

Application Story

NEXCOM APPC 1533T-P20s Exercise Strict Control & Monitoring over Steelmaking Quality



The client attempted to add the remote monitoring function to its PLC-based control system but was deterred by vendor lock-in and costly system migration.

Overview

NEXCOM's panel PC-based softlogic controllers have replaced programmable logic controllers (PLCs) in a heat treatment furnace, seizing control of steelmaking processes and showing a firm grasp of processing status. By modernizing the heat treatment furnace with NEXCOM's panel PC-based softlogic controllers APPC 1533T-P20s, NEXCOM's steelmaking client is able to control and monitor the furnace operations in real time, shifting from passively responding to production issues to proactively engaging in heat treatment processes.

Challenges

Heat treatment is a series of heating and cooling processes which provide strength, toughness, and ductility along with other physical properties for steel and require precise control and real-time monitoring. However, the client's heat treatment furnace was a PLC-based control system which allowed batch process control yet kept processing information only onsite. If a temperature inside the furnace had exceeded a safety range, an operator would have received an alert and reported to process engineers and then to plant managers. The practice was out of date

and caused a few hours' delay in taking corrective actions. Therefore, the client needed an advanced solution to bring everyone on the same page at the same time.

The client attempted to add the remote monitoring function to its PLC-based control system but was deterred by vendor lock-in and costly system migration. On the quest for an economically feasible solution, the client has found NEXCOM's APPC panel PC-based softlogic controllers and revamped the system with 15-inch APPC 1533T-P20s through the help of Onx Control Systems.

NEXCOM's Solution

In a steel mill the APPC 1533T-P20 has taken control of a heat treatment furnace over PLCs. Connecting to existing remote I/Os over PROFINET communication, the APPC 1533T-P20 monitors the temperature, regulates it to a specific level by adjusting the amount of air inflow and outflow, and incorporates burner igniters to accelerate and decelerate temperature changes. Also the panel PC-based softlogic controller keeps gauging the furnace atmosphere and alters the mixture of gases accordingly with gas vales.



By modernizing the heat treatment furnace with NEXCOM's panel PC-based softlogic controllers APPC 1533T-P20s, the steelmaker is able to control and monitor the furnace operations in real time, shifting from passively responding to production issues to proactively engaging in heat treatment processes.

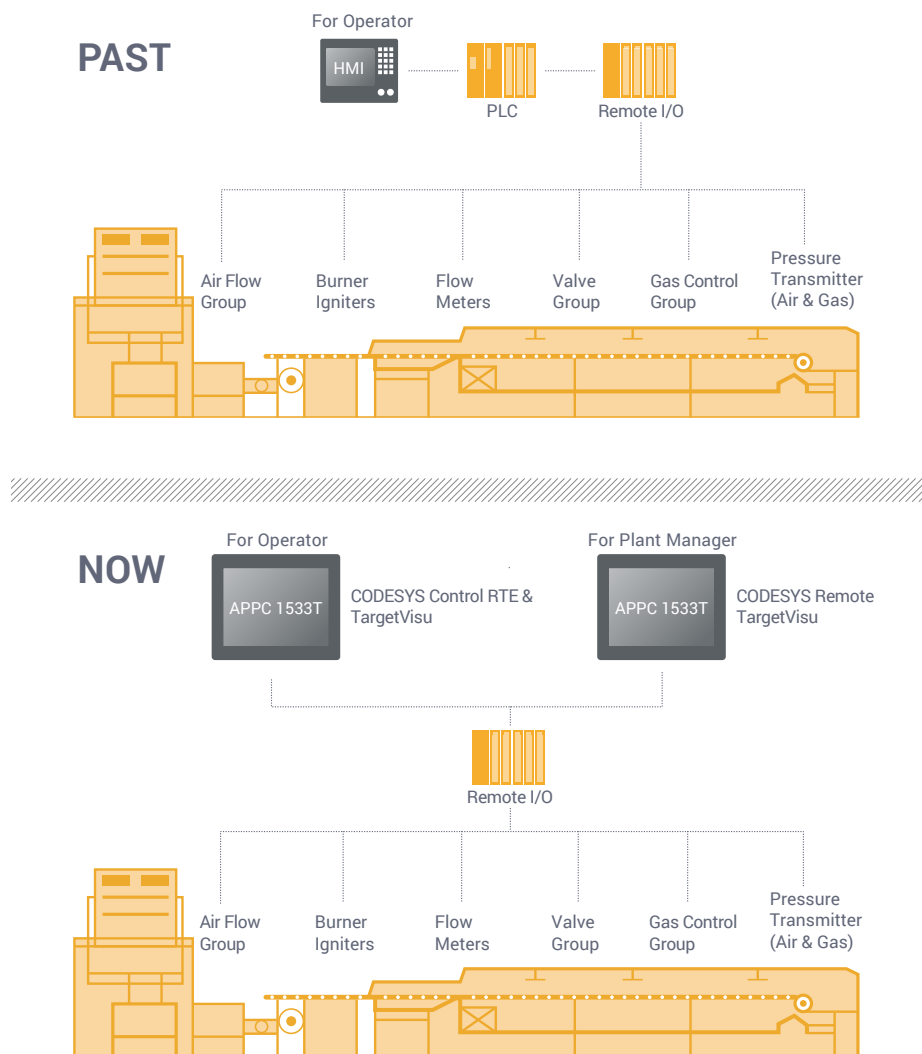
During the heat treatment processes, information including temperature, gas concentration, and valve status is displayed in real time on the 15-inch display of the APPC 1533T-P20 onsite as well as the APPC 1533T-P20 in a plant manager's office.

Solution Benefits

With NEXCOM's APPC 1533T-P20s, real-time information generated from the steel mill is sent to the office from which a plant manager can oversee temperature profiles and alarm events, identify and rectify abnormal temperature fluctuations that could affect the microstructure and quality of steel, and track and

analyze data trends for possible process optimization.

Moreover, the modernized system has a streamlined architecture supporting function consolidation and cross-vendor interoperability. In this project the onsite APPC 1533T-P20 running CODESYS Control RTE and CODESYS TargetVisu software combines controller and HMI functions that relied on separate hardware and works harmoniously with original SIEMENS remote I/Os so it can control and monitor meters, valves, and other instruments. Meanwhile, the APPC 1533T-P20 in the office runs CODESYS Remote TargetVisu to provide a live view of furnace status.





The Intelligent Systems

Founded in 1992, NEXCOM integrates its capabilities and operates six global businesses, which are IoT Automation Solutions, Intelligent Digital Security, Internet of Things, Interactive Signage Platform, Mobile Computing Solutions, and Network and Communication Solutions. NEXCOM serves its customers worldwide through its subsidiaries in five major industrial countries. Under the IoT megatrend, NEXCOM expands its offerings with solutions in emerging applications including IoT, robot, connected cars, Industry 4.0, and industrial security.

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Onx Control Systems (Oniks Kontrol Sistemleri A.Ş) has been established in Istanbul in May 2013. The founders of Onx Control have more than 10 years experience in Industrial Automation sector. The main concern of Onx Control is industrial automation systems so it mainly focuses on PC-based automation. Onx Control has been offered the completed solution packages to Turkish Industry that include Controllers (PC & PLC), AC & DC & Servo Drivers & Motors, and HMI. Within the wide local distributor & partner network, Onx Control has become one of main automation suppliers of Turkish industry.