Reinforcing the European gas network

LAST SUMMER, NET4GAS CONNECTED ANOTHER CZECH UNDERGROUND GAS STORAGE TO THE MAIN EUROPEAN GAS TRANSPORT PIPELINE SYSTEM. THIS PARTICULAR PIPELINE PROJECT INCLUDED PREPARING CONTRACTS WITH NO LESS THAN 380 LANDOWNERS.

NET4GAS operates over 3,600 km of pipelines in the Czech Republic. The company is connecting Central and Eastern Europe with cross-border interconnectors and underground gas storage (UGS). One of these, UGS Turondice, was recently connected to the main Czech gas transit pipelines. This allows extracted gas from the storage facility to be put straight back into the network whenever it is necessary to step up supply or strengthen the reverse flow of gas in a west-east direction.

In order to increase energy security and reinforce the cross-border gas infrastructure, the EU supports NET4GAS projects under the European Energy Programme for Recovery (EPPR). The project involves a DN 1000 (one meter in diameter) high-pressure pipeline connecting the UGS to compressor station Běclav. Located in South Moravia, close to the Slovak and Austrian borders, the new connection was certified in June of 2013.

Permitting and land issues
Some pipeline projects present technical challenges, due to soil conditions or sheer scale. Others may seem quite modest in scope but can turn out to be difficult projects to complete within the agreed time and budget limits. Even with Turondice firmly in the last category, permitting manager Mr. Rostislav Farana is confident about Tebodin’s ability to take any gas project challenge in its stride. ‘We have so much know-how beyond the technical solutions. Apart from preparing the permitting documentation, we can deliver all services related to the permitting process and land issues. They can become pretty complicated.’

Easement contracts
That kind of expertise, while not easy to come by, was much needed in this unusual project. The Turondice pipeline is only a little over two kilometers long, but its realization required agreements with more than 300 landowners, and the negotiations resulted in the signing of more than 170 easement contracts to establish the mutual rights of land owners and NET4GAS. The pipeline is now a vital link in the enlarged cross-border transmission capacity, especially between the Czech Republic and its neighbors.

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New pipeline DN 1000 connected to the gas transmission grid at compressor station Běclav

New plant for Nutrifood

RECENTLY, THE GROUND BREAKING CEREMONY OF NUTRIFOOD’S NEW PRODUCTION FACILITY OF THE NUTRISARI PRODUCT LINE IN CIBUTUNG, INDONESIA TOOK PLACE. THE CEREMONY WAS ATTENDED BY NUTRIFOOD BOARD MEMBERS AND PRESIDENT DIRECTOR MR. MARDI WU, Tebodin representatives and other stakeholders.

Nutrifood was established in 1979, with its first manufacturing facility located in Ciawi, Bogor, West Java. The company manufactures and markets international providing high-quality health food and beverages under leading brands such as Nutrisari and Tropicana Slim, L-Men, WRP, HiLo, and WRP Diet Center (WDC) which are available in more than 20 countries around the world. The new production plant is initiated because of the rapid growth and Nutrifood’s ambitious plans to expand the market to other parts of the world.

Local partner of choice
Due to the experience in the Food & Beverage industry, Tebodin’s office in Jakarta has been recognized as the company’s local partner of choice. The Indonesian team has been involved in this project from the start of the detail design. They have also provided support to the client in choosing the preferred contractor, this to be seen as critical for the project.

The project comprises production area, supporting buildings and facilities such as internal roads and fencing. For the construction phase, Tebodin is acting in the capacity of owner’s representative, enabling the client’s project team greater control over activities on site.

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New member Board of Directors Tebodin

The Executive Board of Bilfinger SE appointed Mr. R. (Robert) Claasen to the Board of Directors of Tebodin B.V. After his study Chemical Engineering, Mr. Robert Claasen (48) worked for Tebodin from 1992 to 1996 – as process engineer and as manager Central and Eastern Europe. In 1996 he joined DSM where he fulfilled several positions. His current position as Managing Director DSM Gyem, Effective June 1, 2014 the management of Tebodin consists of Mr. J.P.A (Jack) Overkamp (Chairman), Mr. P. (Peter) Biele, Mr. R. (Robert) Claasen and, Mr. A.R. (Arjan) Raugoor (CFO).
A SELECTION OF OUR VARIOUS CURRENT PROJECTS

AHI Roofing, founded in New Zealand in the 1950s, invented the concept of making roof tiles from steel with a stone chip coating. The company is a global leader in this niche, with four factories around the world. AHI is now a part of Fletcher Building, a New Zealand-based international building company.

