ABB subsea technology now ready for switch on

ABB's revolutionarySubsea Separation and Injection System, SUBSIS, was successfully installed on the North Sea seabed last summer. The 250-ton SUBSIS module allows the fluid produced from the oil reservoir (a mixture of oil, water and dissolved gas) to be separated on the seabed, with the separated water being directly re-injected into the reservoir rather than incur the cost of transporting it all to a surface platform separator. SUBSIS has undergone extensive testing during the time it has been submerged in the North Sea and, in the course of this summer, major subsystems will be switched in and the full power of the system used to separate up to 10,000 Sm^3 liquid/day. We expect to publish more news on this project as developments unfold. (See also detailed report in ABB Review 6/99)

Brazil petrochemicals order

A consortium consisting of ABB and Snamprogetti of Italy has signed a $650 million order to develop a greenfield gas chemical complex near Rio de Janeiro, Brazil.

The order was placed by *Consorcio Rio Eteno e Rio Polimeros Ltda* and covers the design and construction of ethylene and polyethylene facilities using proprietary ABB process technologies. The plant is scheduled to enter commercial operation at the end of 2003.

Consorcio Rio Eteno e Rio Polimeros Ltda is owned by Brazilian petrochemicals groups *Suzano* and *Unipar* as well as state oil company *Petrobras* and *BNDES* development bank.

ABB to supply the world's two most powerful DVR systems

ABB Industrie AG and ABB High Voltage Technologies Ltd, Switzerland, are building the two biggest Dynamic Voltage Restorer (DVR) systems ever made (photo).

The two DVR systems are being used by an Israeli customer for microprocessor manufacture. These power quality systems are used to protect cost-intensive and sensitive manufacturing processes of the kind used, for example, in the semiconductor or papermaking industry. They compensate voltage fluctuations, so preventing production failures.

The two systems were designed for a power of 22.5 MVA and have an energy accumulator which is over ten times larger than the DVR systems built until now with around 4 MVA. It compensates voltage sags of up to half a second with a reaction time of less than 1 millisecond. The power converters are made by the Power Electronic Systems Division of ABB Industrie AG. ABB High Voltage Technologies Ltd supplies the medium-voltage switchgear and the energy accumulator.

ABB to supply switchgear to Abu Dhabi

ABB High Voltage Technologies Ltd, Switzerland, has been awarded a contract worth around US$48 million from *ADWEA (Abu Dhabi Water & Electricity Authority)* to supply three

gas-insulated switchgear (GIS) units to Abu Dhabi.

The three 220/33-kV GIS units are scheduled for delivery in 8 to 21 months and will be assembled on site. All three units are intended for Al Ain and its environs. This expansion of the high-voltage transmission network in Al Ain will provide power for a farm project.

Escon alliance wins Brazilian Pargo-Carapeba Injection Module

The newly established Brazilian Modification & Maintenance Business Unit, a joint venture of ABB do Brasil Ltda./Oil, Gas & Petrochemical and ABB Offshore Systems, has announced that an alliance formed by ABB and Escon (the Brazilian contractor) has signed an order worth approx US$27 million to install water injection systems on four Petrobras production platforms, located in the Campos Basin. Escon has assigned ABB a scope of work worth US$18 million, consisting of the management and engineering for the procurement of the main equipment and systems. Escon will be responsible for interfaces engineering, piping, structure and installation services. The project starts immediately, with a 14-month lead time and represents a major breakthrough for this Business Unit, which is only six months old.

World's first successful pressure measurement with a fiber laser

Mid-May saw ABB mark an important milestone in their sensing and instrumentation work with a demonstration of the world's first successful pressure measurement with a fiber laser.

A fiber laser is a short section of optical fiber which has been treated in a special way to enable it to behave as a miniature laser cavity. This very robust and accurate technology has the potential to solve many difficult measuring problems, eg high temperature-capable sensors for: pressure, temperature, flow rate, flow composition, seismic, etc. The technology is fully owned and patent protected by ABB. (See also *R&D Digest* section).

