

## BELGIUM

Belco Technologies Corporation successfully completed its contract for a BELCO® EDV® wet scrubbing system to be applied to the flue gas from one of the FCC units at the Total Antwerp refinery. The system is being started up in the spring of 2009 and is expected to greatly reduce emissions of particulate and SO<sub>2</sub> from the refinery.

Soteica supplied, configured and commissioned its web based production and yield accounting system, S-TMS, at Belgian Refining Corporation, Antwerp, in 2008. The configuration of the system included the complete measurement model of all sales, purchases, inventories and unit battery limit process flowmeters. Upon daily execution, S-TMS calculates the sitewide hydrocarbon mass balance as well as each unit's mass balance. As a result, faulty measurements are flagged. Complete reporting, including the refinery loss report, is generated daily.

S-TMS is interfaced to the site's data systems including historian, lab system and gauging system amongst others.

## BULGARIA

Lukoil Neftochim Burgas has awarded Technip a lumpsum contract, worth approximately € 10 million, for front end engineering and design of new units at Lukoil's refinery in Burgas. The contract covers four units based on Axens technology, including a 2.5 million tpy residue hydrocracking unit, a 1.8 million tpy vacuum gasoil hydrocracking unit, an amine unit, as well as a sour water stripping unit.

## DENMARK

Honeywell has been awarded a contract to supply StatoilHydro, one of the world's largest oil and gas companies, with a plant process simulator and operator training system that will be used at the company's Klaunborg refinery.





Smart Wireless technology is helping to provide condition monitoring information at the Total Petrochemicals plant in Carling Saint Avold, France.



Bartec analyser technology, as used at the Bayernoil plant, Germany.

The new simulator will be developed using Honeywell's UniSim™ simulation technology and is being installed in three phases, with final delivery planned for the end of 2009. StatoilHydro will use the simulator to train new plant operators and provide refresher courses and self training modules. The simulator will also be used as a design, development and implementation platform for advanced process control in order to improve operational efficiency at Klaudborg.

## FINLAND

Belco Technologies Corporation successfully completed its contract for the design and supply of a Shell Global Solutions Third Stage Separator for Neste Oy's Porvoo refinery FCC unit. BELCO® is a licensor of the SGS technology. The system is being started up in 2009 and is expected to greatly reduce emissions of particulate and SO<sub>2</sub> from the refinery.

Honeywell announced that it will provide the process control and safety systems for a new NSE Biofuels Oy Ltd research facility in Varkaus. The demonstration plant will develop processes to produce renewable biofuels from wood residues. The resulting biofuels will help reduce greenhouse gases in the automotive transportation sector and help meet stringent standards for the reduction of fossil fuel.

NSE Biofuels will use Honeywell's Experion® Process Knowledge System to operate the demonstration plant. Additionally, Honeywell will help drive plant safety by providing its Safety Manager platform.

The Varkaus site features a number of innovations designed to save energy and increase environmental compliance; e.g. it will reuse the extra gas emerging from the process to heat the line kiln in the pulp production process instead of using exhaustible raw materials such as oil.

## FRANCE

Emerson Process Management's Smart Wireless technology has been installed at the Total Petrochemicals plant in Carling Saint Avold. The introduction of wireless transmitters provides new temperature measurement data, enabling the company to calculate changes in wall thickness over time, on a boiler that provides steam to a steam cracker, helping personnel to anticipate when it may need replacement.

By installing a wireless solution to connect the additional measurement points, Total Petrochemicals removed the need to install approximately 1 km of new wiring.

## GERMANY

Aker Solutions has signed an exclusive alliance partner contract with Shell Deutschland Oil GmbH (SDO) for the provision of engineering services (EPCm) for the SDO refineries in Germany. The contract duration is five years, with the option to extend by two additional two year periods. The refineries covered by the agreement include the Heide refinery, the Hamburg-Harburg refinery, and the Rheinland refinery. The total contract value over the five year period is estimated to be € 100 million.

The Rheinland refinery has a crude capacity of 17 million tpy and is the biggest refinery in Germany. The Heide refinery has a crude oil capacity of 4.5 million tpy, whilst Harburg has a capacity of 4.6 million tpy.

In 2008, Aker Solutions was awarded a five year framework contract by Deutsche BP AG for the provision of engineering and construction management services at its Erdöl-Raffinerie Emsland (BP - Lingen) production facility in Germany.

Typical projects may cover expansion projects, revamp, support for HSE management, turnaround management and permitting; as well as implementation of environmental legislative requirements, debottlenecking, and maintenance driven projects. Project scope can extend across option development, feed studies, engineering, construction management and commissioning support.

In the course of a reorganisation project at the Bayernoil plant, Bartec engineered and delivered a complete analyser shelter with three analysers, a sample return system and closed loop chillers. The integrated analysers control the processes of the treatment of the crude oil.

Siemens Energy has opened one of the world's biggest test centres for large compressor trains for use in the oil and gas industry. At a cost of approximately € 100 million, the mega test centre in Duisburg is currently Siemens' biggest single investment in Europe.

