



SeQent Automotive Case Study

Real-Time Visualization – Supports Lean Plant Floor Strategy

Situation

In a new large engine manufacturing facility in southeast Michigan, an innovative production environment was created to produce multiple engines for the latest vehicle models. This environment presented many problems, for which a real-time visualization and OPC solution was perfectly suited to resolve.

Several machine and tooling manufacturers were involved in producing the machines that manufacture the engines at this facility. Selecting the optimal manufacturer for each machine component meant numerous control technologies were introduced. Each machine manufacturer used different programmable logic controller (PLC) and human-machine interface (HMI) technology to manage their machines. The diversity of control and HMI systems made monitoring the process very difficult.

Results

Without a plant-wide HMI in place, the goal was to monitor the plant using an advanced Andon system for visual display. Using large-scale light-emitting diode (LED), Andon display boards hung in key locations around the plant, any operator could determine the machine status of each machine in an instant. Finding a method to obtain the status data was mandatory. A solution was introduced, which could extract the machine status values from all of the different control and HMI systems. By utilizing OPC drivers from various vendors—as well as the Marquee Manager Gateway for OPC and Marquee Manager Server from SeQent - the Andon system was easily implemented and culturally adopted by most if not all plant workers.

The Marquee Manager Gateway for OPC component performs data collection using OPC and applies business rules to the collected data. Upon finding a business rule exception, marquee messages are dispatched to the Andon displays using the Marquee Manager Server software product. This lean manufacturing Andon solution negated the need for an expensive plant-wide data collection system to monitor the process.

With standardized status data collection using OPC, machine pre-testing was easily accomplished by installing OPC drivers and the Marquee Manager products on notebook computers. Company engineers visited each of the machine manufacturers' facilities and confirmed status work validation prior to machine delivery to the final facility. This pre-testing of the machines ensured that the actual Andon installation on site took minimal time.

With the machines arriving on site weekly and the Andon boards already hung in the plant, machines were added to the Andon monitoring system on a daily basis. This Andon system made it effortless for the machine integrators to test their machines prior to the installation. Many test scenarios could be executed with a visual display confirming operation.

Benefits

The benefits this implementation provided this facility include:

- Improved Quality
 - Less rejected parts
 - Early warning detection
- Productivity
 - Increased throughput
 - Fewer resources required
- Employee Motivation
 - Ownership
 - Accountability
 - Plant wide visibility - Ensuring standards and consistency

