



Cajamarquilla in Peru operates with ABB

BADEN-DAETTWIL, SWITZERLAND – When the owners of the Refineria de Cajamarquilla S.A. (RdC) decided to modernize and expand their plant in 1996, they turned to ABB for the necessary electrical and control expertise and equipment. ABB has engineered, supplied and installed a new and flexible control and data acquisition system for the facility, additional transformer-rectifiers, an expansion of the 30kV switchgear, filters for the new equipment in the cellhouse and a 30t induction furnace.

The Cajamarquilla plant is sited about 25 kilometers from Lima and 35 kilometers from the port city of Callao in an area strategically located near Perú's zinc mines, sufficient energy supplies, and excellent transportation routes. The refinery is owned by Cominco Ltd of Canada (82%), the Marubeni Corporation of Japan (17%) and its employees (1%).

Originally built to produce 100,000 tonnes per year of refined zinc, Cajamarquilla has adopted a two-phase expansion plan. The first phase (120K) resulted in the current annual production rate of 120,000 tonnes (1998). Phase II (240K) will double the size of the operation. Construction of Phase II is expected to start in 2000.



Electrolytic cellhouse



Beginning in the latter half of 1997, ABB engineered and manufactured a new control system as part of the 120K project. The overall project included de-bottlenecking of the sulfuric acid plant, installation of a new effluent treatment plant to meet environmental targets and expansion of the leaching/purification process. The new control system is enhanced with an ABB Knowledge Manager system to provide web technology based tools and solutions for optimized acquisition, organization and distribution of information to facilitate process, production and quality management at all organizational levels. The delivered Knowledge Manager has the capacity to also cover these aspects for the 240k expansion.

In order to ensure a smooth know-how transfer and local support, Asea Brown Boveri S.A. (PEABB) sent an engineer to Europe for six months. There, he received additional training in the ABB Advant Control Systems and participated in the detail engineering for the project.

In early 1998, PEABB installed the control system at RdC and commissioning and startup were carried out by a team of ABB engineers from Peru and Europe in spring of that year. The system went live in May 1998. Cajamarquilla maintenance staff received training in Europe on the operation, configuration, and maintenance of the system. Local operators were instructed after commissioning.

In designing this solution for RdC, ABB engineers took full advantage of the flexibility found in the new Advant Open Control System (OCS). This family of computer-based units and communication tools allows a powerful system of applications to be custom designed and yet still be flexible for later upgrades and revamping.

The system installed at Cajamarquilla includes an AC450 Advant controller with redundant CPU and bus communications, a Masterbus 300 (MB300), local S100 modules for digital and analog I/O's, and two OS520 operator stations, with one CPU and two monitors each, running under Advacommand software that allows the operator access to control and monitor field signals.

The MCC room is equipped with S800 remote I/O modules that receive signals from the instruments, motors and other devices installed in the field. These S800 modules communicate with the AC450 controller through the Advant fieldbus 100 (redundant) communication bus.

If necessary, RdC maintenance personnel can also use the installed capability to make on-line changes in the existing program through the ES130 Advant engineering station running Advabuild software. ABB ACS600 drives are integrated into the system using the AF100 communication protocol. An on-line analyzer has also been integrated. Using a MODBUS communication protocol, the analyzer collects information from the laboratory and displays it in one of the OS520.

The operators of Cajamarquilla are committed to sound environmental protection and safety. To ensure that the plant's waste water meets the standards for secondary use, an AC110 controller with an operator station running Advasoft for Windows was installed in the new RdC Effluent Treatment Plant (ETP) to monitor and control the signals coming from the plant. Two S800 remote I/O modules, installed near the controller and 1000 meters away, are linked to the AC110 by optic fibers. The ETP has ABB ACS600 drives working with 4-20 mA reference signals sent by the system. An additional AC110 controller in the furnace area is used to control its operation.



Purification plant

ABB Building Material & Mineral Industries, headquartered within ABB Industrie AG, Switzerland, offers solutions from products and systems up to complete electrification and control for the construction, extension and modernization of mineral processing facilities worldwide. ABB engineers, supplies, constructs and manages electrification from mine to market.