

Summary

Company success is only achievable if all responsible employees receive important key performance indicators and critical information right in time. These KPIs can be used as a strategic planning instrument and also to manage daily operations by using the transparency they offer. Our client is aware that, if they want to increase performance, they have to increase the efficiency of their production processes. Increasing efficiency means to avoid wasting resources. To measure efficiency with a Manufacturing Execution System (MES) means to acquire productivity, machine utilization and quality information and analyze them under business economic aspects.

Therefore AGCO decided to introduce Apriso's FlexNet solution as an integrated Manufacturing Execution System into AGCO SAP System. For the pilot project the clients' brand new component manufacturing hall was selected. Lodestones MES team developed a customized fully into SAP integrated solution.

Outcomes

- Automatic gathering of:
 - Full information about machine status and errors on more than 50 machines.
 - Various sensor values.
 - Information about parts produced.
 - Information about scrap quantities and reasons.
- Classification of machine down times.
- Delivery of unified and specialized KPI's easy to interpret on all levels (company/ factory/ hall/ machine).
- All order details accessible and manual inputs done on a terminal installed on the machine.
- Information about overall situation on shop floor provided by a production overview.
- Automatically generated reports sent via electronic mail.

Objectives

- Automatic gathering and analysis of production and downtime signals in order to have a standardized and objective data basis of the production process.
- Transparency of machine downtime reasons to trigger the continuous improvement process and increase machine performance.
- Simplification of
 - Plant maintenance processes by providing detailed machine indicators.
 - Machine investment decisions by providing specific KPIs like Overall Equipment Effectiveness (OEE).
- Quality improvement/ scrap prevention.
- Limit usage of papers in the production process.

AGCO company story

With roots firmly established in the farm equipment industry, AGCO has a brand heritage reaching back to the mid-1800s. AGCO was established in 1990 with the purchase of Deutz Allis Corporation from German-based Kloeckner-Humboldt-Deutz AG. Since that time, AGCO has become a worldwide farm machinery company through market growth, strategic acquisitions and cutting edge agricultural solutions.

As a leading global manufacturer of agricultural equipment, AGCO offers a full line of tractors, combines, hay tools, sprayers, forage and tillage equipment, which are sold in more than 140 countries worldwide through one of the largest distribution networks in the industry and are led by four core brands: Challenger®, Fendt®, Massey Ferguson® and Valtra®.

Technical diversity, multiple brands, and global distribution strength are the keys to AGCO's growth strategy. With generations of brand experience AGCO continues to provide innovative, high-quality farming solutions around the world.

AGCO Globe Core MDA/PDA project

Lodestone started in April 2009 with the Globe Core program to implement an SAP ECC and FlexNet based solution in the component manufacturing area of Fendt - AGCO's most successful brand - based in Germany.

The MDA/PDA project was part of the program and focused on a pilot data recording system for the more than 50 machines in the new manufacturing hall. Processes and workflows within this manufacturing hall have been optimized according to lean manufacturing principles and a system solution was designed and implemented to support the workflows. In this framework the chance was taken to also have a system implemented that significantly enhances the acquisition of machine data (MDA) and production data (PDA) and delivers Key Performance Indicators.

Initial situation

- Information gathering required checking machine by machine and storing information in paper form.
- Machine statuses were not unified nor precisely defined.
- Problems with calculation of machine real production time.
- Down time duration and reasons as well as scrap reasons were captured manually (paper work)
 - High work effort and delays in information delivery.
- Not all downtimes were registered and classified.
- KPI's were not precisely specified
 - Not all machine statuses were recorded.
 - KPI's from different machines were hard to compare.
- Order details and work instructions were delivered in paper form.
- There was no overview of current situation on the shop floor available (which machines are working, which are in downtime or error).

The Solution

A series of workshops with business process owners was accomplished to gather key requirements, identify main issues and define business flows. During 12 months of project work a complete, integrated solution was designed and configured. The solution consists of two parts: Machine Data Acquisition and Production Data Acquisition.