**Expansion of Huntsman's Flex Polyols facility in Rotterdam, the Netherlands**

Scope: EPCm services

**Technology Development Agency in the use of Hungarian Railways, for the Hungarian Governmental Information Procurement and related services of a mobile communication network for the Hungarian Government**

Scope: state supervising engineering services

**Concept study for Buraimi Sour Gas Station for Oman Gas Company Phase I, Sultanate of Oman**

Scope: feasibility study

**Feed & DD call off engineering consultancy services for Salalah Methanol Company, Salalah, Sultanate of Oman**

Scope: engineering services contract

**Feasibility and energy efficiency audits proposition**

**In conversation with... Geoff Allan**

Geoff Allan, engineering & product development manager at AHI Roofing, has been a client of Tebodin since 2009. When the company’s first European factory was built in Hungary, with AHI’s roof tiles gaining popularity worldwide, prospects of a lasting partnership are good.

AHI Roofing, founded in New Zealand in the 1950s, invented the concept of making roof tiles from steel with a stone chip coating. The company is a global leader in this niche, with four factories around the world. AHI is now a part of Fletcher Building, a New Zealand-based international building group.

**What is your own role?**

I have been working for AHI for 17 years. I am currently responsible for major capital projects across our four factories and technical development of the product, and in particular the coating. My job involves a lot of travelling. I spend some three to four months a year visiting different regions. I have just returned from a visit to Europe.

**What developments do you see within your market?**

The steel roof tile has over the years become very common in our home market New Zealand. In other parts of the world it is still a novelty, though. The roofing market is very traditional. Each region has its own style, and it is very hard to get people to switch to a different product. Our tiles are expensive, but on the other hand they are far more durable than traditional roofing, in every climate. This means that we can offer our customers a 50-year guarantee. We target countries with a growing middle class that appreciates quality. That is why Eastern Europe is interesting for us. In 2009, we built a factory in Hungary to service this market.

**That was your first project with Tebodin?**

Yes. We chose Tebodin for the engineering, procurement and construction management. They offered a very professional service and it was a pleasure working with them. We have stayed in touch since then. When I am in Hungary to visit the factory, I always drop by and have lunch with the guys at Tebodin. We are now installing another production line in our Hungarian factory, and have hired them again for engineering support. It made sense, given the good job they did five years back. We have a lot of confidence in their abilities and knowledge.

**How do you see the future?**

To maintain our global lead in this business, we are constantly innovating our product and working to keep quality and service levels high. There are copycats in our market but they do not worry us too much. Given the modest market share of steel roofing outside New Zealand, the growth potential is huge.

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**Construction started for Monoclonal Antibody Plant**

On January 28 2014, Synthon officially launched the construction phase of a new ‘monoclonal antibody (MAB) plant’ in the Dutch city of Nijmegen. The plant is being built for the production of therapeutic monoclonal antibodies. In order to get these to the clinics and then to market as soon as possible, in-house production is essential.

After the office and laboratory building and the ADC laboratory, both also constructed with Tebodin’s assistance, the new plant is the third expansion in Nijmegen since 2010. It fits within the growth ambitions of pharmaceutical company Synthon.

The new facility contains various technical installations and a high-quality cleanroom for the production equipment, which utilizes single-use technologies. It is part of the overall master plan for Synthon, designed by architects Broekbakema and well received by the city of Nijmegen. The physical integration of the building in the area, which eventually will have a park-like appearance, is reflected in the green roofs that will be completed as accessible roof gardens.

**Ambitious schedule**

‘Construction is on a very ambitious schedule and the handover will take place by late October 2014’, says Tebodin project manager Mr. Joost van Raaij. ‘This schedule is achievable by running the execution process and design process largely in parallel while using Lean methodologies.

The project is being implemented by a transparent construction team, in which the knowledge and added value of all parties are being put to maximum use.’

With Synthon, Broekbakema, Heijmans and BAM as its partners in the construction team, Tebodin is responsible for the overall project management and the design of the technical installations.

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**01_ Mr. Joost van Raaij**
**02_ Artist’s impression of Synthon’s new plant**
Pre- and post-acquisition partners

IN 2011, THE FRENCH MULTINATIONAL LAFARGE STARTED SELLING ITS GYPSUM OPERATIONS IN EUROPE AND SOUTH AMERICA TO ETXE GROUP BELGIUM, ONE OF THE WORLD’S LEADING PROVIDERS OF CONSTRUCTION MATERIALS AND CONSTRUCTION SOLUTIONS. THE FINAL 20% WAS TRANSFERRED EARLY 2014. ETXE DECIDED TO REBRAND THESE COMPANIES, GIVING THEM A NEW NAME: SINIAT.