With its state of the art technology and huge dimensions, the centre is at the cutting edge in any international comparison and strengthens Siemens' position as one of the leading suppliers on the oil and gas market.

## GREECE

Foster Wheeler received engineering, procurement and construction management contracts from Hellenic Petroleum SA for a refinery upgrade at one of the company's refineries at Thessaloniki. The scope of the



Aker Solutions designed and managed the development of the Adriatic (LNG) facility, Italy.

project is the production of low sulfur fuels, as required by the stringent environmental regulations.

Foster Wheeler's scope comprises a new 15 000 bpd continuous catalytic reformer, modification of the existing atmospheric distillation unit and revamp of the existing naphtha hydrofiner and crude light ends processing unit to increase the refinery's processing capacity to 26 000 bpd of light products. The project, which will increase gasoline and diesel oil production, is expected to be completed by the end of 2010.

Acting as EPC contractor to Motor Oil Hellas, Italian company Technip/Rome has confirmed a contract with Sandvik Process Systems to increase both granulation and storage capacity at an installation for which Sandvik first delivered sulfur solidification and handling plant in 2005. Delivery is expected by mid 2009.

## HUNGARY

Foster Wheeler Ltd has announced that its Madrid headquartered subsidiary Foster Wheeler Iberia, SAU, part of the Global Engineering and Construction Group, has been awarded a contract by MOL Hungarian Oil and Gas Co. to provide the basic design and estimating services for the revamp and expansion of the delayed coker complex at MOL's refinery at Százhalombatta. The revamp will also include the fractionation, gas recovery and sour water stripper units.

The objective of the revamp is to expand the existing coking complex by 27% up to 26 400 bpd, using Foster Wheeler's leading SYDEC(SM) delayed coking technology. Foster Wheeler Iberia will develop the process design package in collaboration with Foster Wheeler's operation in Houston, Texas. This first phase of the project is scheduled for completion by the end of 2008.

Foster Wheeler's SYDEC(SM) process is a thermal conversion process used by refiners to upgrade heavy residue feed and process it into high value transport fuels. The SYDEC(SM) process achieves maximum clean liquid yields and minimum fuel coke yields. Foster Wheeler has supplied this delayed coking process technology for more than 80 new cokers and worked on more than 70 delayed coker revamps.

The value of the MOL contract has not been disclosed and the project will be included in Foster Wheeler's second quarter 2008 bookings.

## ITALY

Aker Solutions designed and managed the development of the Adriatic LNG facility, the world's first offshore LNG receiving and regasification terminal, for ExxonMobil. Aker Solutions' scope covered the entire terminal project including engineering, procurement, construction management, assembly and hook up, marine operations and offshore completion. The terminal consists of a concrete gravity based structure (GBS), two LNG tanks, topsides facilities and two concrete mooring dolphins, and will meet 10% of Italy's gas consumption.

The Adriatic LNG terminal is the first of its kind and represents an international milestone. All previous LNG terminals have been installed onshore. The terminal was assembled in a dry dock in Algeiras. Aker Solutions then relocated the entire structure and towed to the final destination in the Adriatic Sea, 17 km off the coast of Venice. The location was chosen with the aim of making the terminal not visible from shore. The project focus following installation has been on the hook up and completion works for the topsides. Initial operation of the terminal, LNG cool down, is planned for the first quarter of 2009.

The terminal will be owned and operated by Adriatic LNG, a joint venture comprising 45% Qatar Petroleum, 45% ExxonMobil and 10% Edison.

Burckhardt Compression has been awarded an order from a refinery in North Italy to deliver two process gas compressors for the new mild hydrocracker unit. The contract comprises two multiservice make up process gas compressors that are equipped with the monitoring and diagnostic system PROGNOST®-NT and the recycle arrangement in three compression stages.

The process gas compressors will be used for the production of ultra low sulfur diesel and are driven by 2500 kW electric motors. This specific process requires knowledge and experience for the operating conditions as well as reliability and high availability for the equipment offered. The process gas compressors are manufactured

according to API 618 5<sup>th</sup> edition and the latest state of the art technology.

The compressors are scheduled to be delivered in July. The plant will start the production of clean diesel at the beginning of 2010.

Chevron Lummus Global (CLG) supplied the process design and associated technical services for ENI SpA's new two stage Isocracking unit in Sannazzaro, designed for maximum mid distillate production. CLG is now scheduling precommissioning activities, training and preparing for an anticipated startup in spring/summer 2009.

In Taranto, CLG supplied the technology and design related to the revamp of ENI SpA's upflow reactor (UFR) and resid desulfurisation (RDS) plant to integrate an Isocracking unit to produce diesel at minimal incremental capex. CLG is now involved in the precommissioning activities, anticipating startup during the third quarter of 2009. It is expected to be the first ever integrated UFR/RDS/ hydrocracking plant in the world.

