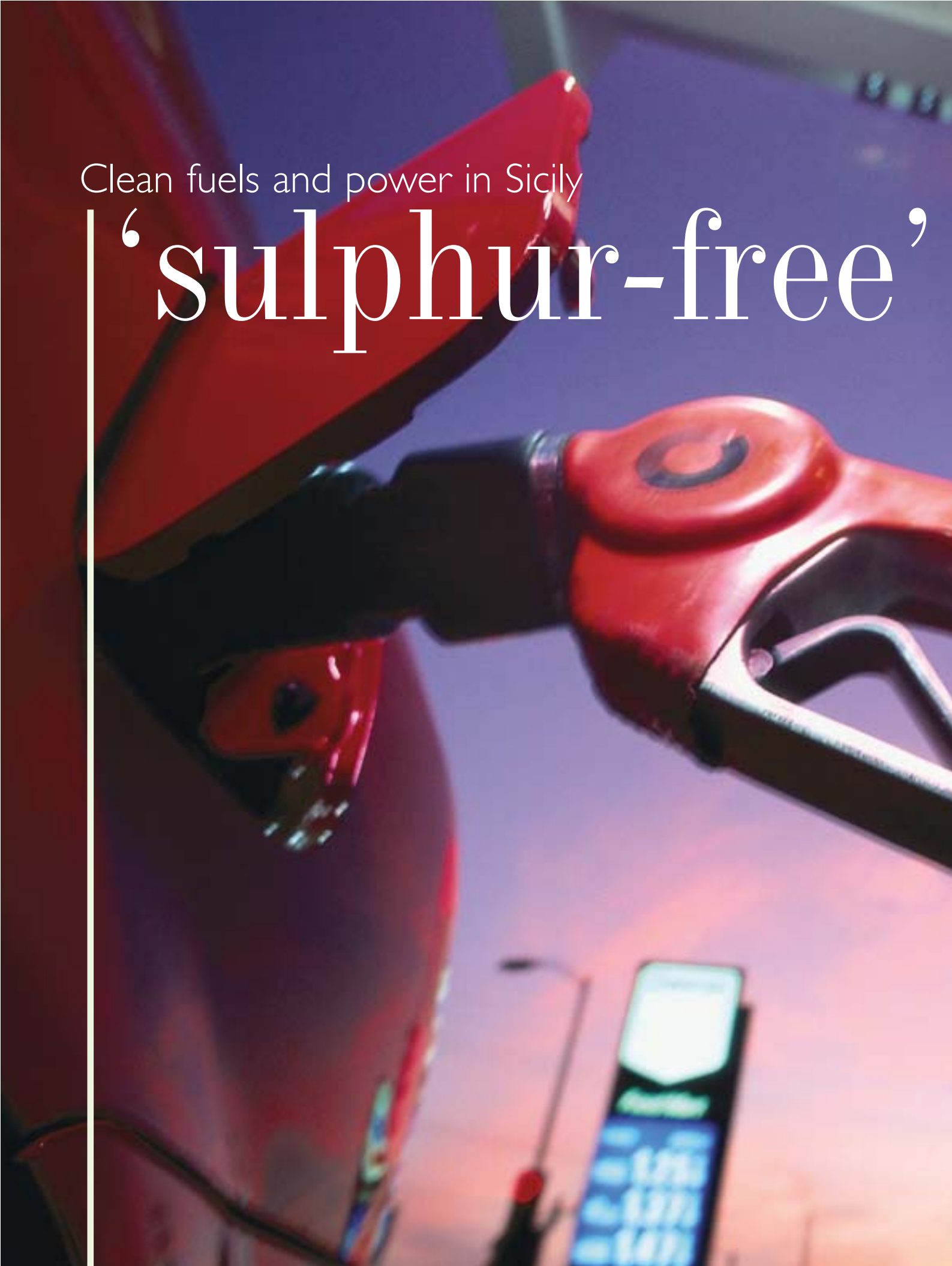
