A FOCUS ON SUSTAINABILITY

We strive to take account of sustainability issues in our work and we are regularly entrusted with projects which focus specifically on best available technologies (BAT), energy efficiency and environmental aspects. Our concepts are innovative, secure and economically viable. We can mobilise all the engineering, socio-economic and environmental expertise you may need to fine-tune and implement your sustainable development strategy. We make sure that the teams assigned to your projects are fully informed of your objectives in this respect. You can count on us for tailor-made solutions that improve living conditions today and preserve resources for the future.

FULLY INTEGRATED APPROACH

Depending on your requirements, we can advise you throughout the whole process, for example as part of an integrated service package, or deal with specific tasks. Our multidisciplinary expert teams can provide consultancy in every project stage from feasibility through project management to technical design. We take pride in our flexibility. This is reflected in the fact that we can contribute in different ways. You can, for example, choose to involve us as Architect Engineers, Owner's Engineers, Consulting Engineers or Project Managers.

SYNERGY WITH GDF SUEZ

Tractebel Engineering is part of GDF SUEZ Energy Services, one of the business lines of GDF SUEZ and the European leader in multi-technical services. This international industrial Group provides sustainable and innovative solutions for the management of public utility services as a partner of public authorities, businesses and individuals. In addition to our own expertise, we draw on the extensive know-how of the other companies of the GDF SUEZ Group, who own and operate many of the installations which we have designed. These synergies provide us with detailed feedback, enabling us to fine-tune our understanding of the operational requirements of new and existing installations.

FULL PROJECT MANAGEMENT

Project management is a specific area of specialisation. Technum-Tractebel Engineering's in-house project managers have vast experience in coordinating and managing every aspect of multidisciplinary, international projects. We focus on the specific needs of your project, and cover both organisational and contextual management. The available means and resources are always deployed optimally with respect for quality, budget and deadline.

PARTNERSHIP WITH AFFILIATE IMDC

A key partnership for ports and waterways is with our affiliate IMDC (International Marine and Dredging Consultants). Founded in 1982, mainly to support the needs of different dredging companies and port authorities in the fields of dredging technology and hydraulics, IMDC has gained a wide experience in river and coastal engineering including: sedimentation, morphology, shore protection, harbour design, nautical control systems and dredging techniques.

CONSTRUCTION OFFSHORE WIND FARM, BELGIAN COAST

March 2009 | Ed. External Communications Tractebel Engineering | Design www.concerto.be | Photography: ACP, Kristien Daem, Veer

TRACTEBEL Engineering
GDF SUEZ

TECHNUM - TRACTEBEL ENGINEERING TODAY

Technum – Tractebel Engineering plans, designs and manages your large infrastructure and building projects. Our integrated approach provides our customers with sustainable and innovative solutions, linking technology to economics. The multidisciplinary approach of our allround teams guarantees operational support based on recognised experience.

We shape the urban and rural landscape and take care of mobility in response to the demands of the city of the future. Setting up long term partnerships with our customers enables us to meet their objectives focused on competitiveness, safety and reliability.

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TRACTEBEL Engineering
GDF SUEZ

Offshore and onshore flexibility

PORTS & WATERWAYS

POWER NUCLEAR GAS INDUSTRY **INFRASTRUCTURE**

CHOOSE EXPERTS, FIND PARTNERS

YOUR INTERNATIONAL PARTNER FOR MULTIDISCIPLINARY PROJECTS

Ports and waterways play a vital role in the economic development of a region. The correct design, construction, operation and maintenance of port, maritime and inland waterway facilities require a company with a wide range of specialised engineering services. Technum-Tractebel Engineering has an impressive track record in every aspect of ports and waterways. Our solutions cover the complete value chain of our customers, who range from major port operators to private sector clients. Our capabilities reach from feasibility studies and economic impact studies to the design, technical realisation, implementation, masterplan and supervision of the project. In all our activities we focus on providing a sustainable and integrated solution.