ABB wins US$100 million distributed generation contract

ABB has won a US$100 million order from *Scottish and Southern Energy*, a major utility in the United Kingdom, for ten combined heat and power (CHP) plants. ABB will build the natural gas-fired plants – small-scale units that produce both electricity and heat – over the next 18 months throughout the UK, and operate and maintain them for 17 years. The plants will be linked and remotely controlled and monitored using advanced IT systems to optimize load management across the national grid. ABB Financial Services arranged part of the financing for the contract.

Several of the plants will be used in greenhouse applications, where they provide electricity for lighting, hot water for heating and $C0_2$ to stimulate plant growth. Because the $C0_2$ is injected into the greenhouse rather than the environment, emissions are reduced considerably. ABB has built and operated similar greenhouse applications in the Netherlands. In Germany, Microsoft's new European headquarters will draw all its power from a CHP plant supplied and operated by ABB.

ABB in alliance to develop new Web solutions for pulp and paper customers

ABB is a partner in an alliance with PaperLoop.com, the on-line paper industry marketplace, to jointly develop a new kind of Web portal for the pulp and paper industry. This is part of ABB's strategy to develop new eBusiness solutions for enhanced customer value.

The development with PaperLoop.com is aimed at creating a new category of Web portal that goes beyond conventional transaction-only or marketing-only sites to put technical information databases online, offer consulting services via the Web and provide industrial software that customers can download or use directly online.

ABB is the first major supplier to the pulp and paper industry to take a stake in a third-party online marketplace. PaperLoop.com is the world's leading provider of information to the pulp and paper industry.

ABB awarded prize for innovative building systems in Tellus House, Helsinki

ABB Installaatiot Oy was responsible for the total technical solution for Tellus House in Helsinki, occupied by ABB since spring last year.

ABB's new office and parking building incorporates a number of new technologies, including a LON (Local

Operating Network – a control and information network) for managing the building's technical systems, a district cooling system and plasma lighting. Modularity makes the Tellus House flexible and easy to convert into new configurations, should the need arise. Thanks to the life-cycle thinking in its design, the Tellus House was cost-effective to build and will be economic to run.

The Tellus House (photo) is a modern, 10-floor building in an industry-intensive district of Helsinki. Notably, most of the building is designed for parking; the six lowest floors accommodate nearly 870 cars. The remaining four upper floors are devoted to office space that can be furnished to accommodate up to 700 employees.

Power electronics laboratory in China

Research and development of power components requires complex, high-performance facilities. ABB, together with the National Engineering Research Center of Converters (NERCC) and the Zhuzhou Electric Locomotive Research Institute (ZELRI), has constructed and outfitted a state-of-the-art test laboratory in the Zhuzhou Research Center in Hunan province, China. Such a test laboratory goes hand-in-hand with technical progress; power electronics have a wide range of application and any innovations or advances have, therefore, an impact on many different products.

Correspondingly, there are many tests which must be carried out by the manufacturer to demonstrate that these new products fulfill all safety and performance requirements. Included in these is the reaction of the products to high levels of voltage and current. Guides prepared by CIGRE and the IEC detail the tests necessary to confirm that the components will withstand calculated stresses under normal working conditions and given normal external influences. The test laboratory allows these operating conditions to be simulated.
Data which has been calculated for components and products can be confirmed by type tests. In addition, testing may be done on lab prototypes and special tests may be carried out according to customer wishes.

The entire infrastructure of the 450m^2 facility was conceived by ABB Industrie and put together by NERCC/ZELRI. It consists of four installations:

- High-voltage installation
- Impulse test installation
- Heating and overcurrent installation
- Combined high-voltage/high-current installation

The compact siting of the four installations means all testing can be performed in one place. A comprehensive suite of electronics handles data acquisition and processing. The proximity of the test laboratory to nearby development, construction and production facilities is particularly practical.

The new test laboratory provides an important tool to enable NERCC to support the development of new technological concepts, and thus better serve its customer base, today and in the future.