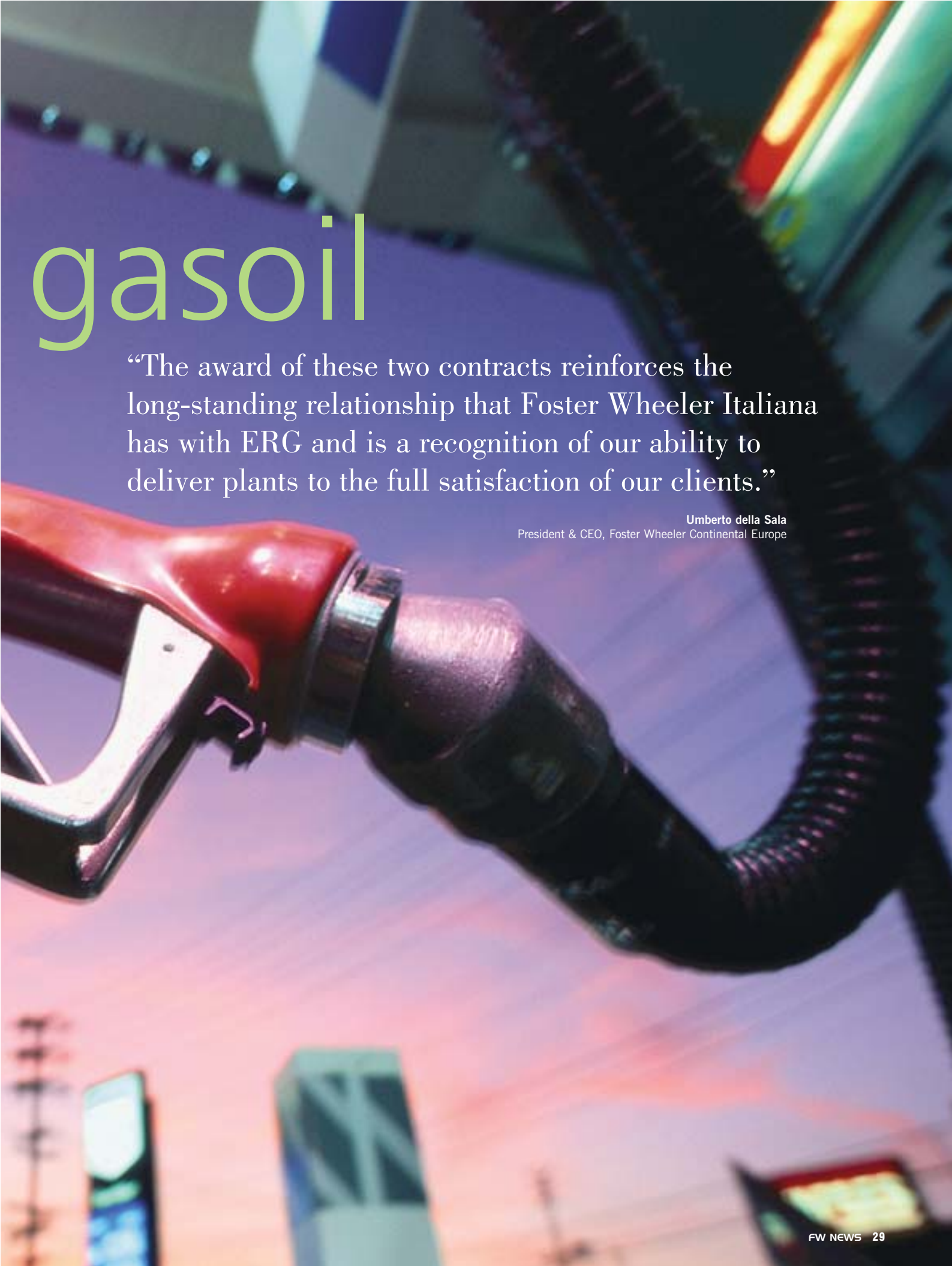
Clean fuels and power in Sicily