The Gas Turbine Services division (GTS) of international energy services company, John Wood Group PLC, has been awarded three gas turbine component repair contracts, worth a total of approximately US\$ 3 million, by Edison SpA, one of Italy's major energy utilities.

The first contract involves the refurbishment of hot gas path components from General Electric Fram 9E gas turbines operated at six power stations throughout Italy, namely the Bussi, Maghera Levante, San Quirico, Sarmato, Celano and Piombino facilities. The work will be carried out at GTS' dedicated turbine component repair facility in Rayong, Thailand.

GTS has also won two additional contracts with Edison, for the repair of fuel nozzles from a Frame 9 DLN gas turbine at the Sarmato power station, and for the repair of gas turbine accessories and fuel nozzles from various sites in Italy.

GE Oil & Gas is supplying ENI SpA with the largest refinery reactors of their type ever to be manufactured, to the company's refinery in the Po Valley in Sannazzaro. Delivery will take place in the first quarter of 2011, with commercial operation expected in 2012.

GE's production facility in Massa will manufacture the 2000 t, heavy wall, slurry reactors, which will be the centrepiece of a new process technology designed to boost production of middle distillates from each barrel of feedstock at ENI's refinery in Sannazzaro. The refinery will highlight ENI Slurry Technology, a process that enables increased efficiency in unconventional oils, heavy oils and residues distillation.

ENI's Sannazzaro refinery is being expanded to meet the growing energy demands of the Turin-Milan-Genoa



At work in one of ENI SpA's reactors.

industrial triangle, the country's most industrialised area. The facility serves northwestern Italy and key markets in Switzerland.

Siirtec Nigi SpA has been awarded by ENI SpA, for its refinery located in the town of Sannazzaro, the lump sum turnkey contract for the technology supply, engineering, procurement and construction of a challenging new sulfur recovery unit to 99.87% of sulfur. The SRU consists in a Claus unit set to operate either with atmospheric air or with enriched air (nominal capacity 210 tpd), complemented with a 325 tpd TGTU based on HCR™ licensed by Siirtec Nigi, Siirtec Nigi's degassing unit and a catalytic incinerator. The plant was scheduled to be completed within the 2009 first quarter.

Italiana Energia & Servizi SpA, through Foster Wheeler Italiana SpA, has assigned to Siirtec Nigi SpA a lump sum contract for the supply of technology, basic design, detailed engineering, procurement and construction of a sulfur recovery package and relevant tail gas clean up unit for its refinery in Mantua. The unit will be designed to recover 105 tpd of liquid sulfur with a sulfur recovery of 99.9%. The process units are all based on Siirtec Nigi's know how and patents. The plant should be completed within 2009.

## THE NETHERLANDS

CDTECH has announced that the BP Rotterdam refinery (BPRR) has started using CDTECH's CDEtbe® technology for production of biofuels. The production is based on etherification of isobutylene and bioethanol to produce ETBE.

The refinery's existing DCEtherol® unit, which was used for production of MTBE, was revamped to produce ETBE. BPRR's objectives were to maximise production of biofuels, with minimum impact on the performance of downstream units, and with minimum investment. The CDEtbe unit proved to have the flexibility to provide maximum conversion, with only minor changes to the existing unit. The BP Rotterdam refinery is the first refinery in the Netherlands that has committed itself to produce biofuels.

Technip has been awarded a cost plus fee services contract by Neste Oil Corporation for a new generation NExBTL renewable diesel plant to be built in Rotterdam.

The contract covers the engineering and management of procurement and construction activities. The plant will have a production capacity of 800 000 tpy and will be one of the largest facilities producing diesel from renewable feedstocks. The production process will be based on Neste Oil's proprietary NExBTL technology, which can use a wide range of raw materials.

This technology was first applied in Neste Oil's Porvoo refinery in Finland, which has been in operation since the summer of 2007. The contract will be executed by



Emerson's Smart Wireless solutions have been successfully applied to the Grane platform, which is stationed in the Norwegian Sea and operated by StatoilHydro. ©Jo Michael, StatoilHydro.

Technip's operating centre in Rome, and is scheduled to be completed in 2011.

Yokogawa has merged the activities of its two main operating companies in the Netherlands, Yokogawa Nederland BV and Yokogawa System Center Europe BV under the new name of Yokogawa Europe Solutions BV. This new organisation will allow Yokogawa to deliver optimum service to both the Netherlands market and international projects in supplying solutions for industrial automation. The result of this merger is a new building in Amersfoort in the Netherlands, which Yokogawa will occupy at the end of 2008. The new premises will also house the regional head office for Europe and Africa. To accommodate the expansion of the branch offices throughout Europe and Africa, the former Yokogawa Nederland NV has now become Yokogawa Europe Branches BV and will also be housed in the new premises.

