StoneCo of Michigan selected Etheridge Automation to implement automation for their Newport, MI quarry. StoneCo had a 10+ year old PLC based automation system that had become increasingly maintenance intensive and difficult to obtain replacement parts. The legacy system still required the operator to control the plant feed and make major decisions on plant operations. StoneCo was looking to improve the plant performance with the new automation system by incorporating feed controls and limiting operator dependence. Etheridge Automation has been automating rock quarries exclusively since the early 1980's. Stoneco liked their control system's flexible interlocking features, feeder controls and their aggregate industry experience.

Etheridge Automation has developed an aggregate processing automation system that is modular in nature and can be scaled for the various sizes and configurations of aggregate plants. At the core of the Etheridge Quarry Information Management System™ is a SoftPLC programmable controller that communicates over Ethernet to the control room PC. Wonderware Intouch 10.0 is used for the HMI. Etheridge uses SoftPLC because of its reliability, ease of use, processing power and flexibility.

Process Control

At the StoneCo Newport Facility, Etheridge Automation installed controls for the Primary and Secondary crushing plants to control all operating equipment and the plant feed. In the Primary plant, the SoftPLC control system increased the production capacity by 20%, allowing the plant to cut the operating time from 10 hours per day to 8 hours. Additionally, major downtime events were greatly reduced, increasing the plant availability.

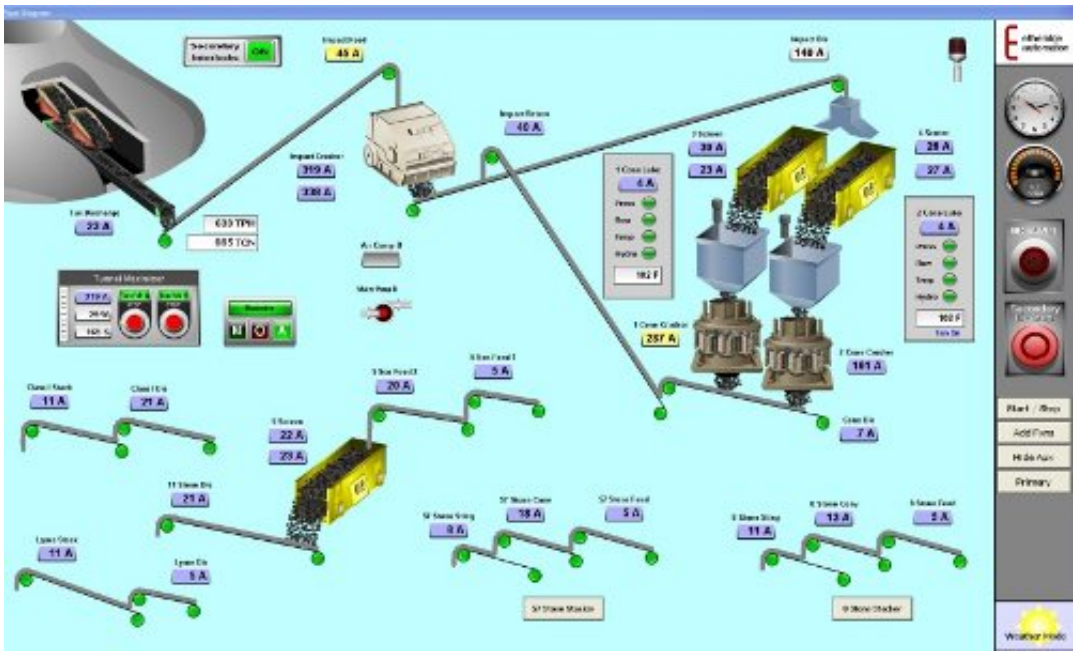
In the Secondary system, the plant capacity was limited by the performance of the screens, therefore increased tonnage throughput was difficult to achieve. The improvements in the Secondary plant were realized in the increased uptime and more consistent product quality. The automated feed controls anticipated and reacted to changing operating conditions and prevented major downtime events, thus improving plant availability.

Another major benefit was the flexible nature of the Etheridge equipment interlocking features. The plant makes significant changes to the equipment layout every few days to accommodate the different blend of products being produced. With the legacy PLC, the interlocking of the equipment could not adjust to the new arrangements so the equipment was left un-interlocked and the operator had to detect and respond to any problems.

With the Etheridge system, the equipment interlocks could be changed quickly with the click of the mouse in the HMI. This flexibility allowed protection for the product conveyors that had not previously been available. Having this interlocking in place, along with Software Speed Switches™ on the product conveyors prevented hours of downtime that would result from belt slippage and motor failures. Previously,

when these belts would fail they would have to be shoveled off by plant employees. By preventing these failures, not only was downtime reduced, but employee safety was improved.

The PLC control system incorporated a SoftPLC CPU in the Secondary plant with a remote rack in the Primary plant. The communications between the racks was accomplished with SoftPIPE, which is a very reliable 5MB remote I/O network built into the SoftPLC CPU.



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