

Maintaining momentum

A computerised maintenance management system developed by CARL Software is helping boost efficiency for Brembo, a global provider of high performance braking systems. Val Kealey visited two of the company's production sites in Bergamo to discover more

Brembo is known as an innovator in the field of brake disc technology for cars, motorcycles and commercial vehicles, but also makes frictions, seats, seat belts and other components for racing use. The company operates in 15 countries on three continents, with 36 production and business sites.

In the Bergamo district of Italy there is an R&D centre and two production sites – Mapello which comprises a cast iron and aluminium foundry and a machining centre for cast iron discs, and Curno where the focus is on the machining and mounting of brake systems.

Predictive maintenance on furnaces at the Mapello site is based on refractory infrared thermography. Low pressure and gravity die casting machines at the site are subjected to consolidated preventive maintenance to ensure high availability. Maintenance to thermal processing machines can only be carried out in August and December during shutdown periods. The machines are

subjected to preventive maintenance linked with predictive control of fan vibration.

The Curno site features two different processes: The machining of parts which come mainly from the aluminium foundry, and the mounting of components to form the different types of final product. There are several manual or semi-automatic lines for assembling the brake systems, as well as for different finished product lines. Several automated assembly lines have been



introduced and all handling operations are now performed by anthropomorphic robots. This has resulted in a change to preventive maintenance methods.

TPM (Total Productive Maintenance) is at the heart of Brembo's production system. Implemented in 2003, TPM is still used today to anticipate machine failures, to reduce equipment micro downtimes and to improve workflow, not just in the corrective field, but especially in the preventive field.

Wanting to standardise on its maintenance methods and procedures and to optimise the management of its spare parts, Brembo looked at various CMMS suppliers during 2008/9 before opting for a Carl Source CMMS.

Reasons for Brembo choosing the Carl Source system included its latest generation Internet technology and Open source platforms, its flexibility and its multilingual/multi-site capabilities that will enable the system to be repeated at other Brembo production sites worldwide. No additional hardware was required and the system can be adapted to the group's changing needs.

Brembo's project team received five days training on the software which was sufficient to enable the company to then train its own personnel. Brembo's administrator for the project took over the software in order to become fully autonomous in the

management and control of data and in the creation of reports. Adjustments were made to the system to customise it to requirements and to simplify some of the operations.

An example of this is the Brembo calendar, an external tool that gives the maintenance manager an estimate of the percentage of equipment that will be available for each day of a particular week. This data, entered into the Carl Source software, enables the company to schedule preventive maintenance work in accordance with the equipment available. To date, two specific developments have been made: Work request numbering for each site; and automatic creation of the date and time of a corrective work request.

Phase one

Implementation of the CMMS has been carried out step-by-step on both production sites. During the first 10-month phase (from September 2009 to July 2010) work involved:

- Installation and definition of user profiles, customisation and training
- Export of an old CMMS database to the Carl Source system
- Defining and implementing maintenance instructions for the preventive maintenance of each piece of equipment
- Triggering the preventive maintenance plan with the corresponding assignment of resources

Brembo reports that the first phase of the development went well. The CMMS has resulted in better management of the work required. Right from the start it allowed a lot of maintenance reports and analysis of failures by machine, enabling the company to calculate the MTBF (Mean Time Between Failures).

Phase 2

Having successfully completed phase one of the development, the project team was keen to get on with the next phase – stock management. The objective was to cut inventory costs by 10% for the Car Business Unit's spare parts stock. Installation took place between September and December 2010. Key factors included:

- Analysis and classification of spare parts and definition of the inventory policy for the business unit
- Migration of the inventory database to Carl Source
- The loading and unloading of barcodes with automatic updating of inventory and purchase requests to ensure that minimum spares are kept in stock
- Creation of an interface with the ERP software Microsoft Axapta.

Brembo is currently working on a new development – Carl Mobility light. This will be a PDA version for inventory management.

It will allow users to handle the inventory procedures in just three clicks.

Phase 3

In the short term, the Brembo project team wants the CMMS to be the hub of its information systems. It will integrate supervision and control of production processes in order to optimise production and achieve efficient maintenance. Eventually, the company hopes that it will be possible to control production via cell phones and to remotely activate maintenance operations. While conclusion of this project, known as e-Maintenance, is some way off, implementation plans are in place. They include:

- Networking and centralised data acquisition for each machine on the server through the Ethernet network to monitor the running status of the equipment, making online diagnostics while taking into account readings from preventive maintenance meters.
- Creation of a reference resource: using an integrated server to store backup of data from various software (classified by site and by equipment). This resource will include a documentary section where users will be able to find details of maintenance procedures and technical drawings.
- Setting up a link between Carl Source and a SCADA system to collect chronological data from the alarm file for each piece of equipment, so that it is possible to monitor in real time energy efficiency indicators, so that trends can be built up to help determine predictive maintenance work.

Once completed, the E-Maintenance project will allow the control of remote installations in Italy and in other Brembo



sites around the world. The maintenance team will be able to remotely monitor data sent by different integrated applications, to send alarms immediately by mobile phone, to provide maintenance and remote service, and to launch work requests with a simple click on the iPhone screen.

Although too early to quantify cost savings, Brembo has been impressed by the efficient implementation of the Carl Source system and believes its infrastructure and architecture to be right for the company. It also recognises its potential to be adapted/extended to meet future business requirements.

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