Benefits of a Manufacturing Execution System

Overview

Manufacturing automation consists of four layers: the physical equipment, SCADA and HMI's, MES, and ERP. Each of these layers play an important role in the manufacturing process. MES acts as a middleman, pulling data from the plant floor and providing it to the ERP system and management personnel.

The Challenge

This particular MES system was originally developed as a pilot for one line at one plant. Since then, the system has been expanded to about ten lines across two plants. Additional expansions to other plants are also being planned.

The Avanceon Solution

This project used Wonderware System Platform as its core software platform with additions of the MES components (Operation, Performance and Quality). Wonderware System Platform's object oriented nature allowed for easy development and rollout to additional lines/plants.

Some of the key components that make up the MES system include:

InTouch

An InTouch application was developed for the operators to use. Screens allow the operators to start and stop work orders, enter quality data, view equipment downtime, and see real time KPI metrics.

KPI's

Key performance indicators such as OEE, PEE, Quality, and Utilization are calculated using production data.

Reports

A handful of reports were developed to provide key data to management. Examples of reports include:

* Shift Summary | * Equipment Downtime | * Sample Data

Downtime

Equipment utilization is tracked on a per entity basis. This data is used to analyze why and when equipment goes down.

Work Order Management

Work orders are generated by SAP. The MES system interfaces with SAP and processes work orders which are used to track production.

Product Changeover

Changeover time is required when a line switches the product it is producing. A custom changeover feature was developed to allow the MES system to handle this process.

The Result

MES systems supply critical data to plant personnel, including:

Operators

The operators on the plant floor are the end users. The implementation of MES allows them to run work orders, track production, and take samples, eliminating the need for paper work.

Supervisors

Plant supervisors are able to monitor the activities of each line in real time without having to physically move from line to line. Supervisors can monitor the details of all operations from an office, or even remotely.

Quality

The quality department is responsible for maintaining sample specification data. Through the use of Wonderware MES, this data management is performed and specifications are saved electronically, eliminating the need for paperwork.

Executive Management

One of the biggest benefits of MES is that it provides management with the data to make informed decisions. Reports, dashboards, and other tools can be used to analyze operations both at a macro and micro level.

Conclusion

MES is not just for one group of people. Personnel at all levels of the plant can greatly benefit from this technology. MES allows operations to be streamlined and provides key data to management, increasing production efficiency.