## NORWAY

Aker Clean Carbon has signed an EPC contract with Aker Solutions for the construction of the European CO<sub>2</sub> Technology centre at Mongstad. Aker Clean Carbon will provide the technology, project management and carry through commissioning and initial operation of the plant while Aker Solutions will build the plant according to an agreement between the parties. For Aker Solutions, the value represents a substantial part of Aker Clean Carbon's total contract of NOK 525 million.

Aker Solutions will deliver a mechanical complete test plant for capturing CO<sub>2</sub> at Mongstad during the summer of 2011. Aker Solutions is providing engineering and procurement services for the project from its Solent office in the UK. Pipe racks and several packages of different equipment will be built and assembled at Aker Solutions' yard at Stord. The installation work at Mongstad will be carried out during 2010. Aker Solutions will also assist Aker Clean Carbon during a six months commissioning period.

Foster Wheeler Energy Ltd was awarded a contract by StatoilHydro ASA to undertake a feasibility study associated with CO<sub>2</sub>/amine absorption at the Åsgard B offshore production facilities in the Norwegian Sea.

Foster Wheeler's scope of work included the assessment of existing facilities, identification of possible bottlenecks and limitations, identification and evaluation of process options, and provision of preliminary cost and schedule estimates for the implementation of modifications. The overall objective is to obtain maximum absorption of CO<sub>2</sub> at Åsgard B in order to reduce future downstream CO<sub>2</sub>

removal demand and increase the volume of natural gas liquids exports.

KBR's subsidiary M.W. Kellogg Ltd has announced that it has won an oil refinery contract from StatoilHydro's Mongstad refinery in Bergen. The company will be working on a revamp of the processing unit along with making improvements to the safety, performance and reliability. This contract follows on from a preengineering contract that was awarded to M.W. Kellogg Ltd in 2007, to assess the changes needed to the coker. The necessary works will take place during a scheduled shutdown in 2009 and will be completed in time for turnaround in 2010.

All work will be carried out in the UK with M.W. Kellogg employees as well as a select few representatives of StatoilHydro.

## POLAND

Chevron Lummus Global (CLG) was selected as technology supplier and delivered the process design for a 50 000 bpd grassroots ULSD hydrotreating (Isotreating) unit at Gdansk. The Isotreating unit will allow Grupa Lotos to meet the 10 ppm ULSD specification mandatory in the European Union as of this year. In addition, the Isotreating unit is designed to deliver a cold flow improvement to produce winter diesel when desired. The unit is currently under construction, nearing its mechanical completion, scheduled to start up in June.

## PORTUGAL

Aker Solutions is providing the engineering, procurement services and construction management (EPCm) for Artenius' new mega purified terephthalic acid (PTA) plant, being built in Sines.

The new plant will produce 700 000 tpy of PTA. The project is scheduled to be complete at the end of 2009, with the plant online in early quarter 1 of 2010. Aker Solutions' operations in India provided the detailed engineering, whilst Technoedif in Portugal is working as subcontractor to Aker Solutions, providing engineering support and construction management assistance.

Fluor announced that it has been awarded a contract for a conversion project at Galp Energia's Porto refinery. The contract is valued at US\$ 455 million.

Fluor, having started front end engineering and design (FEED) for the project in 2007, revealed that it will now begin a contract covering engineering, procurement and construction.

Once completed, the conversion project should produce 2.5 million tpy of diesel, gasoline and kerosene, and will be able to process heavier grades of crude oil.

The project is scheduled for completion by the end of 2010.

Technip has been awarded a lump sum turnkey contract worth approximately € 35 million from Repsol Polimeros. The contract is for the supply of two new furnaces for an existing steamcracker in Sines, Portugal.

The contract will be completed by Technip's Netherlands operating centre, covering basic and detailed engineering, procurement and supply of materials, construction and both precommissioning and commissioning.

The new furnaces will expand the plant by 160 000 t and are scheduled for completion in 2010. The furnaces will be based on Technip's GK6 technology.

## ROMANIA

GTC Technology has announced that Petrochemical Holding GmbH has chosen eight of GTC's proprietary process technologies, CrystPXSM, GT-BTX PluSSM, GT-BTX®, GT-IsomPXSM, GT-TransAlkSM, GT-Aromatization, Pygas Hydrotreating and Hydrodesulfurisation for a major petrochemical project in its 3 million tpy crude oil refiner in Onesti. The aromatics complex, operated by S.C.Rafo SA, is designed to produce 400 000 tpy of paraxylene and 200 000 tpy of benzene.

The objective of the project is to generate paraxylene and benzene from low value fuel streams. GTC's innovative approach will upgrade the catalytic cracked products by direct recovery of aromatics from the FCC gasoline, with additional aromatics production from mixed olefins. The new configuration will completely eliminate motor gasoline production at the refinery. This approach is significantly less expensive and distinct from other processes, which recycle FCC gasoline to naphtha reforming as the means to generate aromatics.

Petrom, Romania, has obtained a revolving type financing of up to € 500 million from OMV, Austria, its main shareholder.

According to Mariana Gheorghe, Petrom CEO, the funds will be used to sustain the company's reorganisation and upgrade.

