was in the pearl fishing business in the Gulf. When the Japanese introduced artificially grown pearls, my family went into shipping and transportation. When my father was young he traveled to India, Pakistan and along the coast to Africa. He saw the world then and the change in Saudi Arabia was not a complete cultural shock to him." ■

The scope of work for the nearly 500 km journey from the heavy lift berth in Jubail to the Riyadh Refinery included customs' clearances, preparation of by-passes, shut down of electric power and individual roads, lifting of electric cables, removal of traffic signs and (concrete) road dividers, and the filling out of railway crossings. The convoy consisted of the boiler, secured on 16 axle lines or 256 wheels of hydraulic platform trailers, followed by an economiser on an 8 axle line combination. On arrival at the Saudi Aramco refinery, Alatas Mammoet installed the boiler on its final foundation.

Salt water quay



***Saldanha** – Another creative example of the combined transport capabilities on land and at sea by the Mammoet organisation was given in the transportation of a salt water quay-wall from South Africa to Angola.*

Mammoet Southern Africa was awarded the transportation of 68 concrete counter-forts for the extension of a quay construction at the Oil Service Centre of Sonils LDA in Angola. The counter-forts weighed approximately 285 tonnes each and were cast at Saldanha Bay. They were jacked-up, put on temporary stools and transported to the ship's side for export to Luanda harbour. Cranes were not required for this operation. With six climbing jacks of 100 tonnes capacity each, the concrete structures were lifted from their casting beds to a height of 1.10 metres, sufficiently high to position an 11-axle hydraulic trailer underneath. Mammoet's 8x8 - 700 HP MAN prime mover carried the fragile cargo from their castings beds to underneath the ship's hook.

Mammoet Shipping's m.s. "Project Arabia" could take 12 units per voyage to Luanda, so that in total six sailings were made. The counter-forts measured 15 x 12 x 5 metres and were loaded with either of the ship's own 350 tonne capacity cranes. After arrival in Luanda the vessel discharged the counter-forts onto a sub-sea structure12 metre below sea level. Then the counter-forts were set on end, also by the ship's crane. By using the heavy lift vessel "Project Arabia" as a floating derrick, Mammoet Southern Africa provided a splendid solution for a combined land and sea project, unique to the South African region. ■

wall to Angola

Raising the mam

By Ellen Eggink

Seven thousand kilometres north-west of the Netherlands, a deep-frozen woolly mammoth lies in wait in a Siberian ice cave for customs officer Dick Mol. Last September he and some members of his international expedition hacked out of the tundra a colossal cold cube. Next April, layman paleontologist Mol will travel to the Siberian city of Khatanga. This time to try and defrost the mammoth, which died twenty thousand years ago, layer by layer.

"That will definitely take a long time", Mr Mol agrees. "We will warm up the big lump of ice with large 'hair dryers'. At the site we already tried a little bit, and that took us seventy-two hours at least. Whether or not we found a complete mammoth or only parts will be clear this year."

Chiselling out the woolly mammoth from the permafrost was a historic moment, according to Mr Mol. Because of the extreme cold, the remains have been preserved perfectly. "We now have a specimen of which more than only the hard tissues, such as jaws, bones and teeth have been preserved. Plenty of those were found, even here in the Netherlands. This mammoth even has its hairs, as I have noticed when we defrosted that one part. A metre long, those hairs. I also expect to find soft tissue, such as the stomach, so that we may find some answers to the question why these animals

suddenly became extinct ten thousand years ago. Did that happen because of extensive hunting, drastic climate changes, or were they struck by a virus? The story that we are supposed to have uncovered the mammoth to make a DNA clone is a fiction of the media."