DAMMING UP THE MAASRIVER, BELGIUM

PANAMA LOCKS

Strong international presence. Technum-Tractebel Engineering specialises in large and complex infrastructure and building projects. We are an affiliate of Tractebel Engineering which oversees the Group's worldwide operations from its headquarters in Belgium. Tractebel Engineering employs approximately 3,500 highly skilled people in more than 20 countries. Key offices are located in Brazil, Czech Republic, France, India, Italy, Poland, Romania and the United Arab Emirates.

LNG JETTIES

THE RIGHT MIX OF COMPETENCES

Technum-Tractebel Engineering has a very long track record regarding the design and construction of ports and waterways. Our teams combine their extensive knowledge and experience to provide you with a solution for the most complex challenges. The following fields of activity can be covered:

Ports

Together with you we will define a long-term approach based on a design, master plan and feasibility study, focusing on the economic and technological developments of the port area in general, and on your specific activities in particular. This approach includes master planning, logistic deployment, structures, terminals, warehouse engineering, and construction of terminals. For specific tasks such as dredging and coastal engineering, we work closely with our specialist affiliate IMDC. Technum-Tractebel Engineering has extensive experience and expertise in the design of terminals for oil, gas, containers, bulk and general cargo.

Ports & waterways infrastructures

Over the years, Technum-Tractebel Engineering has acquired a solid international reputation in ports & waterways infrastructures. We have vast experience in such projects, whether they are locks, quay walls, jetties, breakwaters, dykes, underwater pipes or other hydraulic structures. We provide advice and support for your projects, feasibility studies, permit-related formalities and design and supervision of the works. All our business activities are carried out in a sustainable manner.

Waterways

Waterways are increasingly becoming a key component in our transport networks. We draw on experience with many European projects to examine alternatives and define a concrete approach in full compliance with economic, administrative and ecological considerations. Included are the renovation of existing waterways, harbour access channels, maintenance, dredging and navigability. We can help you improve and optimize goods transport via inland waterways, in line with the overall development plan for the region.

Civil works

We design bridges, tunnels, embankments and soil retaining structures, all capable of withstanding the ravages of time, and serving as environmental landmarks. We can turnkey design services or focus on the technical and economic optimisation of an already approved project, whether the structure is made of steel or concrete. Our completed projects enjoy an international reputation and display our sense for far-reaching innovation. We take a holistic and conceptual approach which emphasizes your projects integration into its surroundings.

Geotechnical studies

Technum-Tractebel Engineering undertakes a wide range of geotechnical studies and prepares a variety of reports on the investigations to suit a particular client's requirements. The investigations include extensive geotechnical mapping and assessment studies and associated documentation. Specific expertise includes foundations, stability studies, groundwater calculations, geotechnical modelling, excavations and soil investigation.

Electromechanical equipment

This complex equipment is essential to the functioning of movable bridges, locks, dams and pumping stations. The technical challenges for these types of projects are becoming greater. Movable bridges are becoming larger and multi-lane as road traffic increases. Locks are becoming deeper and longer as ships increase in size, leading to heavier lock gates. Our electromechanical specialists take these evolutions into account in their designs and work alongside our civil works experts to provide an integrated solution.

Control systems

Thanks to the experience and expertise of more than 60 in-house control system specialists, we can custom design the ideal instrumentation and control (I&C) system for barrages, locks and other facilities. We also oversee Factory Acceptance Tests and Site Acceptance Tests, and work in partnership with the Distributed Control System supplier for commissioning and fine-tuning. Our I&C systems are designed for ease of use, low maintenance, safety and security.

Special offshore structures

Offshore structures can be foundations for wind turbines, measurement masts, radar platforms or transformer stations and can include gravity based structures, monopiles as well as jackets. For wind turbine projects our specialists consider hydrodynamic behaviour, seabed protection, weather risks and environmental issues. Other special structures are: inlet and outlet structures and landfalls for pipelines and cables.

DAMIETTA TEMINAL EXPORT FACILITIES, EGYPT

SPECIAL SERVICES WE CAN PROVIDE

Policy studies

Before starting the technical design and implementation of a project, a number of important aspects need to be taken into account. Our experts provide economic impact studies, feasibility studies, environmental impact studies, regional and mobility studies. We can choose the appropriate methodology for a particular project. We also export our know-how, for example by supporting an overseas client setting up an environmental impact assessment for his project.

