

Process Control System for Conveyor-type Sintering Machine OK-306

Customer: OJSC «Nothern Mining», Kryvy Rig

Tech. Improvements: «TOREX»Ltd, Ekaterinburg

Electric Project: JSC «Mekchanobrchermet», Kryvy Rig

Control System Project: «CSC-Automation»,Ltd, Kyiv

Purpose – The Control System intended for optimal control of the furnace burning process, air-gas ratio, heat recuperation, waste gases utilization in the process of iron-ore sintering by the conveyor-type machine OK-306.

SW / HW platform

- High-reliability redundant process controller Q-System (CPU type - Q25PH) from Mitsubishi Electric to manage a number of plain and cascade PID-loops.
- Distributed controller's architecture based on a remote I/O's and a redundant (dual) optical ring network MelsecNet/H.
- Developing Software «PX-Developer» with built-in functions for PID-loop's auto-tuning procedures (to find an optimal set-up parameters)
- High level Human-Machine Interface (HMI) based on the world first class «Citect-SCADA» visualization and control Software.

Further details

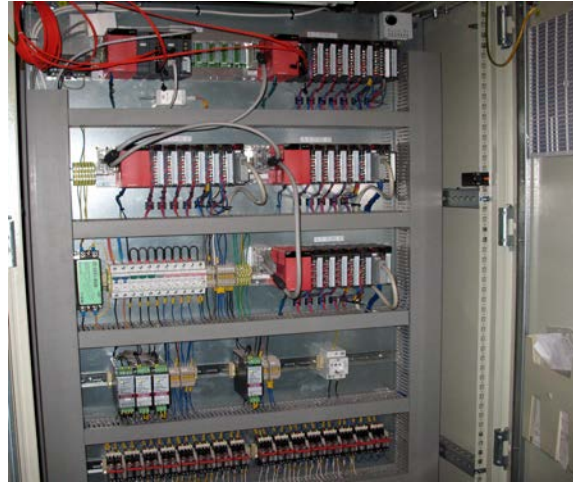
- Accurate measuring of gas volumetric flows by ITABAR in-depth probes and high-accuracy differential pressure transmitters Yokogawa.
- High-speed and heavy-duty actuators Limitorque (USA) for air / gas / waste gas control valves.
- Redundant control of PID-loops / actuators with PLC and individual Set-Up stations.
- Full redundant operator workstations based on PC.
- Industrial Optical Network with ring topology.
- «Read – only» access form MES/ERP-level clients

Control System Info

Analog Inputs	180
PID-loops	50
Digital Inputs / Outputs	200
Project developing duration	4 months
Putting into the operation	2008

Main results

- Gas fuel specific rate reduction from 19,0 to 15,5..16 q.m./ton due to a heat recuperation and re-arranging of an air /gas / waste-gas flows;
- Increasing production output from 235 to 280 ton/hour due to the thicker iron-ore layer on the conveyor and sophisticated drying and pre-heating procedures;
- Automatic optimal «air / fuel» ratio for multiple furnaces;
- Automatic supervisory programs «Slow Down», «Conveyor Runaway», «Emergency Stop and Backup» etc.;
- Generating of the Alarm and Event Lists, Shift / Day / Month Reports, Graphical trends, Archives etc.
- Improved ergonomics, modern HMI approach, full access to all current and archive process data, better production management.



ОАО «Северный ГОК»
Структурная схема АСУТП обжиговой машины ОК-306-1
(реконструкция, II этап)

