

# The Missing Link

Connecting the British Isles and the European Continent, the first natural gas pipeline is currently under construction between Balgzand, Netherlands, and Bacton, UK. It runs some 230 kilometers across the seabed of the North Sea and will be powered by a Siemens-built state-of-the-art compression solution.

Recent predictions from the UK Department of Trade and Industry/Ofgem indicate that—after decades of generous consumption and export of domestic fossil energy—the UK's energy import dependency could increase significantly beyond 2010. Studies suggest serious supply-side challenges if the UK Continental Shelf (UKCS) production rate decreases as expected. Specifically, the UK gas balance will be likely to show imbalances until 2007 and in 2010 and beyond. And gas is continuously replacing oil as the major primary energy.

Against this background the European Commission has identified that one of the missing links in the main gas infrastructure is an interconnection between the Netherlands and the UK. Designed to bring gas from continental sources to the United Kingdom via a route of just 235 kilometers, the proposed BBL (short for: Balgzand

Bacton Line) pipeline will provide that missing link.

## TEAMING UP

In July 2004, the utilities Gasunie (Netherlands), E.ON Ruhrgas (Germany) and Fluxys (Belgium) decided to establish the BBL Company through legally separate subsidiaries. Gasunie's subsidiary company will hold a 60 per cent stake, whereas the subsidiaries of E.ON Ruhrgas and Fluxys will each hold 20 per cent. With an investment of some 500 million euros, the BBL Company will link Anna Paulowna in the Netherlands and Bacton on the Norfolk coast through a 36-inch pipeline. Operational by the end of 2006, it will substantially add to the 16.5 billion cubic meters per year, which the existing Interconnector pipeline between Zeebrugge, Belgium, and Bacton could supply in UK import mode. In the more distant future, the BBL may

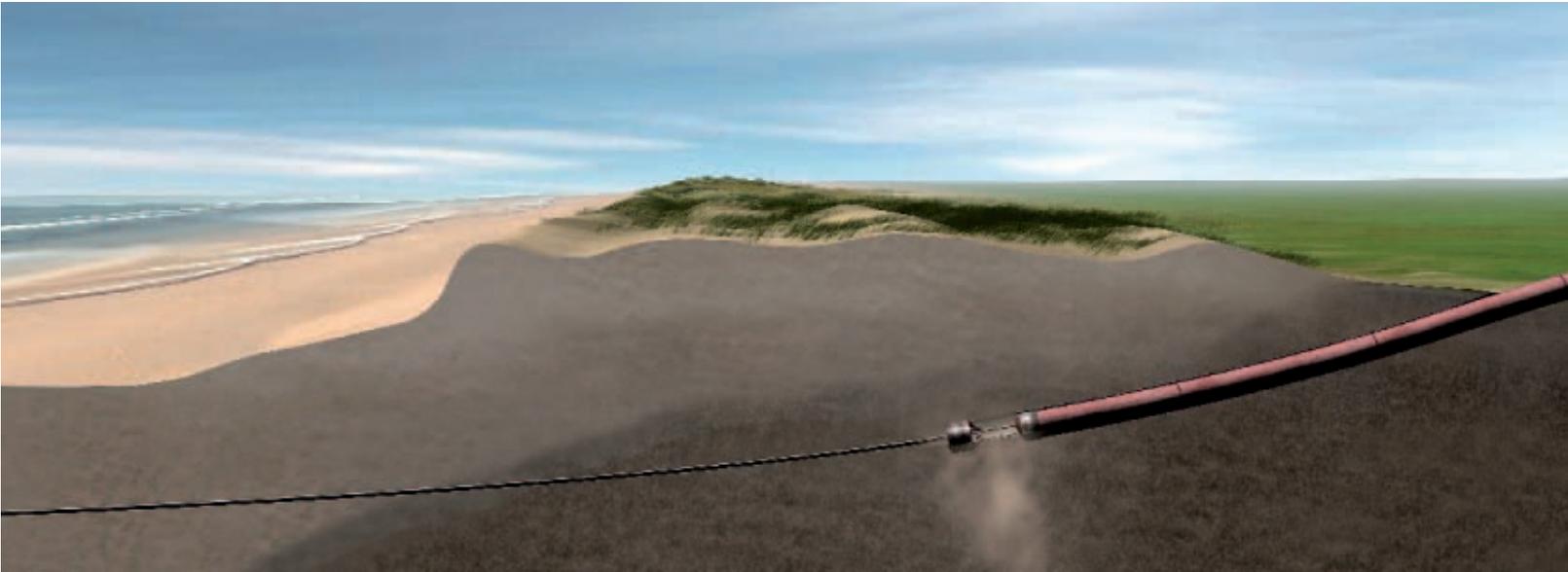
even play an important role in connecting Russian gas volumes to the UK.