‘sulphur-free’



gasoil



"The award of these two contracts reinforces the long-standing relationship that Foster Wheeler Italiana has with ERG and is a recognition of our ability to deliver plants to the full satisfaction of our clients."

Umberto della Sala
President & CEO, Foster Wheeler Continental Europe

Our Milan operation was recently awarded two contracts by ERG Raffinerie Mediterranee (ERGMED) at its ISAB Sud Refinery at Priolo Gargallo facility in Sicily, Italy: to install a new ultra-desulphurisation unit to produce 'sulphur-free' gasoil and to expand the existing power station. The total investment cost of the two projects is in excess of $160 million.

Sulphur-free gasoil

The new ultra-desulphurisation unit will produce 220 m^3/hr of gasoil with low sulphur content, less than 10 ppm, to meet the latest EU product quality directives. The new unit is based on a UOP process, characterised by the high design pressure of the reaction circuit, over 90 barg. This is the latest in a long line of desulphurisation projects carried out by our Milan office.

Scheduled to be completed by the end of 2005, the project kicked off with the signature of a lump sum EPC services contract which extends up to 'ready for start-up' and includes assistance with performance testing.

LSTK conversion

We have recently agreed with ERGMED to convert our lump sum services contract into a lump sum turnkey (LSTK) contract, based on an 'open book' estimate that was prepared during months 5-7 of the project. By this time, a significant proportion of detailed engineering had been carried out and the main materials purchased. This conversion to LSTK gives us more flexibility in project execution which is important, given the very compressed schedule.

High pressure!

Just 21.5 months to reach mechanical completion is a challenging target, with several long-lead equipment items. High design pressures contribute to the complexity of the materials and construction. Early procurement has been a focus for our team, not only to secure the required equipment deliveries but also to achieve the necessary flow of vendor information to allow engineering to proceed.

HSE best practice

HSE is, as always, the prime focus for us. HSE best practice will be implemented at every stage of the project, which also has to meet legal requirements such as the SEVESO II Directive. This has already started with reviews during the design phase: plot plan review, hazard analysis and HAZOP studies.

Power plant expansion

The expansion of the existing power station consists of the addition of a new 72 MW gas turbine and a heat recovery steam generator (HRSG) with postfiring. This will bring the total capacity of the power plant up to 99 MW and will also produce low pressure steam and superheated steam for the existing plant.

Complex configuration

The aim of the power plant expansion in the refinery is to obtain maximum flexibility in power production. This will be achieved by using the existing steam turbines in parallel with the new gas turbine, and the existing steam generators, two out of three at 44% of the rated production, in parallel with the new HRSG.

Under Italian law, we have been appointed for safety purposes as 'responsible for the work execution', 'co-ordinator for the design' and 'co-ordinator during work execution'. We will also assist with pre-commissioning and commissioning.

The newly-expanded power station will supply the entire refinery's power demand, about 72 MW, export about 13 MW to the nearby ISAB Energy IGCC plant, which we designed and built, and export the remaining production to the national network (ENEL Distribuzione).

ENEL is also building a connection point to the network and modifying the routing of the last part of the incoming 150 kV line.

Schedule challenge

The power plant expansion is expected to take 20 months up to mechanical completion, with a further three months to achieve the provisional acceptance certificate.

In order to implement all the required connections to integrate the new unit with the existing installation in such a complex configuration, two different shutdowns will be performed.

Photo: courtesy ERG Group

ERG FACTS

ERG is the largest independent group operating in the energy and petroleum sectors in Italy. It is active in crude oil processing, the distribution of petroleum products and in the production of electrical power. Today it accounts for approximately 22% of the national refining capacity and is the second largest sector operator in Italy.

Via its subsidiary company ERGMED, 72% owned by ERG and 28% by ENI, into which the ISAB Sud and ISAB Nord (ex AgipPetroli) refineries in Priolo Gargallo have been merged, ERG manages one of the largest and most efficient refining complexes in Europe and is the largest Italian exporter of petroleum products, mainly diesel and gasoline.

Shutdown

The first shutdown got underway in October 2004 and involved all ISAB refinery units. During the shutdown all process, utility, instrument and electrical connections have been executed.

In order to provide enough space to install the new feeders for the new unit, all the feeders for the visbreaker have been relocated from the main electrical sub-station to a new dedicated sub-station. This was built before the shutdown in only four months.

A second shutdown of the IGCC plant is planned in April 2005 when the expansion of the existing 150 kV sub-station, necessary to receive the connection from the new power station, will be carried out.

Keys to success

A major factor in achieving on-time completion will be the co-ordination of the suppliers of the two main packages, ordered by ERGMED; General Electric for the gas turbine and ANSALDO Caldaie for the HRSG, and all the other parties involved.

A deep analysis of the complete network has been performed by our team and several solutions evaluated to overcome the gas turbine functional limits and to comply with the refinery's requirements for flexibility.

We have also maximised the use of local material supply and subcontractors, the latter allowing us to benefit from the knowledge and experience of the plant which the local subcontractors already have.

Building on a long-standing relationship with ERGMED