World's highest-rated superconducting fault current limiter

The new current limiter is the world’s first superconducting device to go into service in a power plant. The prototype was installed in the Löntsch hydropower plant, near Glarus in central Switzerland, in September 1996 for long-term performance monitoring under actual operating conditions.

Current limiters of this kind employ so-called ‘high-temperature’ superconductors which, unlike ‘low-temperature’ superconductors that have to be cooled to around 4 Kelvin, only require cooling to 77 Kelvin. The new current limiter has a system voltage of 10.5 kV and a power rating of 1 MVA.

Developed by ABB Corporate Research in Baden-Dättwil, Switzerland, the current limiter takes advantage of the unique ability of superconductors to transmit electricity without losses when cooled below a certain temperature and when the electrical current is below a certain threshold level. When a short circuit occurs, the electrical current immediately rises above the critical value, which effectively ‘shuts off’ the current limiter’s superconductivity. The resistance of the current limiter then instantly increases and dampens the current surge caused by the short circuit.

135-MW combined cycle power plant for Indonesia

ABB Power Generation, Switzerland, has been awarded a turnkey contract by the independent power producer PT Energi Sengkang to build a 135-MW combined cycle power plant at Sengkang in South Sulawesi. The contract is valued at over US$ 100 million.

PT Energi Sengkang is a joint venture of PT Trihasra Sarana Jaya Purnama of the Republic of Indonesia and the two Australian companies Energy Equity Corporation Ltd and Tenneco Holding Pty. It will supply power from the plant to the state-owned electricity company PT Perusahaan Listrik Negara (PLN).

Fuel for the plant will come from the Kampung Baru gas field, some 30 km away. The first phase of the plant, operating in simple cycle mode, is scheduled to enter service in August of this year, with full combined cycle operation beginning in August 1998.

ABB will supply two gas turbosets and one steam turboset, the heat recovery steam generators, the electrical generators and the complete power plant control system. In addition, it will supply a 150-kV switchyard and a 34-km power line to connect the new plant to PLN’s national grid at Soppeng, South Sulawesi. ABB will be responsible for the engineering, procurement, construction and commissioning of the complete plant, and also for its operation and maintenance during the first six years.

ABB signs order for ‘clean’ ice-breaker

ABB Fläkt Marine of Gothenburg, Sweden, is to retrofit catalytic converters employing SCR (Selective Catalytic Reduction) to the first in a series of three large diesel-powered ice-breakers of the Atle class owned by the Swedish National Maritime Administration. The total installed power is approximately 21 MW.

The order includes an option for similar systems to be retrofitted to two more ice-breakers, Frej and Ymer.

The catalytic converters will reduce NOx emissions from all ten diesel engines on the ship by 90 percent or more. Unburned HC and CO emissions will also be reduced by 70 percent.
World’s most advanced gas turbine test center opened

ABB Power Generation has built a new 6,000 m² test center in Birr, Switzerland, for performing tests and development work on components for gas turbine power plants rated to 450 MW (peak ratings of 600 MW).

Installed in the test center is the world’s largest gas turboset. Rated at 265 MW, it consists of a GT26 gas turbine and an air-cooled turbogenerator. Both machines represent the latest state of the art. The gas turbine can be fired either with gas or oil and operates with advanced, low-emission burner systems.

Powerful data acquisition and processing systems determine pressures, temperatures, etc at 2,000 measuring points on the machines in order to analyze and validate the machines’ operating behaviour. The data are transmitted online to the research and development teams.

The gas turbine was ignited for the first time on November 5, 1996, and two weeks later the gas turboset fed power into the public electricity grid. The test center was inaugurated on December 5, 1996.

The US$ 77 million test center at Birr represents a major investment in the future and underscores ABB’s commitment to technological leadership in gas turbine and combined cycle power plants.

Contracts worth US$ 200 million to equip nuclear power plants in South Korea

ABB Combustion Engineering Nuclear Systems, USA, has signed contracts valued at approximately US$ 200 million with the Korea Electric Power Company (KEPCO) to deliver nuclear reactor equipment to units 5 and 6 of Ulchin nuclear power plant, situated in Kyongbuk province.

Under the terms of the contracts, ABB will provide engineering design and components for two 1,000-MW light water nuclear steam supply systems based on an advanced version of its proven System 80+™, one of the world’s safest and most reliable nuclear systems. The two power plant units are scheduled to go into operation in February 2003 and 2004.

In addition to this order, ABB and KEPCO have collaborated in the construction of six other similar nuclear power plants for the country’s electricity supply grid.