So what happens to existing supplier relationships when a company changes ownership? That will depend more than anything on the performance of the supplier. Tebodin is happy to observe that its relations with Siniat are just as good as they were when the company was still Lafarge.

**Pull-cycle project management**

In 2009, before the spin-off was even conceived, Tebodin provided to Lafarge the concept and basic design for a gypsum factory in Turceni, a town in Southwestern Romania. This was a particularly challenging project: the plant was to be built on marshy soil, and the execution schedule was very tight. Construction started in 2012, with completion in November 2014.

Mr. Gheorghe Budureac, remained in place. Based on his good experience with Tebodin’s experts, he recruited them – now on behalf of Siniat - for the construction management. Six Tebodin staff including project manager Mr. Vasile Macarov are involved. The scope of the work includes planning, time schedule monitoring, work states, site coordination, and more.

**Relocating production line**

This final phase of the project also includes the relocation of the production line from a factory in Germany. The new plant aims to have the biggest wallboard capacity in Romania, with scope to expand to the double depending on market demand. Some 50-60% of its output is to be exported to Balkan countries. Mr. Macarov has noticed no changes in his relations with the company. ‘With its new parent company Etex, our client is part of a leading global player. And their trust in Tebodin has remained as strong as ever. So I think our partnership definitely has a future.’

Modern building for Polpharma in Gdansk

Polpharma is the largest Polish manufacturer of pharmaceuticals and a leader of the Polish pharmaceutical market. The company actively operates in the markets of Central and Eastern Europe, the Caucasus and Central Asia. For almost 80 years, Polpharma has been trusted by patients, healthcare professionals and business partners alike.

In Abu Dhabi, under the leadership of Mr. Srinivasan Mahalingam, Tebodin’s directors, the new parent company Etex, our client is part of a leading global player. And their trust in Tebodin has remained as strong as ever. So I think our partnership definitely has a future.’

Subsea pipeline disposes of El Bunduq’s produced water

PRODUCED WATER, A BY-PRODUCT OF OIL AND GAS EXPLORATION, AT THE EL BUNDUQ OIL FIELD OFF THE ABU DHABI AND QATAR COAST, AN INCREASE IN PRODUCTION MEANT THAT BUNDUQ COMPANY LTD SOUGHT TO EXTEND ITS EXISTING DISPOSAL SYSTEM. TEBODIN ENGINEERED THE REQUIRED 7.5-KILOMETER SUBSEA PIPELINE.

As produced water would increase due to reservoir situation and possibilities of the future tie-ins, Bunduq started a study for the improvement of the water treatment system. Their first step is the design and cost estimation of the ideal case that the produced 50,000 barrels of water per day can be disposed in a new well located at marginal area inside their field. The current satellite platform EB-37 was selected for the new disposal well, 7.5 kilometer distance from their offshore complex. Bunduq continues the selective study to seek an economical solution for the system improvement including other disposal well locations until the end of 2014.

The company chose Tebodin’s office in Abu Dhabi to perform the front end engineering of this pipeline. The scope of the contract also comprised the replacement of an existing gas turbine generator including a waste heat recovery unit in case the sets of current generator could not cover the power demand of a new booster pump.

**Cost-saving solutions**

‘A major challenge on a produced water pipeline is the selection of materials’, says Mr. Palani Palaniappan, the project manager on behalf of Tebodin. ‘We performed a detailed techno-commercial evaluation of materials that were available in the market. The design team further invested serious time in a value improvement workshop, which set the tone for a project that resulted in many cost-saving solutions for our client.’

Mr. Palaniappan led the 20-strong Tebodin team while they produced the design, performed in-place analyses of the platforms, prepared an EPC package for the detailed engineering phase and made preparations for the procurement of new pumps and the aforementioned new gas turbine generator. Activities started in June 2013 and were completed on January 2014.
The makeover of an oil field

OMAN’S LARGEST PRODUCER OF OIL AND GAS IS REJUVENATING ONE OF ITS OLDEST PRODUCTION FIELDS. TEBODIN IS INVOLVED IN AN EARLY STAGE TO PERFORM THE FRONT END ENGINEERING & DESIGN.