## GETTING STARTED

Groundwork, pipeline laying and construction work at the terminals is well under way, and so is the production of the compression solution for the Balgzand terminal. Encompassing three state-of-the-art compressor strings rated 23 megawatt (MW) each, it will step up gas pressure to approximately 120 bar for the gas to travel the 235 kilometers to the Bacton terminal. Key performance requirements included an extended operating area to cope with potential swings in demand, as well as low-maintenance, fully remote-controlled operation.

## A FINE PIECE OF TECHNOLOGY

Designed and manufactured at Siemens facilities in the Netherlands and Germany,



In order to avoid any adverse impact on the sensitive ecosystem of the sand dunes, horizontal directional drilling will be used to bore a shaft beneath the dunes through which the pipe will be pulled, leaving nature unscathed.

the compressor strings feature high-speed variable-speed motors which directly drive multi-stage centrifugal compressors. Motors and compressors are fitted with active magnetic bearings. Through a smart computer-controlled management of bearing stiffness and damping properties, minimal vibration is ensured at critical speeds to provide the required wide operating area. The strings are equipped with a digital control system for full remote control and integration into Gasunie's dispatching center in Groningen, Netherlands.

Says Etienne Meier, Project Manager with Siemens in Hengelo: „The machines do, indeed, mark the state of the art in smart turbomachinery. However, we have amassed considerable routine with all the technologies involved, as we have designed a number of similar machines in recent years. And they've all passed the acid test

of proof in operation—with more than satisfying results.“ It was because of that vast experience with similarly advanced units that Siemens were awarded the contract to supply the Balgzand compression solution. „Notably, BBL Company were familiar with the machines we delivered for NAM's GLT project. They have lived up to all expectations,“ Meier continued. NAM is a joint venture of Shell and Exxon Mobil, operating the Groningen Long Term (GLT) gas fields, where some 500 MW of compressor performance are being successively installed at 29 clusters.

#### TIGHT SCHEDULE AHEAD

By the end of January, the first of three strings has successfully passed comprehensive performance tests and has been released for shipping. Strings #2 and #3 will follow in March and May, respectively. The first two units will be up and running

before 1 December 2006—the day when commercial operation of the BBL pipeline is scheduled for start. Until then, installation on site and commissioning have to match a challenging schedule. Says Etienne Meier: „Flexibility is a value we share with our machines.“ And smiles.

Building reputation: one of the smart compression solutions installed at a NAM GLT compressor station near Groningen, Netherlands.





## A Matter of Attitude

Accepting responsibility for Health, Safety and Environmental performance (HSE) has become a core value of corporate policy. Dedicated management structures are put in place with a keen goal setting of zero incidents. Elaborate educational programs are indispensable, as the single most important factor is—the human mindset.

Throughout the oil & gas industry, first-time visitors are invited to a compulsory video presentation before being admitted to a potentially hazardous area. Different as they may be in terms of aesthetics, these induction videos convey a clear message: Stay alert, stay alive. Once access is granted, the newly sensitized eye discovers the semiotics of an intricate HSE signage system. What to do, what not to do, which path to follow, where to gather in case of an incident, whom to report to—it is all thought of and visualized. However, this is just the visible tip of an iceberg, the iceberg being a vast corpus of occupational health, safety and environmental protection regulations and practices issued and enforced by regulatory bodies and public authorities.

