



OEE Improvements at Lavazza

With the easy-to-install and easy-to-use Overall Equipment Effectiveness (OEE) measuring system, Lavazza and Bosch have strengthened their relationship. The ultimate goal is to maximize the OEE of coffee packaging lines through a continuous improvement approach.

Plant Operating Time		
Planned Operating Time	Planned Maintenance	Planned Downtime
Operating Time	Availability Losses	Breakdowns, Idling
Gross Production Time	Performance Losses	Reduced speed rate
Net Production Time	Quality Losses	Scrap, Reworks
OEE = Availability x Performance x Quality		

Overall Equipment Effectiveness

The term Overall Equipment Effectiveness takes into account the most common and significant sources of manufacturing productivity loss and organizes them into three classes: Availability, Performance and Quality. All three factors, and OEE itself, are generally expressed as percentages, allowing for ease of comparison and improvement measurements.

In 2005, Lavazza and Bosch started a joint project called Valued Added Maintenance, which gives daily support to Lavazza to increase the productivity on its coffee packaging lines. The support includes modernizations, overhauls and the permanent presence of embedded engineers and OEE consultants. During the project, the necessity for real time monitoring of the lines' performance became evident and OEE was chosen as the agreed performance indicator. As a result, a measurement system was required to retrieve all machine and production data from the packaging line. Bosch selected MRM as an independent partner to provide the OEE measuring. The data is used to gauge the success of the project. It also provides the starting point for improvement oriented discussions as well as allowing the construction of performance based compensation models.

OEE Measuring System

The OEE measuring system is composed of simple hardware modules, which are compatible with all types of controllers.

As a result, third party equipment can be linked to the system (see Figure 1).

Profibus, hardware signals or an existing ethernet network can be used to exchange performance data. All machine statuses, alarm messages and counters are transmitted to a central server, which generates real time reports and live-view pages containing graphics and trends. Specific reports are created for different user groups, such as plant management, production and maintenance management, floor personnel and the board-room.

The reports and performance data are accessible from every PC connected to the Lavazza network. Bosch engineers and OEE specialists analyze the data and suggest solutions to improve the performance. Thanks to a user-friendly web browser interface and simple graphics, the system is easy to use and has been quickly accepted by all employees.

Lavazza Benefits

Every day, Lavazza benefits from its partnership with Bosch, with the ongoing

F. Godio,

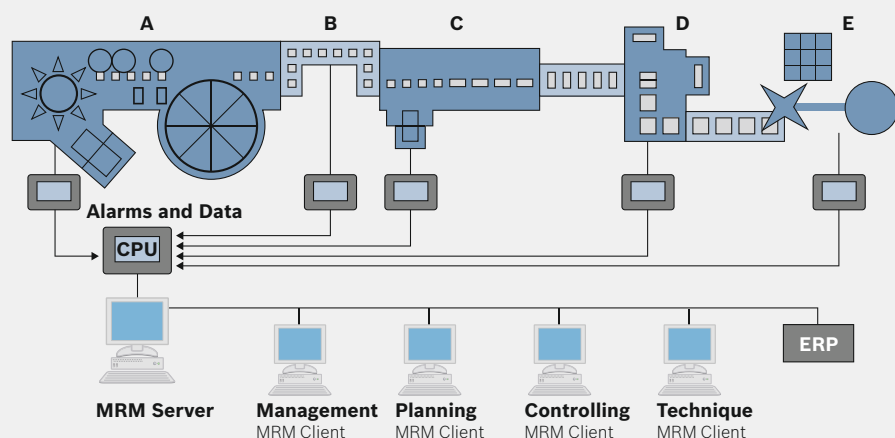
Lavazza Plants Manager:

“General overviews give management the opportunity to evaluate general performance losses. Quality, performance and time productivity are measured separately, so areas for improvement can be easily identified and actioned. General OEE data and reports are important for precise capacity requirement planning and budgeting.”

F. Bertoglio,

Lavazza Settimo Plant Logistics:

“With a simple glance at a monitor, live-view reports enable production managers to check and verify the real time status and performance of all the lines on the shop floor. Control of production scheduling becomes extremely precise and proactive, and problems can be detected before they actually happen.”



Packaging Line Layout

- A Packaging machine
- B Transport conveyors
- C First multipack machine
- D Second multipack machine
- E Palletizing robot

monitoring of machine statuses, alarm messages, counters and the reports produced by OEE measuring system being of great value. The Lavazza team and the locally-based Bosch engineers easily analyze and highlight weaknesses and areas for improvement. After only a few months of the installation, the project team registered improvements in OEE values and increases in throughput and equipment reliability. This was accomplished with the simple commit-

ment of maintenance staff and line operators to the common goal of minimizing OEE losses. Breakdowns, waste and changeover times have been reduced through tailored, on-the-job training and maintenance documentation.

level, which is able to verify the real time status and performance trend of packaging lines, but it is also important at the operational and maintenance levels to further develop the culture of continuous improvement.

The Human Factor

The project shows the importance of the human factor, which has to be considered in each phase. The OEE concept is not only dedicated to the management

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S. Verduci,
Lavazza Settimo Maintenance Manager:

“Daily and weekly reports are fundamental for identifying major line failures, planning appropriate short term corrective measures and scheduling planned maintenance. It is possible to have a quick response on the effectiveness of the actions performed by the maintenance team.”

J. von Gunten,
Bosch Embedded Engineer:

“With the OEE measuring system, it is possible to keep track of how each line is doing and identify recurring problems and errors. Analyzing the OEE reports helps me to identify areas of improvement and it is then possible to set up a proactive consulting approach. This helps to solve machine problems in advance and increases the knowledge and skills of maintenance staff and line operators through coaching and training.”