Photo's: Mammuthus / Carpolex

Media attention

Since his return, Mr Mol has dealt with the media extensively. Journalists from everywhere have collectively pounced on the story of mammoth Jarkov, called after the nomadic family that found the animal because its huge tusks stuck out of the ground. The images of the dangling clump of ice hanging from a Russian transport helicopter were sent out all over the world. Mr Mol states about his media performance: "I don't do that out of vanity, but to promote palaeontology. Dutch museums have the most extensive collection of bones of extinct large mammals, whereas university education in palaeontology has been taken off the curriculum in order to save costs. A great pity, for if we want to learn to understand our future, we must study our history. The reasons why these animals disappeared can perhaps give us some clues as to how we have to deal with nature to prevent other animals from becoming extinct." Mr Mol became hooked on mammoths in his boyhood years. At the end of a school day he would roam the sand and gravel quarries near his home, searching for fossil remains. He went on to publish his findings and now, thirty years on, Mr Mol is seen world-wide as one of the leading experts in the mammoth field. No wonder that the French adventurer and film producer Bernard Buiges approached him last year, when he was looking for a mammoth expert who wished to participate in his expedition to Siberia. Mr Mol states, "Buiges often travels to the pole area and while he was in the sauna in Khatanga he heard about the tusks that the Dolgan family Jarkov had found. He decided to make it into a dig and sell the documentary he would make about it, since that is the only way to finance an expedition like this; it really costs millions."

Siberian tundra

Mr Mol grabbed the chance to go to Siberia with both hands. "I tried to go once, but that plan mainly cost me a lot of money. The culture in the erstwhile Soviet Union is so different, one gets completely stuck in red tape. Unless you know your way around, like Buiges." In April last year, Mr Mol went to the Siberian tundra for the first time, to scout the location. In September the time had come for the main job: the chiselling away of the mammoth. Beneath the remains a tunnel was dug, which at the same time gave interesting information on the plant life in the spot where the mammoth had died. "The plants in the clay layer were still green." Mr Mol will be able to write publications about this find for years to come. Lifting the frozen mammoth by helicopter was exciting – would the heli manage to hold on to the twenty tonne clump? The most emotional moment came when Dick Mol worked his dryer to melt off a small layer of ice and suddenly could smell the mammoth: an animal that has not existed for the last ten thousand years. Was it a boy-hood dream that was fulfilled? Dick Mol says, "That is the same kind of question as what my most favourite find has been. My house is filled with finds and every object has its own story. Siberia did, of course, give me a kick, for which I was prepared to suffer a bit. What would you make of eating raw fish and reindeer flesh, thrice a day, for a month? I came back ten kilos lighter." He did bring home a nicotine addiction. "Unavoidable", he says somewhat apologetically. "You're not in with the Dolgans if you do not drink or smoke. The vodka I could decline, but when after four days I still did not join in, they began to ignore me. That was immediately repaired when I asked for a cigarette." The nomadic people looked upon the expedition with mixed feelings, however. Although they were paid in kind for their services – with a motor ski among other things – they do consider the earth to be holy. An animal sacrifice in the hole that was left behind must appease the gods again. ■

World wide premiere "Raising the mammoth"

On 12 March 2000, Discovery Channel will broadcast the documentary "Raising the Mammoth" simultaneously in 146 countries in 23 different languages. Dick Moll is one of the main players in this spectacular salvage drama of the recovery of a 22,000 year old frozen Mammoth. Watch your local tv guide.