Long term objectives include stabilising crude oil and gas production in the country, upgrading the Petrobrazi refinery and building a 860 MW gas fuelled thermal power plant; as well as diversifying energy sources and developing gas storage facilities.

The Protection Group of Sembcorp UK has secured a consultancy deal with Romanian petrochemicals company, Petrom. The work is centred on one of Petrom's largest refineries near the capital, Bucharest, and focuses on assisting Petrom with its goal to implement a world class site emergency response strategy.

Sembcorp's initial task was to assess whether Petrom's needs would be best met by enhancing the in house emergency response capability or outsourcing it to a specialist service provider. The Protection Group team reviewed the current facilities and operational procedures and produced a 'gap analysis' for Petrom's management that highlighted the services required to meet the company's performance expectations.

Based on this 'gap analysis,' Petrom, working closely with Sembcorp, took the decision to outsource its emergency response requirement. Drawing upon its specialist expertise, the Protection Group team created a specification for the new service provision, devised a site specific equipment investment programme, and formulated the vital transition plan. Key performance indicators were also determined to drive the critical service levels.

Technip has been awarded a lump sum contract by Rominserv and Rompetrol worth approximately € 40 million for a hydrogen plant to be constructed at the Petromidia Refinery in Constanta.

Based on Technip's proprietary technology, the plant will have a capacity of 40 000 m<sup>3</sup>/hr of 99.98% purity

hydrogen, and will also deliver approximately 40 tpy of high pressure steam.

The plant, which represents an overall investment of approximately € 65 million, is scheduled to be completed in 2010. It is part of a major investment programme to increase the Petromidia refinery's hydrofining capacity, to bring product qualities exclusively to Euro 5 standards, and to increase processing capacity to 5 million tpy.

Uhde has been awarded a contract by Petrom SA of Romania to construct a gasoline desulfurisation plant at Brazi, north of Bucharest. The plant will produce 700 000 tpy of low sulfur gasoline.

The contract is worth an approximate € 90 million and includes comprehensive engineering services, supply of equipment, construction, commissioning support and facilitating training. The new complex marks Petrom's move to low sulfur fuel production. Uhde was also awarded clean fuels contracts in Bulgaria, bringing them to the forefront of desulfurisation plant construction. During the last 7 years, Uhde has built plants that produce approximately 33 million tpy of gasoline and diesel fuels.

## RUSSIA

Foster Wheeler has received a services contract from Mariisky NPZ Ltd for the planned expansion of the Mari-El refinery. Mariisky NPZ Ltd, a private company, owns and operates the refinery.

The objective of the expansion is to increase the refinery's crude processing capacity from 27 000 to 90 000 bpd and to increase its ability to convert lower value products into higher value products. Mariisky NPZ Ltd plans to install a new refinery train including new crude and vacuum distillation units, hydrocracking, hydrodesulfurisation, amine and sulfur recovery units based on Shell technology, a solvent deasphalting unit, a hydrogen production unit based on Foster Wheeler technology, sour water stripping facilities and a new power plant.

Foster Wheeler Italiana will define the design basis, then undertake the basic design package for the non-licensed process units, power plant, utilities and offsite facilities, and front end engineering and design (FEED) for the entire expansion project. Foster Wheeler Italiana will also act as PMC for the EPC implementation phase, up to 'ready for startup' of the new facilities.

Foster Wheeler Italiana will be supported by Foster Wheeler's Moscow operation, particularly in the application of Russian norms to the design and FEED packages and the development of the FEED for certain utilities and offsite facilities.

Release of the job will occur in phases. At present, Foster Wheeler Italiana has been released to proceed with the definition for the non-licensed process units, power plant, utilities and offsite facilities, the application of Russian norms, and the licensor coordination and support, all during the design basis phase.

Foster Wheeler will supply fired heaters for the Nizhnekamsk integrated refinery and petrochemicals complex in the Republic of Tatarstan.

The contract was awarded by Open Joint Stock Company Taneco, a unit of Russian oil company Tatneft.

Foster Wheeler will engineer and supply the materials for two furnaces for the hydrocracking unit, and a charge

heater and three interheaters for the continuous catalytic reformer unit.

OJSC Taneco is the new name of CJSC Nizhnekamsk refinery, for whom Foster Wheeler has already successfully completed the FEED for the new complex and the process design package for the delayed coker.

These contracts are expected to be completed by the end of 2009.

At the beginning of 2008, Sandvik Process Systems was awarded a contract to manufacture and supply sulfur solidification and handling plant for the Lukoil-Nizhegorodnefteorgsintez refinery in the Nizhny Novgorod region. The plant includes four Rotoform granulation/pastillation units as well as additional systems for storage, bagging and railway loading. Equipment was delivered in February 2009 and Lukoil plans to install and put it in operation by mid 2009.