With many producing fields Petroleum Development Oman (PDO) is responsible for more than 70% of Oman’s crude oil production and nearly all of its natural gas production. Its concession area is about 100,000 km² or one third of Oman’s geographical area. Although Oman started its search for oil already in 1930, the first economic find was made in 1960. Yibal is one of the oldest fields and was one of the biggest producers in PDO. The field started producing oil in 1969.

Depleting wells

Today, Yibal surface facilities are facing a challenge as integrity issues are increasing which is caused by the age of old equipments as well as the change of fluid composition. At the same time the old configuration (while the production was still high) is not cost efficient these days especially that current technologies can give better cost efficient solutions. These issues are currently putting a burden in the maintenance & operation cost of Yibal field.

During the project three stations will be bypassed. The facilities here will be taken out of production. At other stations PDO will replace old gas-lifts compressors and install new export handling compressors, test headers and bulk headers. The design project started this year in January and has to be finished by January 2015.

Aware of standards

Tebodin is asked to perform the Front End Engineering & Design (FEED). The goal is to address risks promptly and gather strategic information so that this project can be completed successfully. Tebodin has been operating in Oman for more than a decade and has successfully executed several projects in Oman. Tebodin not only has the technical and commercial competence, they are also well aware of PDO standards and procedures.

PDO and Tebodin will be working together more often, says Tebodin’s Project Manager Mr. Raafat Soliman. ‘If this FEED project is going well, and with the experience we gained in working in Yibal Rejuvenation, we are looking forward to be working with PDO and other clients in the execution of similar rejuvenation projects.’

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Power equipment for Russian markets

IN THE LIPETSK SPECIAL ECONOMIC ZONE IN RUSSIA, LEADING POWER EQUIPMENT PRODUCER ABB IS BUILDING A NEW PRODUCTION PLANT FOR LOW-VOLTAGE CABINETS. TEBODIN IS CONTRIBUTING WITH DESIGN AND MANAGEMENT SERVICES.

Based in Zürich, Switzerland, ABB employs 150,000 people and operates in over 100 countries. Driven by a strong focus on Research & Design (R&D), the company has a long track record of innovation and maintains seven research centers around the world. ABB is the largest supplier of industrial motors and drives, and the largest supplier of power grids worldwide.

The Low Voltage Products division of ABB manufactures circuit breakers, switchgear, control products, enclosures, and cable systems. Customers include a wide range of industries and utility operators.

The new production facility in Lipetsk is ABB’s sixth factory in Russia.

Metal-processing

Located in the heart of Russia’s metal-processing industry, the Lipetsk Special Economic Zone (SEZ) is attracting foreign investment through tax incentives, state-run infrastructure and simplified procedures. ‘The new plant is being constructed on a 3-hectare site’, says ABB project manager Mr. Vladislav Danish, ‘it will produce metal components for low-voltage switchgears, and up to 100,000 low-voltage enclosure bodies per year. We are taking future extensions into account.’

Tebodin was assigned for project management services and elaboration of the basic design documentation for several components of the new factory. Tebodin project manager Mr. Vyacheslav Senichev: ‘We are using 3D design to provide speed and quality. Our team is also doing the construction management, including commissioning assistance. The project is expected to be completed in May 2015.’

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New public ferry

A NEW FERRY TERMINAL IN THE PORT OF GDYNIA IN POLAND WILL ALLOW OPERATING LARGER VESSELS AND OFFER BETTER SERVICES. TEBODIN IS DESIGNING A NEW QUAY TERMINAL BUILDING, CARGO STOREHOUSE AND MANEUVERING YARDS.

The Port of Gdynia specializes in general cargo and is one of the largest container part in the Baltic, with shipping connections to over 40 countries. As part of a multimodal network, Gdynia is well connected but its passenger ferry services are still quite modest. A car ferry connects Gdynia to Karlskrona in Sweden. The 12-hour crossings take place twice a day. The current terminal is outdated, and its inconvenient location adds extra time to the journey.

Port of Gdynia Authority (PGA) is a public service company. Constructing a new terminal underlines the good relations with Stena Line, which started ferry services in Poland in 1995. Stena Line aims for further development of the Gdynia-Karlskrona line. The new quay will accommodate their...
industrial buildings in Abu Dhabi

control room are not necessarily in their vocabulary. Industrial buildings require an integrated design approach that involves all disciplines, starting at the very earliest stage of the project to prevent costly changes and time delays previously suffered by these types of projects in their later stages."

Diversified team

The original group of civil and structural engineers has been developed into a diversified team over the past year, to offer the range of design approaches that the industry needs. The Industrial Buildings team now includes eight MEP (Mechanical Electrical and Plumbing) engineers and an architectural team of seven, aiming to grow to ten and twelve respectively by the end of this year.