Mammoet 25

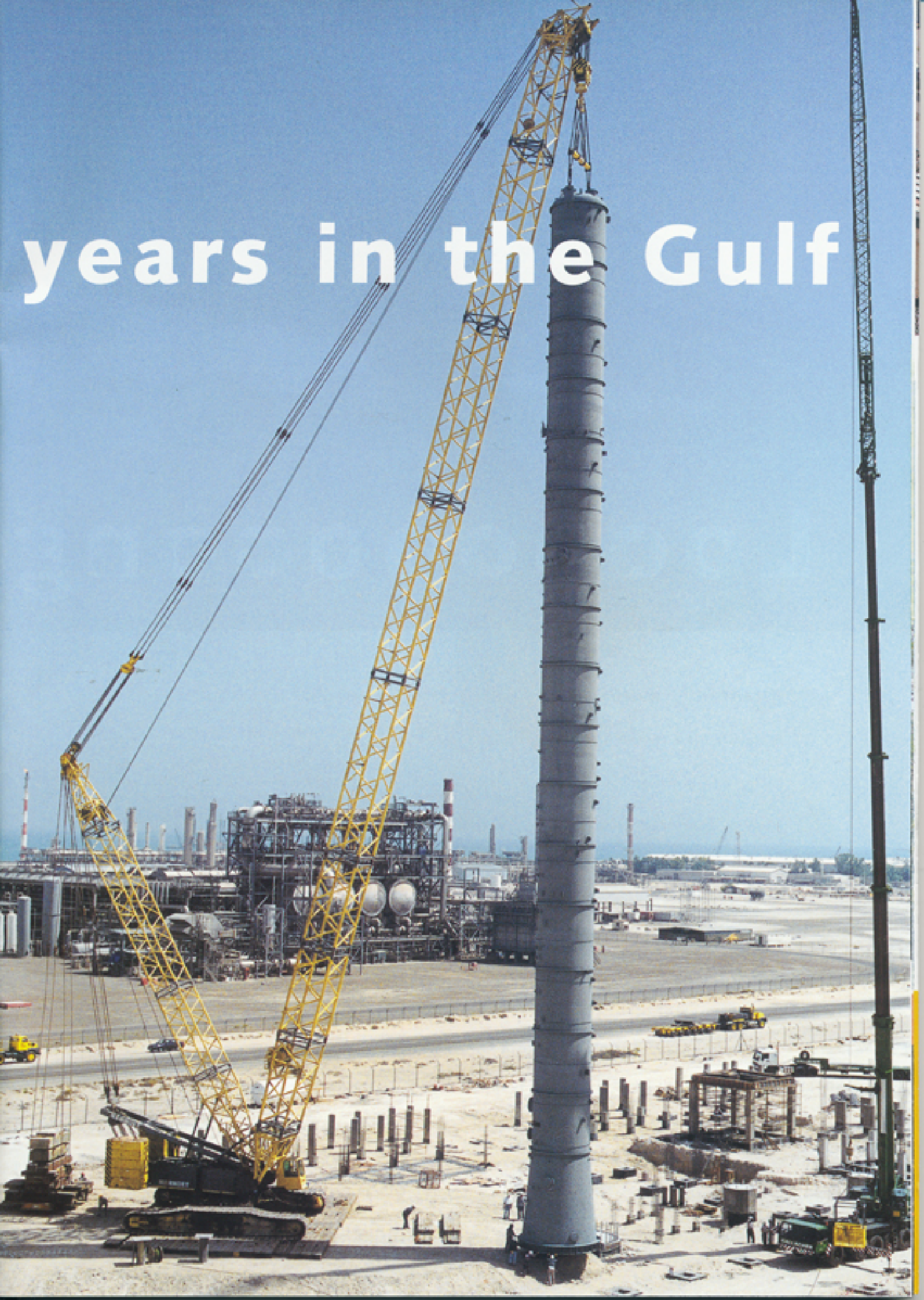
***Dubai** – Since 1974 Mammoet has been operational in the Gulf area in the Middle East. First by the name "Mammoth Gulf", later under "Mammoet Gulf", which is in fact the same thing, and stands for reliable heavy lift services by land and by sea with excellent service to all clients.*

Mammoet Gulf is based in Dubai and operates in the United Arab Emirates, Qatar, Oman, Jran, India, Pakistan, Mauritius and East Africa. For over 25 years, a multitude of prestigious projects have been carried out in transporting, shipping and positioning heavy equipment for power stations, desalination units, fertilizer and petrochemical plants, refineries, cement factories and relocation of complete factories.

