



# BaoSteel Corporation Application Story

## RTP 2200 System in 2030 cold strip CM09 at BaoSteel Corporation

### Summary

During periodic maintenance at BaoSteel's 2030 cold strip CM09 color coating machine group, primary and secondary replacement ovens from the Stein Heurtey Corporation of France were scheduled for installation. Other replacement equipment included the incinerator, dry air supply and flue gas systems. After evaluating several industrial control systems from different vendors, Stein Heurtey and BaoSteel selected the RTP 2200 Hybrid Control System and Citect (Ci Technologies, Inc.) as the primary control system for the machine group.

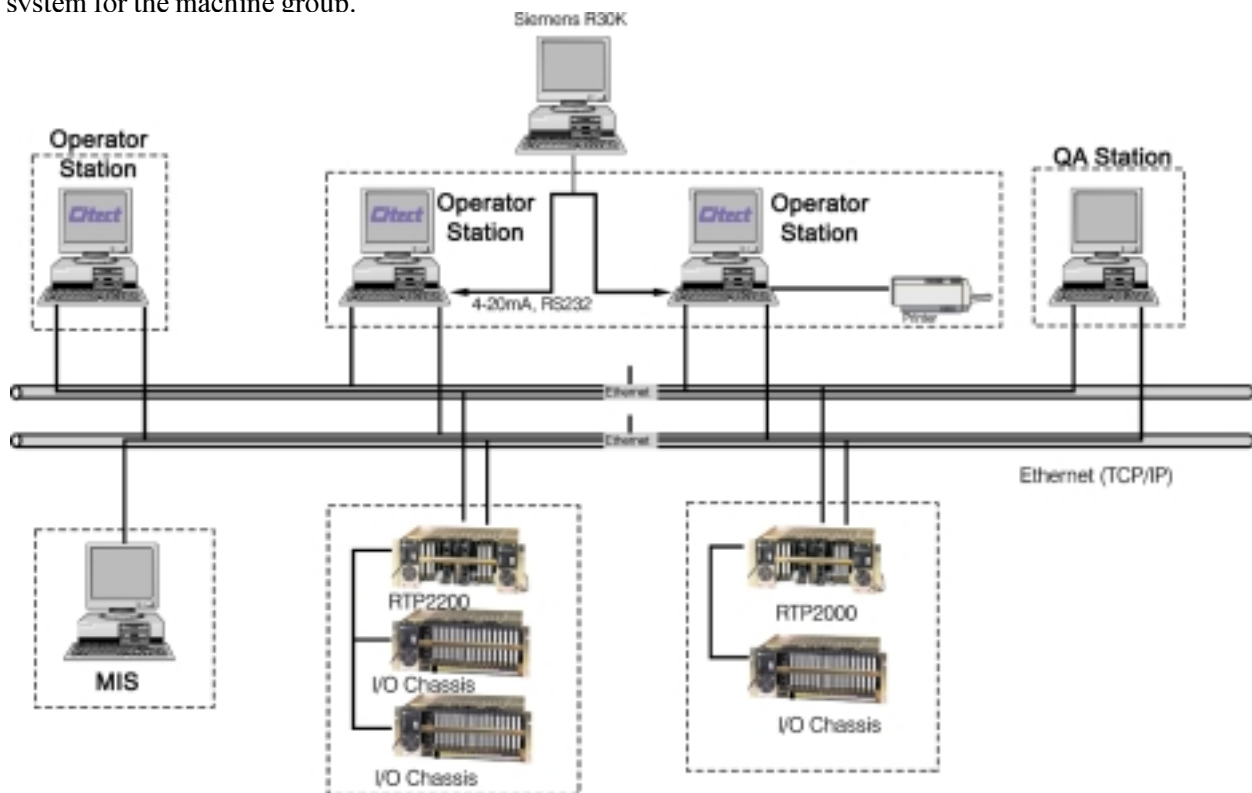


Figure 1 BaoSteel Corporation control system architecture

### 1. System architecture

The primary automation system includes two zones; each has a separate RTP controller, with 600 I/O points. Redundant target node controllers (RTP 2200) with four I/O chassis and 40 I/O cards are used in the instrument control station. Considering the critical nature of incinerator control, the RTP 2200 also contains redundant I/O cards. The electrical control station, which operates as a secondary control station, performs the interlocking and start/stop functions for motors and pumps. A single target node controller (RTP 2000) is configured, with two I/O chassis containing more than 20 I/O cards.