Future expectations

Projects currently under development within the team range from conceptual to detailed design. Industrial facilities have traditionally presented the challenge of a functional and budget-driven design. Now the market has become much more advanced, and form and function have to be joined with future expectations of the operation of the facility, within that same budget. The team’s development and the use of the very latest design technologies allow the realization of smarter, more sustainable facilities, meeting higher standards and being produced within budget and on schedule.

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Terminal serves larger vessels faster

vessels up to 240 m in length, enabling transport of 1,300 passengers and 350 freight trucks per crossing. It will create also possibility to operate the other potential ferry clients.

Two hours handling time

The location of the new terminal at the Polish Quay, close to the port entry, shortens the trip by 30 minutes. Railway connections bring Gdynia and its partners in the ‘Triity’, Göteborg and Szczecin from Sweden and elsewhere. In order to ensure that the new terminal will facilitate the speed of modern travel, the project’s main focus is a maximum handling time of 120 minutes per vessel.

In a public tender Tebodin proved to have the best expertise, references and price. ‘A full disembarkation and embarkation of passengers, cars and trucks in less than two hours is crucial from the economic point of view’, says Tebodin project manager Mr. Lech Paszkowski. ‘We are able to guarantee this with a detailed analysis of port activities using traffic microsimulation. This enables us to develop a numerical model of the city, port area and terminal, picturing congestion with a time perspective until 2025.’

Best examples

Tebodin is responsible for the conceptual design, building permit for oil and gas companies, safety is paramount: not only it is the basis for their license to operate, it’s a way of living (hearts and minds). Our industrial safety experts can assist in improving the safety within (amongst others) the oil and gas companies. Our Dutch office, for instance, has been analyzing the process safety of ONEgas onshore and offshore (North Sea) production and treatment facilities.

HAZOP studies

ONEgas, a subsidiary of NAM, contacted Tebodin in 2012 to perform HAZOP studies for a number of its sites. A HAZOP (hazard and operability) study is a structured and systematic examination of a planned or an existing process or operation in order to identify and evaluate problems that may represent risks to personnel or equipment or prevent efficient operation. If a deviation is found, the causes are systematically investigated. The possible consequences are assessed (for example an explosion and loss of life). Then can be decided whether designed/existing safeguards are sufficient or actions are necessary to reduce risk to an acceptable level. The follow-up of the HAZOP study actions required offshore site visits. For process technologist Mr. Freek Leuweld and instrumentation specialist Mr. Erik van den Bosch this meant first several days of special training provided by NOGEPA (Netherlands Oil and Gas Exploration and Production Association). They learned safety procedures, basic medical skills, fire-fighting and survival techniques. The icing on the cake concerning the course: a simulated helicopter crash in a swimming pool!

Site visits

With their NOGEPA certificate, our engineers were ready for their first site visit to the platform AWG. In several days, they spoke to staff, examined the drawings and installation and took pictures which were used for substantiation to prove actions were closed out properly. Tebodin recently received a further assignment to review production platform K15/Bravo in the second quarter of 2014, and is eager to expand further in this area of expertise. In the first half of 2014, visits are bound to be planned to production platforms L2 and L9. The experts are looking forward to them. ‘Our cooperation with the crews has been great. People are committed in making their platform safer. Together, we work to achieve the highest possible safety level,’ says Mr. Wouter van den Ham, project manager.

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Tebodin strengthens in offshore area

01_ Design impression of a Mosque and Mess Hall for GASCU

02_ Mr. Lech Paszkowski

01_ Mr. Lech Paszkowski

02_ Design impression of a Mosque and Mess Hall for GASCU

01_ AWG platform

02_ Mr. Erik van den Bosch (left) and Mr. Freek Leuweld with their NOGEPA certificates
Supervision of NORM treatment facility construction

OIL AND GAS PRODUCERS HAVE TO DEAL WITH NATURALLY OCCURRING RADIOACTIVE MATERIAL (NORM) THAT ACCUMULATES IN THEIR EQUIPMENT. NEAR ABU DHABI, A PLANT IS TO BE BUILT TO TREAT THIS WASTE, WITH TEBODIN ACTING AS PROJECT MANAGER.

During production of oil and gas, Naturally Occurring Radioactive Material (NORM) is accumulated in equipment and components. During maintenance of the production facilities, these deposits of NORM are removed and become available as hazardous waste. The primary radionuclides are typically radium-226 and radon-222, which are decay products of uranium and thorium.