Within the world-wide Mammoet organisation, Mammoet Gulf can offer the "Factory to Foundation" concept. For combined integrated heavy lift services, a dedicated fleet of specialised, and sometimes custom-built, rolling, floating, jacking, lifting and skidding equipment is available. Cranes can be provided with lifting capacities from 40 to 1300 tonnes. Highly skilled personnel operate this equipment, supported by an in-house logistic system and experienced CAD engineers.

One of Mammoet Gulf's latest and very impressive lifting contracts was carried out for ISO Octane Co. at Jebel Ali. As pictured, a vessel weighing 180 tonnes, with a length of 66 metres and a diameter of 5 metres, was erected and positioned with a CC2400 crane. Transportation of this vessel had been executed by Mammoet Gulf as well. This project was further confirmation of the fact that Mammoet Gulf complies with the international Mammoet Group standards.

A richly illustrated brochure on the Mammoet Gulf activities was released recently and for further information you may contact their sales department. They can be reached by e-mail: mamgulf@emirates.net.ae ■


years in the Gulf

Looooooooong

***Kuantan** – Walter Wright Mammoet in Malaysia hit a record high with the transportation of a propane-propylene splitter column with a massive weight of 1200 tonnes, a length of 110 metres and a diameter of 7,8 metres. Another record was the short production time of only eight months.*

The column, built by KNM Steel Construction for client Petronas, was destined for the Propane Dehydrogenation Plant (PDH) in Gebeng, Kuantan - the world's biggest single train dehydrogenation plant. Designated as C-3003, the column entered Malaysia's Book of Records. It took two double 12-axle lines of turntable-mounted SPMTs, some of Mammoet's skilled personnel and 8 hours to travel the distance of 5 km from the fabrication yard to the site. Due to its enormous weight and size, a temporary bridge was designed and constructed in less than 3 weeks in order to facilitate the move and other auxiliary cargoes upwards of 150 tonnes. In this PDH project a CC2600 and M4600 crane are working alongside the M1200R, which is used in various erection jobs. The last lift was a flare stack weighing 30 tonnes with a length of 146 (!) metres.

The PDH plant is designed to produce 300,000 tpa propylene, which will be used as feedstock for the production of acrylic acid and oxo-alcohols for Petronas's downstream business. The plant, which forms part of an integrated petrochemical complex implemented in Gebeng, is set to start operations in the middle of this year. ■

transport in Malaysia

"Among the leaders of Malaysian process equipment manufacturing is KNM Steel Construction Sdn Bhd, a company that has grown within the last eight years by leaps and bounds, with three manufacturing plants in Melaka, Kerteh and Gebeng today. With its pool of qualified professionals and engineers, KNM is now capable of undertaking design and engineering of pressure vessels, heat exchangers, air coolers, specialised structural systems, process skid packages, tank farms and spheres, as well as the revamping of gas plants, refineries and petrochemical plants. The company has ploughed major investment into equipment and engineering capabilities with technology as the key driver for its competitive advantage. It owns the largest plate rolling and bending machine in Malaysia, which has a capacity of up to 100mm thick and 4 metres wide, allowing the manufacturing of heavy and thick walled vessels and structures." Excerpt from Petromin, October 1999

Mammoet and Millwright

By Aad van Leeuwen

"It was condensed and fast track; we only had 10 weeks to disassemble, refurbish, install and get it running."