As EPC contractor for the Khabarovsk refinery, Spanish engineering company Tecnicas Reunidas has confirmed an order with Sandvik Process Systems for a complete sulfur solidification and handling package covering granulation, silo storage and bagging of sulfur granules. Due to the ambient temperatures, the entire system will be installed inside a building. Delivery is expected by the middle of 2009.

Technip has also been awarded a contract by Sibur Neftehim worth € 45 million. The contract is for a lump sum engineering and procurement contract to expand an ethylene plant in Kstovo.

This project will also be carried out by Technip's operating centre in Zoetermeer, the Netherlands. The contract covers detailed engineering, procurement and supply of main equipment and materials. Technip will also provide technical assistance during construction, commissioning and startup.

Yokogawa Electric Corporation has signed a strategic partnership agreement with JSC Gazprom Neft. Under this strategic partnership agreement, the first ever between an instrumentation manufacturer and Gazprom Neft, Yokogawa will introduce its solutions on a priority basis at four of the company's refineries. These solutions will include integrated production control systems and operation support software for efficiency improvement and event analysis.

Yokogawa will also contribute to a Gazprom Neft programme for reducing total cost of ownership by offering technical support with the design, delivery, service, operation and engineering of control systems.

Using this strategic partnership agreement with Gazprom Neft, Yokogawa will expand its business in Russia's oil and natural gas industry.

Yokogawa Electric Corporation has announced that its subsidiary, Yokogawa Electric CIS Ltd, has signed a contract with Taneco to become the main automation contractor for a refinery and petrochemical project. The complex is to be constructed in Nizhnekamsk, Russian Republic of Tatarstan.

As the designated control system supplier for Taneco, Yokogawa will receive control system orders from each of the companies that are building plants for this complex. The construction project will be executed in three stages. The first phase orders will be completed by the beginning of

2009 and are estimated to be worth US\$ 69 million. Orders for all three stages are expected to total US\$ 107 million.

The first stage includes the construction of refining facilities, sulfur recovery facilities and an aromatic complex. The second and third stages will complete the construction of heavy oil crackers, polypropylene and polyethylene plants.

Yokogawa will design the control system for these plants and will deliver an integrated process control system that will include an integrated production control system, a safety instrumented system, and a plant information system.

## SERBIA

Petrolinvest used COADE's CADWorx and CAESAR II in the design of a US\$ 25 million light petrol isomerisation plant addition for the Novi Sad oil refinery.

## SPAIN

Burckhardt Compression has received an order for three Laby® (labyrinth piston) compressors for the LNG receiving terminal that is part of the new regasification plant in the port of El Musel in Gijon, Northern Spain. Delivery of the compressors will take place in mid 2010. The new installation will have an initial storage capacity of 300 000 m<sup>3</sup> of LNG, split between two storage tanks, 150 000 m<sup>3</sup> each, with a total emission capacity of 800 000 m<sup>3</sup> of natural gas per hour. Two more storage tanks, which will take the final emission capacity up to 1.2 million m<sup>3</sup> natural gas per hour, will be built at a later date.

Técnicas Reunidas Group, an engineering, procurement and construction (EPC) company, has chosen the Intergraph® SmartPlant® Enterprise solutions suite and signed a long term software agreement for its engineering design and data management projects.

Sandvik Process Systems is to supply sulfur solidification plant for Repsol's Cartagena refinery. Overall investment in the refinery, including infrastructure and environmental work, makes it the largest project in this sector in Spain in recent years. Engineering company Intecsa Industrial/Madrid is acting in a consortium on behalf for Repsol Petroleum. Delivery is scheduled for August 2009.

Soteica supplied, configured and commissioned its online energy system, Visual MESA, at the Repsol Cartagena refinery in 2008. The optimisation model includes the fuel (including CO<sub>2</sub> emissions), electrical, steam, boiler feed water and condensates system. This is the seventh Repsol site where Soteica has deployed a turnkey Visual MESA installation.

## SWEDEN

In June 2008, Preem AB and Haldor Topsøe A/S entered into a development agreement in order to hydrotreat 70% LGO and 30% renewable organic material in the form of raw tall diesel (RTD) in a revamped MHC unit at Preem's refinery in Gothenburg.

Haldor Topsøe's scope of work includes fundamental research, catalyst supply, engineering and commissioning. The unit is expected to start up in early 2010.

The process is environmentally friendly since it is tailored to treat tall oil derived material, as well as other

Nynas AB, Sweden is using Intergraph® SmartPlant® Enterprise to help expand and increase production capacity.



renewable resources, rather than crops used for human nutrition.

Invensys Process Systems (IPS) has announced that the Swedish biorefinery SunPine AB will use Invensys SimSci-Esscor's PRO/II simulation software for modelling a new biodiesel refining operation in Pitea. The new plant, which is a member of the Solander Science park biofuels collaboration, converts crude bio oil byproducts of pine pulping into second generation biodiesel for shipment to diesel refining facilities.