The instrument control station is located in the former lab facility and the electrical control station is located at, what was once, the electrical room. The distance between the instrument control and the electrical control stations is more than 300 meters. Each of the control stations is located more than 300 meters away from operator room. Fiber optic cables are used to connect the whole system.

Three Citect operator stations are used for both the instrument and electrical control stations. Two of the

operator stations are set up to function as the primary and secondary servers. The third operator station set up as a client. Another MIS (Manufacturing Information System) computer to monitor the plant process, and a QA (Quality Assurance) station for remote monitoring of product quality, are also connected to the Citect network.

A 20mA current loop interface (Siemens 3964R protocol) is used by the oven control system to communicate with the L2 Siemens R30K computer system at the cold strip department. These systems exchange information such as machine speed, coil number, steel depth and width, and oven/steel temperatures. The architecture of this system is shown in figure 1 on the previous page.

## 2. System functions

Control system functions include main process monitoring and controlling for the following:

### Incinerator monitoring and control

- incinerator pressure control
- incinerator temperature control and alarming
- incinerator ignition control
- incinerator gas and combustion air detection
- combustion air speed control

### Primary and refine coating oven monitoring and control

- oven temperature control (each section)
- steel plate temperature control
- oven ignition control (each section)

### Recycle air monitoring and control

- recycle air flow control
- recycle air temperature control

### Flue gas control

- flue gas flow control
- flue gas pressure alarming
- flue gas fan outlet pressure alarming

