



A Rockwell Automation Company

IPSCO Automated Control System Upgrade

The Client:

IPSCO is an international company engaged in the production and sale of steel and secondary manufactured steel products. The Calgary operation is comprised of two separate facilities: an ERW pipe mill and a pipe finishing plant. The mill, with its heat

treating facilities, is capable of producing oil and gas well casings with diameters from 4½" to 10¾". Annual capacity is 205,000 metric tons.

The Requirement:

To incorporate several Allen-Bradley PLC 2 processors and one Allen-Bradley PLC 3 into a multiple Allen-Bradley PLC 5 processor configuration. This was to be performed using an ICOM PLC 2 to 5 automated conversion package and manually translating the PLC 3 logic into the PLC 5 format. Once this was completed, both programs were combined into a single Allen-Bradley PLC 5/60 processor to look after the entire mill line. Several problems were encountered with this undertaking, but were successfully overcome resulting in an optimized system that is less cumbersome for maintenance to troubleshoot making down time less of an issue. The

finishing line was also optimized in the same manner, utilizing another PLC 5/60 processor. A new PLC 5/60 was then installed onto the back end of the finishing line to handle the weighing, measuring and tagging of the finished product. Once this task was complete, a common Data Highway was installed providing a single connection point for all processor monitoring and program editing. Hinz then worked in conjunction with IPSCO on starting up their new pipe tagging and tracking computer system which inventories and tags all pipe throughout the plant.

The Design Solution:

The biggest challenge of this undertaking was to ensure that scan times of the new processors would not impact the operation of the existing time-sensitive operating process. This was partially accomplished through the elimination of old 1771-IK modules and replacing them with new 1771-VHSC cards. Multiple scans of various program directories at optimum periods was also required. The PLC 2 to 5 automated program conversion does not convert math instructions properly and care had to be taken to ensure the old BCD values were changed to integer numbers. Values that are stored in registers and are not hard coded will not be brought over when importing the program files.

Care had to be taken to capture these so that zeros would not be placed in these registers and fault the processors. The majority of the process changeover was completed during plant maintenance days and testing was restricted to short periods around plant shutdowns. To ensure a minimum of interference with production, new PLC 5 programs were tested in off hours with reinstalled PLC 2 processors operating during production until all conversion issues were resolved.