SunPine will be using a newly patented process to manufacture biodiesel from a main feedstock of crude tall oil (CTO), a byproduct of pine pulping, and combine it with vegetable oils such as jatropha or castor oils to create tall diesel (CTD). With environmental approvals recently in place, SunPine AB will begin initial construction in the summer of 2008, with biodiesel production startup planned for October 2009.

Efficient operation of the distillation column is critical to profitability of biodiesel production, impacting cost, output and regulatory compliance.

Nynas AB seeks to expand its refiner base and double its production capacity by 2020, and has chosen Intergraph® SmartPlant® Enterprise to assist in this.

## TURKEY

Emerson Process Management's project engineering and PlantWeb® architecture has enabled a new bioethanol production plant operated by Tarkim to start up a month early and produce almost 30% above target levels. Emerson's PlantWeb solution at Tarkim includes 381 field instruments, 108 control valves and 124 on/off valves, using HART communications protocol.

This year, Lukoil, Russia, intends to supply petroleum products to the Turkish market from its own refineries in Burgas, Bulgaria, Odessa, Ukraine, the ISAB refinery in Sicily, Italy, and the Tupras refineries in Turkey.

In July 2008, the Lukoil Group signed an agreement for a 100% acquisition of Akpet, Turkey.

Despite the current global financial situation, Lukoil plans to expand its Turkish business by investing approximately US\$ 37.5 million. The company hopes to have the Akpet gas stations rebranded in compliance with Lukoil by 2011 - 2013. Lukoil, as part of its Turkish development programme, seeks to invest a total of US\$ 400 million in the local network.

Türkiye Petrol Rafinerileri AS (Tüpras) has commissioned Shell Global Solutions to assist in its refinery optimisation programme at its four refineries. This is part of the

company's efforts to improve operations and maintain its strategic importance as the country's energy supplier.

The refinery previously used diesel as the main diluent in fuel oil production. Replacing a portion of the diesel with kerosene will free more valuable distillates and reduce the total fuel oil production. Lowering the product quality giveaway will reduce the amount of distillate downgraded to fuel oil and therefore the volume of the fuel oil pool.

## UK

Aspen Technology, Inc. has announced that the first deployment of aspenONE using Microsoft Applications Virtualisation was completed by long term customer BASF.

The chemical company used Microsoft virtualisation to accelerate how quickly its worldwide process engineering team can begin using and realising value from the new releases and updates to the aspenONE Process Engineering suite.

BASF engineers throughout the world have used aspenONE for years to quickly create higher quality process modelling simulations, costing and sizing activities, which improves plant design and optimises production. Now, BASF can achieve additional IT and operational cost savings and faster performance improvements, leveraging Microsoft Application Virtualisation.

Microsoft's virtualisation technology decouples applications from operating systems and runs software as network services, making applications available whenever and wherever they are needed, even when disconnected from the network.

In November 2008, CB&I announced that the Isle of Grain LNG project in the UK, owned and operated by National Grid Grain LNG Ltd, successfully received its first shipment of LNG. Receipt of the shipment is part of the final cool down and commissioning process. CB&I is the engineering, procurement and construction contractor on this expansion project, which increased the facility's capacity to 8.6 billion m<sup>3</sup>/y, or 12% of the UK's current gas demand.

CompactGTL plc, the specialist gas to liquid company, has launched its UK pilot plant at the company's new site based at Wilton, Teesside. The plant was successfully commissioned and has demonstrated the complete

CompactGTL process under continuous operation at pilot scale for the first time. The plant takes a feed of natural gas and converts this to synthetic crude oil products. Over the next few months, the company will conduct extensive tests on the plant which has been developed to solve the problem of associated gas in remote or deepwater environments.

The first commercial plant, which is expected to be commissioned in 2013, will produce 1000 - 1500 bpd of syncrude. The modularity of the CompactGTL plant offers clients the flexibility to tailor the size of the process plant to suit the amount of associated gas produced from a particular oilfield. Solving the problem of associated gas will help new oilfield exploration and enable development of oil discoveries in remote locations.

E.ON has awarded Costain the EPCm contract for the gas plant infrastructure for its Holford underground gas storage project in Cheshire. The development will be one of the fastest churn facilities in the UK, allowing rapid response to daily fluctuations in gas demand. The facility comprises eight separate underground caverns with a combined capacity of 162 million m<sup>3</sup> and a daily withdrawal rate equivalent to the domestic needs of 3.5 million homes.

Costain's scope includes design, construction and commissioning of the gas processing plant and associated infrastructure and modification works at all eight wellheads to debrine the caverns, followed by further modifications to allow for gas trading.

Costain Oil, Gas & Process has been awarded the EPCm services contract for E.ON's Holford underground gas storage project. The scope of work is to design, procure, install and manage the gas plant infrastructure. The total value of the contract to Costain, including professional services and equipment, will be over £ 60 million. The Holford facility will comprise eight separate underground storage caverns with a total capacity equivalent to approximately half of the UK's average daily gas requirement. The facility will be able to respond rapidly to daily fluctuations in gas demands.