In order to safely treat and dispose of NORM hazardous waste, Abu Dhabi Oil Refining Company (TAXKREEK) is developing a NORM treatment facility. It is to be built on the premises of the existing Central Environmental Protection Facilities (BEAAT) in Ruwais, located 250 kilometres West of Abu Dhabi city.

Variety of treatments

The new facilities, with a design capacity of 25,000 ton/year, are envisaged to treat, handle and dispose of contaminated scale, sludge, equipment, drilling cuts and other waste. The NORM will be subjected to a variety of treatments, such as:
- Hydro-lazing for descaling of equipment, centrifugal separation, incineration, immobilization in concrete blocks, evaporation and landfill.

Tebodin has been awarded the Project Management Contract (PMC). On behalf of TAXKREEK, Tebodin will manage and supervise the EPC contractor who will actually design and build the process and handling facilities and the landfill, including off-sites and utilities like gas, water and electricity.

On-site

During the detailed design and procurement phase, a Tebodin team of 9 managers and engineers will work at the EPC contractor’s home office in Madrid for a period of 10 months. Subsequently, a Tebodin construction management team will be stationed in Ruwais for a period of 16 months to manage and supervise the construction and commissioning of the facilities.

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Feasibility and operability

‘A simulation study is a model based on a real situation, where we simulate various scenarios to gain insight into possible future operations and bottlenecks. Simulation is part of a feasibility study to look into the operability of a plant or facility.’

Then we design the model and a dashboard to communicate the different scenarios to the client.

‘The results can be used as a tool for investment decisions for a new plant or system, or for an existing plant, or for spotting bottlenecks and potential delays. The study can be used as a tool for planning production flow, buffer sizes, resource planning and actual layout. An animated situation in 2D or 3D is an excellent management tool for investments decisions. Sometimes a client needs a model for future use such as planning.’

Anything with flow

‘We have extensive experience in ports, in Rotterdam, the Netherlands, and the Middle East. We have optimized distribution centers and production plants. We have used it for traffic modelling in the Netherlands and Russia, studying the effect on congestion. The flow can also be the process of replacement of parts, such as valves, to find room for optimization. Simulations is a tool for supply chain solutions in the broadest sense.’

Good look and feel

‘To give an example: logistics company Alfred Talke approached us for a project for one of their clients, a polymers plant in Qatar. They wanted to gain insight into the feasibility of their 175,000 m² warehouse. We looked at optimal resource usage, footprint, loading docks, trucks, capacity, buffer sizes, to build Talke’s business case towards their client. The simulation study, with a detailed 3D animation, gave a good look and feel of the project and the future operational activities on site.’

Edible nut processing plant

IN THE CITY OF VIZIANAGRAM, ON THE EAST COAST OF INDIA, A NEW PLANT FOR PROCESSING CASHEW NUTS IS BEING BUILT. A TEBODIN TEAM OF 15 IS WORKING ON THE FIRST EPCM PROJECT FOR OLAM.

Olam International is a global integrated supply chain manager and processor of agricultural products and food ingredients. With sourcing and processing activities in the major producing countries, Olam has built up a leading position in cashew, cocoa, coffee, sesame, rice and cotton. The company has its roots in West Africa and quickly expanded into East Africa and India during the 1990s, when the agricultural commodity markets were deregulated.

Value chain

As a multinational company, Olam is striving for leadership in the integrated value chain of agricultural products. Initially engaged in origination and distribution, the company has seized new opportunities in the past decade. Today Olam manages farms and plantations in countries around the world. It is involved in fertilizer manufacturing and a growing number of value-adding food processing activities.

Semi-mechanized Cashew Processing Plant

Processing cashew nuts is traditionally labor-intensive, especially the shelling and husk peeling, delicate affairs best done by hand until quite recently. ‘Olam will increase production output by introducing the first semi-mechanized plant in India,’ says Olam project manager Mr. Sudarsanan Sharmugam.

‘About a third of the world’s raw cashew nuts is produced in Africa, and 80 percent of it is exported to India and Vietnam for processing into blanched kernels. Olam is bringing together all of its cashew expertise in this plant, gaining greater control over quality and traceability in the process.’

Status of the project

Tebodin’s credentials and competitive bid made possible for the project team to start working on the conceptual design in October 2013. Mr. Sudarsanan: ‘Construction is to be completed in September 2014, meaning time is of the essence.’