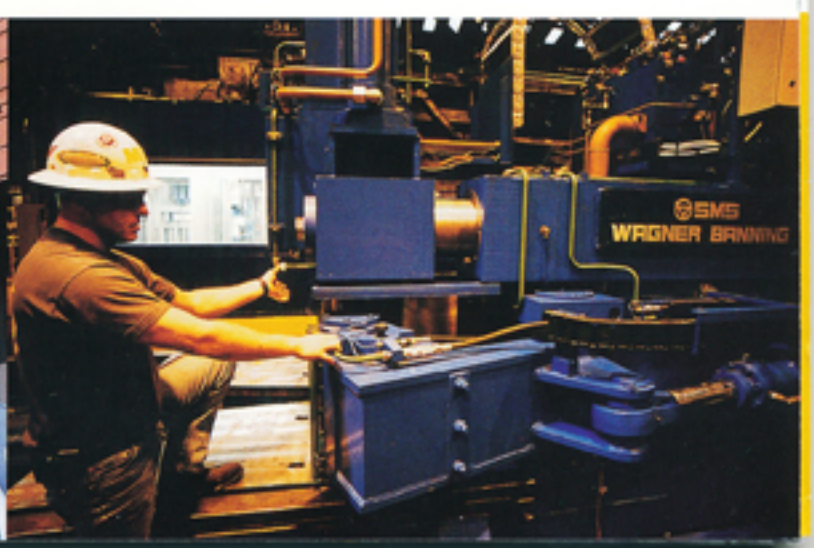
***Aurora** – Although Mammoet Western is located in California, it performs rigging and millwright activities nationwide. Millwright is their specialism, for which they operate a wide variety of purpose-built lifting and jacking equipment. Owing to the dedicated and professional workforce, Mammoet Western succeeds in acquiring repeat orders which make up for some 75% of their total work volume. Clients tend to come back, whenever they have something heavy or awkward to move or install.*

This proves the level of client satisfaction is high and results in a constant flow of millwright projects. One such job was executed last year for Rotek Incorporated in Aurora, Ohio. Mammoet Mail visited the site and was guided through the works by David Morton, Plant manager and Tom Satterwhite, Maintenance Engineer. Parent company ThyssenKrupp AG in Germany, formed in March 1999 through a merger between Thyssen and Krupp, gave the green light for a new ring rolling installation.

David Morton: "One of the main reasons for installing this new computer-controlled equipment was to give us a facility able to control more accurately the dimensions and quality of the products that we roll. Originally, we looked at refurbishment of the old equipment. Tom and I developed a plan to replace the hydraulic and electrical equipment. We went to Germany to present this plan to the Board and quite soon they came up with the alternative to invest in a new mill. They reasoned that spending a lot of money on refurbishment would still leave us with an old machine. In the end they struck a deal with mill manufacturer SMS Wagner-Banning, who supplied us with a new mill against a relatively small price difference. As they say, we went to Germany for a refurbishment and we came back with a completely new mill."

For the exchange of the complete production line, which entails removal of the old facility and bringing in and installing the new seamless rolled ring plant, teamwork is required between different parties. Tom Satterwhite: "Rotek was responsible for the installation of the mill frame, including the piping etc., and SMS Wagner-Banning for the machine installation. Mammoet Western, being the main millwright contractor, executed the rigging and it makes sense to have one contractor who is responsible for subcontractors too. The old ring mill was removed in about three days and after four days we were ready to start preparation in the basement. After that, the mill foundation frame had to be installed and levelled at a certain date so that it was ready for the SMS machine beams to be mounted. Then the complicated installation of the mill frame followed. It was very difficult to get it level and accurate. We did some unique things on the ring mill: the mill was assembled in Germany and most of the piping had already been done. Consequently, some adjustments had to be made. Well, these things you cannot really foresee until you have the machine in place. All in all, the installation went extremely fast and at the moment we are ahead of schedule. We hope to beat the overall planning by a week."

As scheduled, the production facilities are closed off for three months and obviously Rotek cannot leave their clients in the dark for such a period. According to David Morton, the customers were well-informed before the shut-down. "Part of our production goes into our slewing ring operation with longer lead times. For those clients we keep an extra supply in stock. Our ring customers are contacted and we try to get a forward view on their requirements. When they need continuous service we can stock rings for them. Moreover we have made arrangements with other manufacturers to roll for us on a subcontract basis. This way, we keep a good positive relationship with our customers. In respect to the installation: I am very pleased with the progress and the way things are going. Mammoet Western has dealt with the entire operation in a very professional manner. Basically that's what you want in a project. The motivation of the people was tremendous and it made the project go so much smoother, it paid off greatly." ■