Electrical equipment for 16 cranes in China

Bao Steel of Shanghai, one of the world’s largest steel producers, has placed orders with ABB Industrial Systems AB of Sweden for electrical equipment for 8 overhead travelling cranes and 8 grabbing cranes.

In 1995 Bao Steel ordered similar equipment from ABB Industrial Systems for a total of 38 overhead travelling cranes which have meanwhile been taken into operation.

Electrical equipment for cement mills in Egypt and Indonesia

ABB Industrie AG is supplying the complete electrical equipment for two new cement production lines in Egypt and Indonesia.

The first order, valued at approximately US$ 18 million, was received from the Egyptian Cement Company, Cairo. It is for the electrical equipment for the first production line of a new cement mill with an annual capacity of 1.3 million tonnes.

The second order, valued at about US$ 14 million, is from P.T. Indocement Tunggal Prakarsa of Jakarta, the largest cement producer in Indonesia.

480-MW combined cycle plant ordered by independent power producer in Turkey

ABB has received a turnkey contract to build a gas-fired 480-MW combined cycle power plant at Marmara-Engelisi, 100 km west of Istanbul, Turkey. The US$ 360 million order, of which the direct ABB share is valued at approximately US$ 320 million, was placed by the independent power producer Uni-Mar Enerji Yatirimlari A.S., Ankara, Turkey.
Uni-Mar is currently co-owned by the Marubeni Corporation of Tokyo, Japan, and Unit International S.A. of Brussels, Belgium.

The project will be implemented on a 'build, operate, transfer' (BOT) basis. The power plant is scheduled to enter service in 1998 and will be operated by National Power, a British electrical utility.

ABB will supply two gas turbotoses and one steam turboset, the complete electrical infrastructure, including the overall power plant control system, and the 380-kv switchyard. The two 165-MW ABB type GT13E2 gas turbines for the power plant will be manufactured in Kobe, Japan, by ABB’s joint venture company with Kawasaki Heavy Industries Ltd. (KHI). As main contractor, ABB is also responsible for the general engineering, design and overall project management.

**ABB wins 500-kV power line contract in the Philippines**

National Power Corporation (Napocor) has placed an order worth nearly US$ 90 million with ABB SAE Sadelmi, Italy, for the supply and construction of two overhead 500-kV power transmission lines in the Philippines. The lines will connect Labrador to San Manuel and San Manuel to San José, a total distance of 170 km, on the main island of Luzon. When completed, the two high-voltage interconnections will form an important part of the new electricity transmission grid currently under construction in Luzon. ABB will have turnkey responsibility for the project. The new lines are scheduled to be available for service by the spring of 1998.

**Electrical equipment for two cruise liners**

The German shipyard Meyer Werft in Papenburg has placed an order with ABB to supply the electrical equipment for the two cruise liners Superstar Leo and Superstar Virgo. Both of the ships are being built for the shipping company Star Cruises of Malaysia and are due to be completed in 1998 and 1999.

With a grt of 75,000, the liners will be among the largest passenger vessels ever to have been built in Germany. The ABB companies sharing the contract are the marine divisions of ABB Industriatechnik in Hamburg and ABB Industry Oy in Helsinki.

ABB is supplying the complete power generation plant, rated at 56 MW, the electrical propulsion system with two 20-MW drives, and most of the power distribution equipment for both of the vessels.

**Extension order for a combined cycle power plant in the UK**

ABB has received a turnkey contract valued at over US$ 270 million to extend the South Humber Bank power station in the UK with an additional 510-MW combined cycle plant. The order was placed by independent power producer Humber Power Ltd. The plant is scheduled to be in commercial operation by the end of 1998 and will be operated by IVO Generation Services, one of the partners to the project.

The contract is being led by ABB Power Generation, Switzerland, which will also supply two type GT13E2 gas turbines, the heat recovery steam generator, one steam turbine, the electrical generators and the overall plant control system. The power plant will incorporate ABB’s advanced combined cycle technology with low-NOx burners featuring high fuel efficiency, low emissions and reduced operating costs.

In 1994, ABB was awarded the contract to build phase one of the South Humber Bank combined cycle plant.

**Order for expansion of hot strip mill in Sweden**

ABB Industrial Systems AB of Sweden has been awarded a contract worth US$ 25 million by SSAB Tunnplåt of Borlänge, Sweden, to deliver, install and commission electrical, control and drive equipment for the expansion of a hot strip mill. The equipment being delivered includes two 22-MW synchronous motors supplied by cycloconverters, switchgear, transformers and static var compensation equipment as well as all the process control equipment.

After expansion, the mill will produce 2.7 million t/year of high-tensile steel.

![Rocket launching rig at sea](image)