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Feasibility and operability

‘A simulation study is a model based on a real situation, where we simulate various scenarios to gain insight into possible future operations and bottlenecks. Simulation is part of a feasibility study to look into the operability of a plant or facility. We look into available data, such as layout, flow, and decision model. Then we design the model and a dashboard to communicate the different scenarios to the client. The exact features depend on the type of study, such as a port study looking into waiting times and queues, or distribution centers looking into product flow.’

Investment decisions

‘The results can be used to various advantages: for basic investment decisions for a new plant or system, or for an existing plant, or for spotting bottlenecks and potential delays. The study can be used as a tool for optimizing production flow, buffer sizes, resource planning and actual layout. An animated situation in 2D or 3D is an excellent management tool for investments decisions. Sometimes a client needs a model for future use, such as planning.’

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Nedalco track record decisive in new Cargill project in Germany

WHEN PLANNING TO BUILD A NEW ALCOHOL PLANT IN GERMANY, CARGILL LOOKED FIRST AT THE ALCOHOL PLANTS IT HAD ACQUIRED WITH THE TAKEOVER OF NEDALCO IN 2011. THEN, CONTACTED THE ENGINEERS WHO HAD HELPED BUILD THEM: TEBODIN.

On its Barby site, south of Magdeburg near the Elbe River, Cargill is building a new alcohol plant alongside its starch production plant. A matter of achieving synergy: the residue from the production process of the existing plant will serve as feedstock for the new one.

**Twin plants**

Cargill came to own two sets of twin plants like this in 2011, when it took over the Dutch alcohol producer Nedalco. The plants are located in Sas van Gent (NL) and Manchester (UK). Satisfied with the efficiency gains, management decided to copy the concept to its German operation. And what could be more logical than to get in touch with the engineering firm that helped build the Nedalco plants? That was Tebodin in the Netherlands.

For both plants Tebodin had been successfully involved during the engineering and realization phases. This track record was a decisive factor for Cargill to again invite them for the Barby project.

**Multi-office team**

Tebodin was awarded the basic engineering and permitting scope. Its deliverables have served as input for the final investment decision, which was taken by Cargill mid-December 2013. From January 2014, the project has entered the EPCm phase, which has been awarded to Tebodin as well, with an intended completion and production start-up by mid-2015. A multi-office task force team has been mobilized and situated in the Hengelo office, together with representatives of Cargill.

In the existing plant, various types of glucose syrups are processed that are sold to industrial producers of food (including sweets, dairy products and bakery ingredients) and alcoholic/ non-alcoholic beverages. In addition, the plant produces wheat starches, wheat-gluten and products for animal feed. In the new facility, the available carbohydrates from wheat will be processed into ethanol by fermenting and rectifying the ethanol into premium ethanol. The new plant, like the ones in Sas van Gent and Manchester, will produce various grades of food quality alcohol. Yearly capacity will be around 90,000 m³.

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**Geotechnical expertise provides rock solid support**

TEBODIN PROVIDES TECHNICAL SERVICES TO INVESTORS, ENGINEERS AND CONTRACTORS WITH ACCURATE INFORMATION ABOUT THE UNDERLYING SOIL AND ROCK.

Kizad (Khalifa Industrial Zone Abu Dhabi) is set to become a global hub for manufacturing, logistics and trade and a key driver in Abu Dhabi’s efforts to achieve economic diversification. ‘Abu Dhabi Ports Company asked Tebodin to design a world-class secondary infrastructure in Kizad’, says geotechnical expert Mr. Pankaj Teredesai in the Abu Dhabi office. ‘The first stage of Kizad comprises several large industrial zones, onshore facilities and an offshore seaport.’

**Input for design work**

The secondary infrastructure of Kizad consists of roads and utilities, including irrigation facilities and landscaping. Tebodin carried out a broad range of geotechnical services, which served as input for the design activities. Mr. Teredesai: ‘The geotechnical investigations into subsurface conditions, mechanical and physical properties were carried out by a third party. We reviewed the factual reports in order to gather relevant geotechnical information. We prepared geotechnical reports addressing analysis and design of various geotechnical engineering aspects for the project. Geotechnical Subsurface profiles were generated for various zones. Geotechnical design parameters were recommended and bearing capacity for various foundations and pile capacity were calculated. We also performed slope stability analyses and site specific assessments to verify liquefaction potential and provided the specifications for soil improvement measures.’

**Supporting services**

For many years Tebodin has supported large scale developments in Abu Dhabi with geotechnical services. For oil refining company Takreer, a project warranted extensive geotechnical instrumentation and monitoring, in-situ and laboratory geotechnical testing, settlement calculations, compliance and zone load testing.