Saint Nazaire – Three columns, manufactured by steel fabricator Tissot S.A. were shipped on behalf of forwarder Leon Vincent from Saint Nazaire to the BP refinery in Grangemouth (UK). Mammouth Transport France booked the contract for the shipment of respectively a polymerisation reactor of 340 tonnes with a length of 38 metres (diameter 9,35 metre), a degassing column of 135 tonnes with a length of 43,5 metres (diameter 7,40 metres) and a smaller item of 45 tonnes on the heavy lift vessel m.s. "Happy River". The shipment arrived safely in Grangemouth whereafter contractor Technip took over.

Panama – Mammoet Shipping's m.s. "Happy Rover" sailed from Hanko in Finland to the Manzanillo terminal at Colon, Panama, to deliver six very large RTGs (Rubber Tired Gantry Cranes). The RTGs, manufactured by Kone Cranes of Finland are capable of stacking up to 7 tiers containers. With measurements of 12 x 26 x 27 metres they are the largest of their type Mammoet has carried sofar. Because of their size, the 122 tonne RTGs had to be lifted by both "Happy Rover"'s 400 tonne cranes working in tandem. All six RTGs were then landed between the ship's cranes and subsequently driven to their designated place by their own propulsion. Despite the complicated sequences of loading and moving, the RTGs were on board within two days.

Mammoet

Rio de Janeiro – For the Petrobras P40 project, m.s. "Happy Rover" loaded a 618 tonne living quarter in Rio de Janeiro. With its dimensions of 21 x 18 x 12 metres the module was transferred from a barge onto the vessel with her own heavy lift cranes. Because of the uneven distribution of the weight, one of the Huisman-type cranes had to lift up to its maximum lifting capacity of 400 tonnes. In fact, the whole manoeuvre was a repeat for Captain Frans Piscaer who had been through the same loading operation six months earlier with m.s. "Happy Ranger" who entered this port for a number of modules, for the same Petrobras P40 project. For both shipments the destination was Singapore. Striking detail: Mammoet Stoof carried out the required skidding work for the first voyage.

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Amsterdam – M.s. "Happy River" loaded an offshore crane for Singapore just next door to the Spliethoff and Mammoet offices. The 106 tonne crane, built by Kenz, was lifted with one of m.s. "Happy River"'s own 400 t heavy lift cranes. The 50 metre long structure was placed on deck and after seafastening, the vessel went on her way to Singapore to deliver the crane to Sedco Forex, collecting other cargoes on the way.

Leghorn – One of the four recently acquired vessels, m.s. "Tracer", loaded a houseboat of 200 tonnes with destination Warri, Nigeria. The 35 metre long boat was lifted with the ship's own 275 tonne rotating cranes, which, unusually, are positioned either side of the vessel.

in Focus

Schiedam – M.s. "Tracer", the second newbuilding in the present range of four to be operated by Mammoet Shipping, loaded five fully dressed columns destined for an oilrefinery at Grangemouth in the U.K. The heaviest column weighed 300 tonnes and measured a length of 65 metres. The loading operation took place at the yard of Huisman, where the 275 tonne capacity heavy lift cranes had been fitted on the ship by said company. The location of these cranes on port side aft and starboard side forward, as well as their large outreach, make them capable of handling long heavy lifts of up to 500 tonnes, thereby requiring minimum ballasting. The ships are optimally designed to carry project cargoes and heavy lifts. They also boast restricted length and draft and good manoeuvrability, because of the active rudder and bowthruster. As such, the "Tra-" class vessels are very suitable for projects where cargoes must be discharged in small ports or at site jetties. Furthermore, the ships' holds are box shaped and totally flush. Thus, they are also ideally suited for any dry cargo commodity - forest products, steel plates, pipes, bulk cargoes, etc. Their service speed of about 16 knots fulfils shippers' requirements of short transit times.

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