

Modernization of “Ebner” Furnaces control system

Customer: JSC “NF machinig plant”, Karaganda region, Balkhash

Technological Process Specification

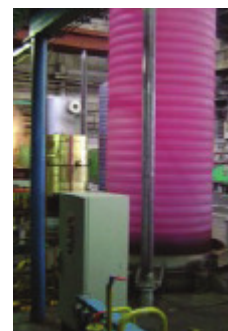
Bell furnaces HICON/H2 of Austrian firm EBNER, designed for intermediate and final annealing of nonferrous metal in inert gases sphere were bought by the plant in 1992. Till 2002 furnaces were on standby, furnaces were installed and implemented in 2002. Furnaces consist of eight stands; each stand consists of the foundation, a muffle (a bell closing annealing metal) of heating and cooling bells. The heating bell provides muffle heating, and inert gas (nitrogen and hydrogen) transfers heat from muffle to metal. The cooling bell has som cooling ways: muffle is refrigerated by forced air blow-off more than 200 Celsius degrees and muffle cooling is made by water low than 200 Celsius degrees. As a heating spiral of the heating bell it is used electric spirals, one bell with total power 320 kW. Power regulation has 2 levels: 33 and 100 per cent. Annealing temperature is from 200 to 700 Celsius degrees, annealing-cooling cycle time is from 5 to 28 hours.



All heating and cooling control, also gas and vacuum processing control were carried out by five controllers SIMATIC S-5 CPU115U, visualization of each controller was carried out at the individual device Monitor Panel MP12A of Siemens, and process registration was carried out by five six-channel loggers Sirec 2010 of Siemens. This equipment was discontinued the line and morally was out of date. And in connection with often breakdowns and lack of SPTA required package it was decided to reconstruct control system: to change 5 controllers SIMATIC S-5 CPU115U on two ones SIMATIC S-7 CPU315-PN/DP, to carry out process visualization and data registratgion on the basis of software package WinCC V6.2, to build control system with using ET200M.

Requirements to automation system

- It's necessary to save and extend operator's interface.
- To save blockings and emergency messages registration.
- To save annealing diagrams for eight desks during the month.
- To provide phased commissioning desks without long-time stop.





SOLUTION AND AUTOMATION SYSTEM CHARACTERISTICS

For received task implementation it was used two controllers SIMATIC S-7 CPU315-PN/DP, changed control program. On the basis of PC with using of WinCC V6.2 it was formalized control process visualization, also carried out annealing data registration, receipts and messages archive. Connection between controllers and decentralized circumference was carried out on PROFIBUS-DP, controllers connection with visualization was carried out by Ethernet.

Project implementation period

Project implementation period is 5 months, commissioning is December 2007.