Value engineering

Your project can undergo a value engineering analysis to identify ways to complete the project at less cost and greater efficiency. Our approach involves a team of experts that follow a structured process. The process helps team members understand different perspectives, communicate across boundaries, innovate and analyse. Our final objective is to increase value. This can be attained for instance by reducing lifecycle cost, enhancing safety or reducing impact .

Risk management

Analysing and managing the risks associated with a project is another capability of Technum-Tractebel Engineering. In this context the financial, economical, timing and execution risks are assessed and the proper mitigation scenario's are studied and prepared.

Due diligence

Technum-Tractebel Engineering offers due diligence services to its clients as and when required. Areas include validation of conformance, estimated schedule and cost, construction requirements and costs, permits and environmental assessments. A recent example is for a multifunctional terminal in Antwerp, in which we conducted a comprehensive due diligence assessment to verify all documents pertaining to the project's cost-benefit analysis.

KEY REFERENCES

PANAMA CANAL

This major project commenced in 2002 and involves the conceptual design studies for a complex of locks on the canal near the Pacific and Atlantic Oceans. The project will allow the crossing of Post-Panamax vessels and thus maintain the vital role of the Panama Canal. Our sustainable approach included important measures to conserve water loss, facilitate maintenance and increase the operational speed of the locks.

IVOZ-RAMET LOCKS, BELGIUM

Technum-Tractebel Engineering is in charge of the studies for the construction of a new lock on the Maasriver at Ivoz-Ramet. This will improve the navigability of the river, and thus have a major positive effect on the local economy and increase the flow of waterborne traffic between The Netherlands, Belgium and France.

C-POWER, BELGIUM

Renewable energy projects are a key focus of Technum-Tractebel Engineering.

C-Power is a Belgian company set up to develop and implement an offshore wind farm on the Thornton Bank, 30 km off the coast of Belgium in the North Sea. In collaboration with our subsidiary IMDC, we are responsible for the basic design and construction management of the project, meant to provide one million households with renewable energy.

SEINE-SCHELDE, FRANCE AND BELGIUM

The Seine–North Europe Canal project included the analysis and design of preliminary routes and structures for the implementation of the 110 km canal linking the Seine and Oise basin, the Nord Pas de Calais and the North of Europe, for Voies Navigables de France. The canal will allow traffic up to 4,400 tonnes, significantly reducing road traffic and easing mobility problems in the area.

DANUBE RIVER, EAST EUROPE

This project includes complete feasibility studies, EIA and cost/benefit analysis for the improvement of navigation conditions on the Danube between Calarasi and Braila; the correction of the Danube river bed in order to fit out the Danube's fairway in accordance with European requirements, for the Batin sector; and the extension of Calafat Port infrastructure and systematisation of the port rail device. It will contribute to an improvement in the region's mobility and economy.

MANAPPAD PORT DEVELOPMENT, INDIA

Technum-Tractebel Engineering was awarded the contract for a master plan study for this new port in India that is expected to have a turnover of 60 million tons of coal and iron ore when fully operational. This strategically located port will improve local transport and accessibility and will provide a major boost to the local economy.

DAMIETTA LNG TERMINAL, EGYPT

A gas terminal for gas derivatives is being built in Damietta, Egypt for the Consortium UGDC. The terminal consists of a tank farm and marine facilities for LNG tankers. Our tasks included the pre-design, design and tender documents for marine facilities for LNG tankers in the range of 15,000 m^3 to 80,000 m^3. The possible impact of an earthquake was an important parameter in the design and was thoroughly studied.

RONQUIÈRES BARGE TRANSFER SYSTEM, BELGIUM

The renovation of the control system of the sloping lock of Ronquières, Belgium, involved a preliminary study, cost estimate and scheduling, I&C system design, drafting of specifications and bid comparison. This led to implementation and supervision of the I&C systems of two 1.5 MVA turbine units of the sloping lock as well as the complete renovation of the I&C system. The final solution will improve mobility on the waterways in the region.