Both solutions can be used as templates for future rollouts. Standardization in machine statuses reporting and status classification allows comparing all machines and different segments ensuring that all KPI's will be normalized and comparable between different factories. The biggest advantage of the MDA solution is the possibility of linking different types of machines and plcs. The PDA solution is linked directly to production order execution. Responsible for scrap classification and order information gathering, the PDA solution helps improving quality and reduces delays in information delivery.

Based on client requirements the following modules were built:

- Shop floor screens - gathering/ displaying production data.
- Work instructions and order details accessible from terminals.
- Machine data overview – easy way to access all information gathered by the system.
- Production KPI's – automatically calculated.
- KPI dashboard – KPI presentation with a drilldown functionality for downtime reasons and scrap reasons.
- Shop floor overview–machine statuses monitored in real time.
- Automatic report framework–sending automatically generated reports via electronic mail.
- Archiving of historical data.

Reporting

We could achieve clear improvements in data structure and consistency and enhance the reporting process by automatically generated reports and the facilitated delivery of KPI's. The MDA/PDA solution offers a single point of truth approach by applying the same basis for OEE calculation for all machines.

Cost savings

Due to the extensive automation and better reporting capabilities the productivity of the manufacturing team could be increased significantly. Furthermore future investment decisions are based on a solid productivity reporting basis.

As the project was very successful AGCO decided to continue with the implementation of the system for all machines in the entire component manufacturing area of Fendt.

Lodestone received excellent feedback from Hans-Bernd Veltmaat, Senior Vice President of Manufacturing and Quality: "This is the smoothest go-live I have experienced in my career. It looks like we have developed a solid basis for our future projects."

Thomas Müller, MDA/PDA Project Manager

"Lodestone's experience in the automotive sector, a committed and qualified team and the excellent cooperation contributed to a successful implementation of a system that allows us for more transparency in our daily shopfloor management and enables us for continuous process improvements."

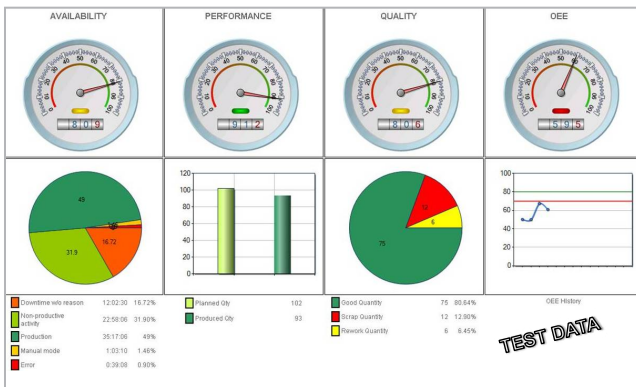


Figure: AGCO KPI Dashboard

The Benefits

Manufacturing operations

We could realize an extensive automation of all information flows within the component manufacturing area while increasing transparency and reducing error rates.

The solution contributes enormously to the company's internal continuous improvement program, by delivering automatically the top downtime reasons to the shopfloor management team.

Lodestone Contribution

Consulting Partnership

Lodestone was the chosen consulting and implementation partner for this program and played a leading role throughout all program phases.

Project Management

Lodestone was engaged in multiple Project and Integration Management roles responsible for various functional team leaderships, hands-on delivery of solutions from blueprint to post-go-live support, planning and managing of data migration and cutover activities, providing ABAP and other technical services for the project on site and near shore.

Pilot Design and Implementation

The pilot MDA/PDA project was managed and supported intensively by Lodestone. This includes the support of business processes as well as the implementation of a combined SAP and FlexNet solution.

Why Lodestone

Lodestone was chosen because of its deep automotive industry, technical and functional expertise combined with its well proven program management methods enabling AGCO to realize business value with minimum risk. Extensive experience coupled with high quality standards provided the foundation for a successful partnership with Lodestone on this project.

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