### ASSUMING RESPONSIBILITY

While HSE started as something like a technical directive, in recent years it matured to a comprehensive management system and became a core value of corporate policy at oil & gas majors world-

wide. After all, the nature of their business—and of the chemical industry, who pioneered HSE—requires that HSE has the uncompromising commitment and support of the management. Says Frank Stieler, President of Siemens Power Generation Industrial Applications (PGI): „At Siemens, HSE is never a mundane chore. Our management assume personal responsibility to ensure the health and safety of people inside and outside of the company, and to avoid any adverse impact of our business activities on the environment.“ The policy currently being implemented throughout the company will bring all sites and employees to the level of HSE awareness and practices defined by the most stringent standards of the industry.

### CONTINUOUS EDUCATION

Of course Siemens holds international certificates such as the environmental ISO 14001 and the OHSAS 18001 for health and safety. But as Mike Peto, responsible for HSE at Siemens PGI, says: „These

„If we want to compete for business opportunities, we must bear comparison with the best in the industry.“

Mike Peto, Health, Safety and Environment (HSE) coordinator of Siemens PGI.



are a good base, but no laurels to rest on. Correct HSE behavior has to become part of our working life.“ Which is what Gordon J. McDonough, HSE coordinator at Siemens’ Service Center in Trenton, U.S., so imperatively coined: „Arrive safely, work safely and return safely home.“ Gordon explains: „Much of what we do, we do with the uncanny sureness of a somnambulist. So sensitizing people’s mind is key to the success of any HSE program.“ A smoker who takes a small step in the right direction may be making a giant leap for the safety of many others. HSE requires permanent attention—and education. „Safety takes priority over comfort,“ Mike Peto comments.

#### REVEALING STATISTICS

It is a common experience that, once properly trained, selective perception can work very much in favor of a positive goal. For instance, when sensitized to identify risks in their working environment, employees suddenly report a much greater number of so-called ‘near misses’. Statistical evidence says that 500 near misses equal one incident. „Incident may as well read accident,“ says Horst-Guenter Schaefer, HSE coordinator of Siemens PGI’s Global Field Service. „A statistical datum of 500 near misses may actually stand for one and the same hazard encountered 500 times. It may refer to something as trivial as a pit at a construction site—easy to jump over. But jump no. 501 may be fatal.“ The message is simple: cover the pit. Or: do it right the first time, every time.

#### DEMANDING PARTNERSHIP

HSE doesn’t start and end in any single company. Once construction or service work is done on the premises of another company, a basis of common understanding in all HSE-related issues has to be ensured. Originating from the Benelux states and Germany, the Safety Certificate Contractors (SCC) provides such a basis. It is a management system widely applied in today’s oil & gas industry,

and without SCC, no employee of company ‘A’ would be allowed to work on the premises of company ‘B’. In addition, company or site-specific certification is often required, including compulsory refresher courses at defined time intervals. At Siemens, these are documented in the Personal Safety Logbook (see title photo) of every employee concerned.

#### GOING BEYOND

While SCC defines demanding standards, HSE requirements of some companies go far beyond. This is particularly true for the top segment of oil & gas producers—companies which are always in the public eye. „As a consequence,“ Mike Peto says, „not only do they set the highest standards for themselves, but they expect the same of their suppliers.“ For Siemens as a leading supplier to that industry, this gives a clear heading. Mike Peto: „If we want to compete for business opportunities, we must bear comparison with the best in the industry.“ As a consequence, Siemens don’t just aim to meet legal minimum standards, which often vary among countries. „Even more relevant are international standards, which go beyond legal requirements,“ says Peto. It is Siemens’ policy to work in accordance with the highest locally applicable standards. By the same token, Siemens applies these standards to its contractors.

#### CULTIVATING AN HSE MINDSET

HSE is not a one-off program. Besides the involvement of top management, dedicated management structures, and efficient means of reporting and analysis, it needs persistence in spreading the message that constructive communication among all related people and parties is an indispensable prerequisite for improvement. Anything relativizing the keen goal of zero incidents would mean a step in the wrong direction. Cultivating an HSE mindset is the only way to go. After all, we all want to return home safely.