E.ON is now well advanced in the initial phase of the project to develop the salt caverns and is now entering the second phase of the project to establish the gas plant infrastructure, which is scheduled to be complete by June 2010. It will then be used to 'debrine' the caverns in

preparation for receiving gas. The brine generated during the cavern excavation process will be utilised for the production of industrial chemicals. The project will commence operation and trading gas in January 2011.

Costain has been awarded a contract by Storengy (part of GDF Suez) to carry out detailed engineering and design, procure (for and on behalf of) all necessary works and manage the procurement, construction and commissioning of the phase 1, Brine and Water Infrastructure, at the Stublach underground gas storage project in Cheshire. Completion is forecast during August 2009.



Aerial view of Stublach underground storage of natural gas, Cheshire, UK.

Emerson Process Management has won a contract to install its DeltaV™ SIS safety instrumented system at fuel storage and distribution sites operated by BP Oil across the UK. Emerson's safety technologies will be used in tank overflow protection systems and the first system will be delivered to BP's oil terminal at Hemel Hempstead.

Emerson's safety systems engineers will design, configure, install and test the safety instrumented systems. This work will be completed in accordance with Emerson's own safety management systems, which are certified for compliance with the requirements of IEC61511.

BP Oil specifies Emerson's Safety Technologies for Tank Overflow Protection Systems.

Foster Wheeler Energy Ltd has been awarded a contract for the design and supply of a Terrace-Wall™ steam reforming furnace by BP Chemicals Ltd. The Terrace-Wall™ reformer will replace the existing reformer at BP's chemicals complex at Saltend, near Hull.

Foster Wheeler Ltd announced that its UK subsidiary, Foster Wheeler Energy Limited, part of its Global Engineering and Construction Group, has been awarded a two year extension of its existing alliance contract with Shell UK Oil Products Limited for the provision of basic design, engineering, procurement and construction management services at Shell's Stanlow Manufacturing Complex, UK.

This is the second extension to the current contract and will take the Foster Wheeler Alliance with Shell at Stanlow into 2011. Foster Wheeler's original Alliance contract with Shell was signed in 1997.

The Foster Wheeler Energy Ltd team, based at Shell's Stanlow Manufacturing Complex, has grown steadily over the last eight months in order to respond to a higher refinery/chemical complex workload.

INEOS Manufacturing Scotland, part of the world's third largest chemical company, has become a corporated member of EEMUA, the association for industrial asset management. INEOS's refining and petrochemical complex at Grangemouth is the largest industrial site in Scotland, extending over 1700 acres and directly employing 1400 people.

With a refining capacity of 200 000 bpd and approximately 1 million t of chemicals, the site produces enough motor fuels to supply the bulk of the market in Scotland and northern England.

Joining EEMUA enables INEOS to engage with a wider group of companies in the energy, power and processing industries. Membership means that INEOS will have access to guidance documents and industry standards which is an invaluable resource.

Invensys Process Systems has been awarded the main contract to supply a complete 'offsites' solution to Murco Milford Haven refinery. This is an important investment for the refinery which will provide significant improvements in the safe efficient operation of the oil movements system.

Invensys Process Systems will manage the project and all associated services in partnership with Land and Marine, Extronics and ABB.

Extronics, a leading supplier and manufacturer of intrinsically safe and explosion proof electrical and electronic equipment, has been chosen to supply a wireless network for hazardous environments by Invensys Process Systems (IPS), a global technology, software and consulting firm. The intrinsically safe and explosion proof wireless network will form an integral part of IPS' project to improve plant visibility at Total's UK based refinery.

IPS was awarded the turnkey contract to supply a complete 'offsite' solution to the Milford Haven refinery. Offsite operations are crucial in the production process, providing the handling and storage facilities for high quantities of gas or liquid in the form of tank farms and terminals. Extronics worked with IPS to provide significant improvements in the efficient operation of these offsite facilities at Milford Haven in zone 1 and zone 2 rated hazardous areas.

IPS required Extronics to provide a robust and cost effective measure to deliver work scheduling and position status feedback to operators, in real time, on more than 1500 manual valves involved in the offsite operations to be displayed on a process mimic.

## ELSEWHERE IN EUROPE

Eni SpA has awarded Jacobs Engineering Group Inc. with three framework projects to provide multidisciplinary, front end engineering services to three operating units: refining and marketing, exploration and production and Polimeri Europa. Each contract will last three years; financial terms were not disclosed. Jacobs will develop extended basic design packages and cost estimates for several Eni projects, working from its head office in Italy.

Jacobs Engineering Group Inc. has been awarded a three year contract by Shell Supply and Distribution to provide front end design, engineering, procurement and construction management services for Shell's European biofuels programme. The programme aims to install bioethanol and biodiesel blending facilities in Shell depots across Europe.

As part of the contract, Jacobs will develop conceptual designs and basic engineering packages for various biofuel blending projects, progressing to full implementation and construction management for most of the projects. 