### Interlocks

- coating ovens interlocks

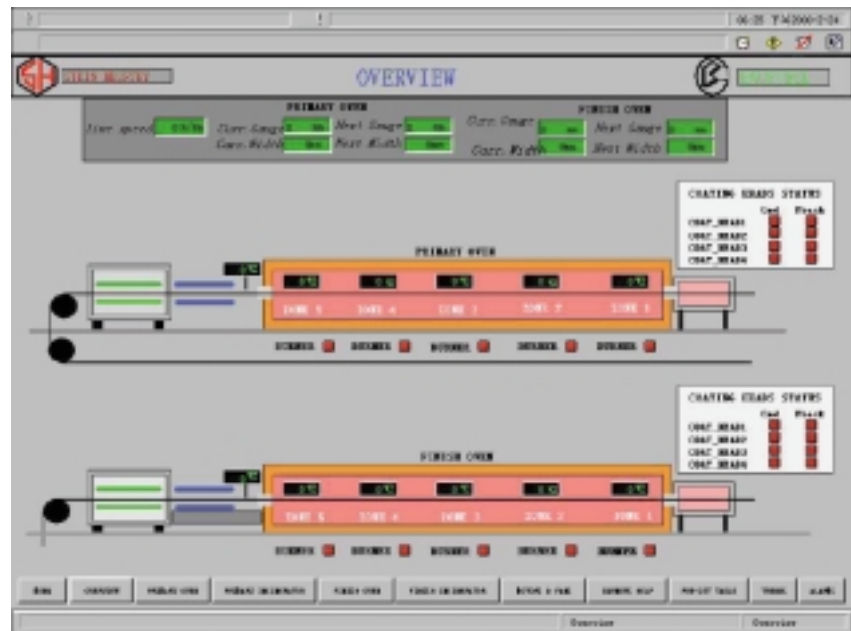


Figure 2 Process overview

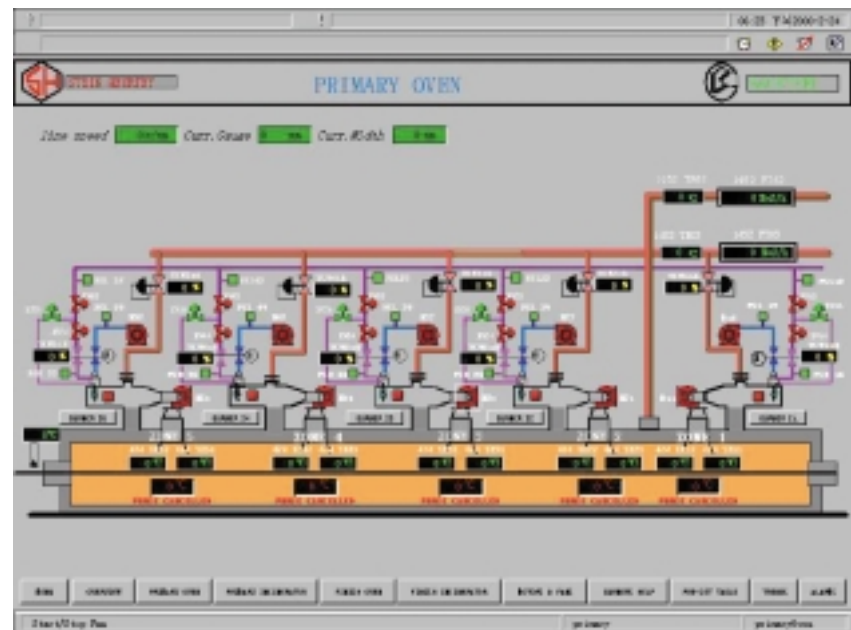


Figure 3 Primary oven control display

### System performance

A tight timetable was scheduled for the system installation and on-site tuning. Removing the old system, installing new system, and system testing was scheduled to be completed in only six weeks. The project began on January 6, 2000 and was completed February 20, 2000. The entire system overhaul was successfully finished in only 40 days. The stability, flexibility of configuration, fast system response time (less than 100 milliseconds), and fast analog sampling rate (50 samples/second) of the RTP 2000 and 2200 Hybrid Control Systems impressed site engineers. The RTP systems have demonstrated in practice that it is an easy to use, easy to configure control system with high performance, robust hardware, and is suitable for industrial automation in metal, chemical, and utility industries.

Because of the high network performance of Citect software with the RTP Hybrid Control System, the old system remains connected to share process data to help manage the entire plant.

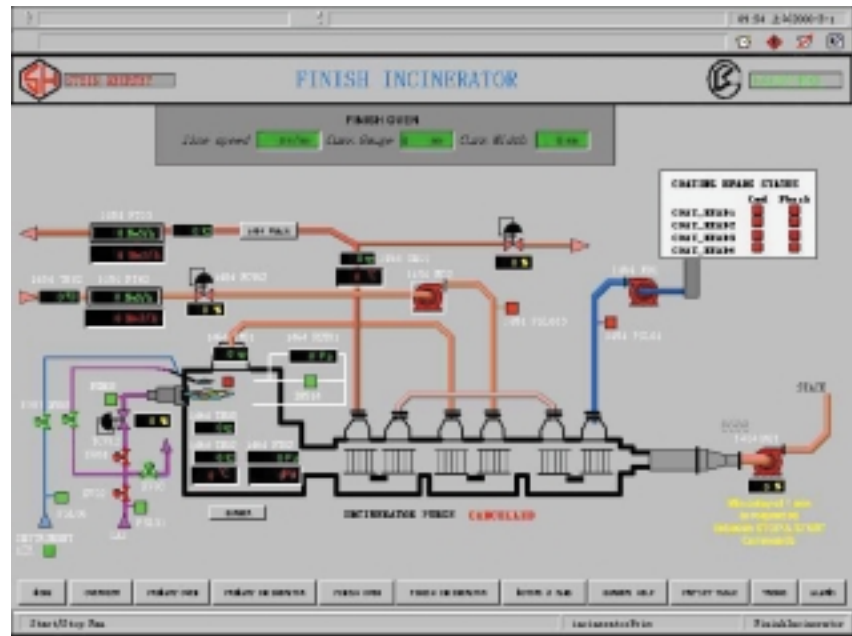


Figure 4 Finish oven incinerator control display