Site investigation works and geotechnical design recommendations were also part of the package when Tebodin was assigned to develop the master plan for a development of the Abu Dhabi Government. ‘Our reputation in this field keeps growing’, says Mr. Teredesai.

Even for the most seasoned of engineers, the scale of some developments cannot fail to impress. The first stage alone of Kizad (Khalifa Industrial Zone Abu Dhabi) covers an area of 51 square kilometers. After full completion, the site will measure 418 km², making Kizad the world’s largest industrial park and port operations.

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Support for UNICEF’s work in Nepal

TEBODIN HAS BEEN SUPPORTING UNICEF, THE UNITED NATIONS CHILDREN’S FUND, SINCE 2010. AROUND THE GLOBE, UNICEF AIMS TO PROTECT THE RIGHTS OF CHILDREN. IT ADVOCATES MEASURES THAT GIVE CHILDREN THE BEST CHANCE IN LIFE. THIS YEAR, TEBODIN IS ONE OF THE COMMUNITY PARTNERS MAKING A CONTRIBUTION TO UNICEF’S WORK IN NEPAL.

Nepal is one of the poorest countries in South Asia, located between the north of India and the Himalayas. Poor infrastructure and rough mountain terrain mean that many families lead isolated lives, with parents struggling to provide their children with food, hygiene and the care they need to stay healthy or even live till adulthood.

Cross-sector approach

UNICEF is running several programs in Nepal to improve living circumstances. It uses a cross-sector approach that combines nutrition, health, water and sanitation, agriculture and social protection interventions. The organization works closely together with the Nepalese government and receives wide support for its programs from governmental and non-governmental organizations as well as private sponsors such as TEBODIN.

Healthcare closer to home

A key factor in improving children’s chances is improving the availability of healthcare. In Nepal’s rural areas, the nearest clinic is often at several days’ walking distance. UNICEF-trained local volunteers, the so-called ‘wonder women’, are now able to recognize the symptoms of disease and to provide basic treatment of conditions such as dehydration and iron deficiency during pregnancy. They can also promote vaccination by explaining its importance. Their advice saves lives.

UNICEF is further improving the availability of healthcare by promoting the establishment of new clinics, especially birth clinics for pre and postnatal care.

Protecting the innocent

A national immunization campaign is ongoing to vaccinate children between nine months and 15 years of age against measles and rubella. Furthermore, in Nepal’s remote areas, UNICEF recently launched a therapeutic feeding program to fight malnutrition, another threat to the lives of young children and their health in later life.

These and other programs are already having a positive effect on the lives of children and their parents. More babies are born in good health, more mothers remain in good health during pregnancy and childbirth, and more children make it through their first five years.

First of a kind project in the Middle East

TO MEET THE RAPID DEVELOPMENT OF DOMESTIC AND OVERSEAS MARKET AND ECONOMIC GLOBALIZATION OF DOMESTIC AND OVERSEAS MARKET, KOSTAL HAS SELECTED TEBODIN CHANGCHUN TO PROVIDE DESIGN REVIEW & PCM SERVICES TO ITS CHANGCHUN GREENFIELD PROJECT.

Kostal (Shanghai) Management Co. Ltd. is a Sino-Germany joint venture funded in 1995. It owes the existing facility of about 30,000m² at Shanghai. The main business of Kostal is the development, manufacturing, sales of automobile electrical appliance and electric switch and module. After the development of near 20 years in China, Kostal has become the key project of national automobile industry. And to meet with the development request, Kostal is going to build a new plant in Changchun.

Kostal’s team, headed by project manager Mr. Jack Chen, is providing engineering review, procurement and construction management services. The new building will be designed to fit out to accommodate production facilities as well as office. The kick-off meeting for the project took place on February 13, 2014, and the project is scheduled to be finished in February 2015.

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01_ Mr. Jack Chen
02_ Artist’s impression of Kostal’s new factory

In Abu Dhabi, TEBODIN has been awarded a detailed engineering contract of a plant for the commercial capture, usage and storage of carbon dioxide. The project is the first of its kind in the Middle East initiated by a Masdar/ADNOC joint venture. The new system draws the CO₂ from the production process of a steel plant before compressing and dehydrating the gas. It will then be transported through a 50km pipeline and injected into the Rumaila onshore oil field.

The benefits of the project are threefold: the reduction of greenhouse gas emissions in the United Arab Emirates, the availability of CO₂ for enhanced oil recovery, and a free supply of natural gas that can be used for domestic electricity generation.

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Overview of Masdar’s carbon capture plant

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