



GLOBAL PLASTICS MANUFACTURER

AUTOMATING THE “AUTOMATED GUIDED VEHICLES” WITH SAP® MII

QUICK FACTS

Company

- Industry: Plastics
- Products & Services: consumer, cosmetic & pharmaceutical packaging
- Implementation partner: RTS Consulting Inc.

Implementation Highlights

- Close collaboration with RTS Consulting, an SAP Partner.
- Phased, facility-by-facility implementation.
- Uniform reporting c/w ERP updates from various plant systems.

Challenges and opportunities:

- Moving the plastics manufacturer's personal care containers production operations to a different location, helping decrease transportation costs to current customers.
- Acquisition of former plant.
- Pilot implementation of Automated Guided Vehicle system.
- Improve the resource planning process and visibility into daily injection molding production, as well as component assembly processes.

Why SAP:

- Integration with SAP ERP Application.
- Interactive user-interface, role-based implementation.
- Real-Time, bidirectional communication with plant equipment.
- Bidirectional communication to warehouse system serviced by Automated Guided Vehicles.
- Highly configurable solution that meets individual manufacturing facility needs.

Objectives:

- Real-Time insight and control of the production operations at various levels: corporate, plant, department, equipment.
- Automatic production reporting completely eliminates the manual MRP process that was previously in place.
- Interfacing to the new warehouse management system involving a pilot project of dozens of AGV's.
- Provide operators, planners and managers with accurate real-time information using common interactive dashboard interfaces deployed across the enterprise.
- Creating an enterprise-wide data repository for Injection Molding Machines configuration.

Benefits:

- Reliable planning, production order management, operational data, enterprise wide KPI's
- Continuous monitoring of equipment and production parameters, streamlined maintenance response.
- Manual MRP process eliminated, re-keying production order confirmations in ERP eliminated.
- Automatic integration to warehouse management, goods movement, in-process quality forms.
- One-Click distributed label printing at operator request, shipment process control and dock monitoring.

Existing Environment

- SAP ERP application

FACING THE LIMITATIONS OF LEGACY SYSTEMS

The primary goal was to select and implement a real time shop-floor data collection system that enables automated reporting of production to SAP, thereby eliminating the manual reporting and recording of information into SAP and the associated non-value added costs. In addition the solution provides for both improved accuracy and timeliness of production reporting.

That's the power of the SAP Manufacturing Integration and Intelligence (SAP MII) application. SAP MII solves the disconnect between the plant floor and the enterprise business systems. It enables you to become an adaptive manufacturer, profitably replenishing your supply network while dynamically responding to unpredictable change.

The Shop-Floor hardware currently used at this plastic manufacturer is very diversified in terms of models, makes and age. The production data parameters were stored in various locations, and historical data was limited due to machine type and connectivity issues. All data was aggregated into daily production reports on a shift by shift basis, and then reviewed by several employees at the management, operator and technologist levels to verify accuracy. Upon completion of the manufacturing shift, the information recorded on the MRP cards was verified and entered in SAP to report production activities during the shift. This was a lengthy manual process due to the paper based MRP card system that was currently in place at each facility. The requirement for an industrial grade data historian at each location was deemed a top priority, due in part to the FDA requirements for the products that were currently manufactured for medical use.

Company wide, production order scheduling and routing is performed with the corresponding SAP ERP module. Separate orders are created and followed for molding and/or assembly divisions in each plant. Prior to the implementation of SAP MII, there were no means of automated data transfer between the ERP system and the shop floor work centers.

The plastics manufacturer's team immediately saw the suitability of the SAP MII framework to their operations, providing a direct connection between shop-floor systems and business operations. By establishing connectivity to various existing hardware and software, MII ensures that all data that affects manufacturing is visible in real time – including information about orders, materials, equipment status, costs, and product quality.



CHOOSING AND DEPLOYING THE RIGHT SOLUTION

To lead this initiative, the global plastics manufacturer engaged RTS Consulting Inc. with up-front goals to establish real-time production transactions and reporting metrics, the implementation team leveraged SAP MII technology along with the company's proven tools and process templates to deliver a world-class solution.

RTS Consulting worked with the manufacturer's project team to establish a shop floor baseline with a specific focus on production order confirmations. Starting with the first plant, the SAP solution leveraged the RTS Consulting MII templates to implement a solution over a 10-week period. The final solution integrated various shop floor hardware from bar-code printers, operator interface stations, injection molding presses, automatic assembly equipment and Automated Guided Vehicles with SAP MII, to seamlessly consolidate warehouse, machine and user information into a single application.

Real-time confirmations for production orders and goods movement are verified by shop floor operators using interface stations directly into SAP, while providing additional shop floor metrics around overall equipment effectiveness (OEE). Measurements around estimated versus actual work center run rates and box count reports are accessible on demand by operators and supervisors. The Shop Floor Project was then ready to be expanded to the other plants, within the same MII architecture and framework.

PROCESS MONITORING WITH VISUAL REPRESENTATION OF THE CURRENT STATE OF VARIOUS MANUFACTURING WORK CENTERS

While dashboards and portal technologies alone do not deliver actionable intelligence, these tools do provide a necessary base for visibility, as well as a launching point for event based triggers and alerts. Through enabling a portal view into processes as they occur, and monitoring events or drilling down into areas of concern, one is taking a proactive view of manufacturing using the tools that look beyond symptoms to provide the details to enable the root cause analysis. Visibility, whether gained through portals, dashboards or alerts delivered to wireless devices, easily triggers corrective or preventive actions when necessary.

MACHINE SETUP TIME REDUCTION BY ALLOWING FOR SETUP OPTIMIZATION BASED UPON PRIOR GOOD RUN PARAMETERS USED IN THE MANUFACTURING PROCESS

Part of the power of any automated system is the data that is exposed by accurately and efficiently monitoring and logging plant floor information. More than two million combinations of product – work center specific datasheets become valuable when they are correlated to the manufacturing events (shift change, order change, system alarms etc.) and only if this correlated data can be extracted and distributed to enterprise-wide personnel in the form of intelligent actionable alerts and easy to manage reports. Special care is considered in choosing the equipment so that scalability, openness, support and at last but not the least cost, was within the acceptability levels considering enterprise wide implementation and/or deployment.

INTEGRATING ADDITIONAL FUNCTIONALITY AND CONNECTIVITY TO LOGISTICS EXECUTION DEVICES, SUCH AS AUTOMATED GUIDED VEHICLES

With SAP MII and the AGV system, on-time shipping is tremendously better than it used to be for a variety of reasons. For example, SAP MII enforces new disciplines that are essential to delivering complete orders on time; Data quality is enforced with automated checks, keeping processes supported by SAP ERP running optimally. The loading docks and all the AGV units are now monitored constantly giving workers a real-time inventory overview they never had in the past.

LOOKING AHEAD

Due to the successful implementation, the global plastics manufacturer remains committed to the SAP MII platform and is now looking to implement the RTS Consulting Energy Management Information System (EMIS) solution. This will allow the manufacturer to make further continuous improvements that will align its configuration and use more closely with the company's business practices. Leveraging on the existing infrastructure, and building on the SAP MII flexible platform, key real-time, actionable information about energy use and cost reports are planned in the near future. This information will be used from the shop floor to the top floor to drive strategic decisions that increase energy efficiency, decrease environmental impacts and lower production costs.



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