

Automation and predictive diagnostics combine to reduce route maintenance needs

Up to 400 hours per year of routine maintenance has been eliminated and safety has been enhanced, following an automation upgrade at a relocated Ticona plant. *Thorsten Fleck*, automation leader at Celanese Corp explains more.

When Ticona GmbH was forced to relocate one of its manufacturing facilities in order to provide land for a new runway at Frankfurt International Airport, the decision was made to upgrade from the existing analogue automation system to digital control.

A subsidiary of US-based Celanese Corporation, Ticona produces polymers under the brand name of Hostaform, which is used in the production of plastics for the automotive, medical, and communications industries.

Following evaluation of a variety of control technologies, Ticona engineers selected Emerson's DeltaV automation system, and Emerson representatives in Germany worked out an automation strategy in cooperation with the Ticona project team.

The new plant, which was completed in 2012, utilises two separate DeltaV systems to control both continuous and semi-batch chemical processes. The total device signal tag (DST) count is about 23,000, including a significant number of DeltaV SIS signals.

Each system has a dedicated AMS Suite predictive maintenance software package that provides maintenance personnel with access to diagnostic data produced by around 2,500 smart field instruments and more than 500 digital valve controllers via the Foundation fieldbus communications protocol.

This combination was found to be especially useful during the commissioning phase, where checking

loop integrity and instrument calibration are normally time-consuming activities. The use of AMS Suite during this period made it possible to stay within the time limits for starting up the plant.

With more than 2,500 fieldbus instruments and over 500 FIELDVUE digital valve controllers, it is believed to be the largest Foundation fieldbus installation in Germany and this combination of automation and predictive diagnostics is expected to grow as the plant and its requirements evolve.

Emerson personnel conducted on-the-job training prior to instrument commissioning and startup. As a result, Ticona personnel had a good understanding of the control system and field devices that they would be responsible for before the plant went into full operation.

Acceptance

Once the predictive maintenance solution had been introduced, it became obvious that the daily use of the fieldbus technology and the diagnostic capability of AMS would improve maintenance work practices and reduce the exposure of individuals to difficult-to-access locations. At that point, the digital system became readily accepted by the team.

Today, AMS Suite is an integral part of the daily work routine at Ticona. Traditionally, maintenance personnel would have to go out

into the plant on a regular basis to check on equipment. Now, however, when a device alert is raised, the first thing that needs to be done is to look at the asset management monitor and many situations can be diagnosed from this, without having to leave the control room. Frequently, it is not necessary to go into the field at all, avoiding the risks that this can involve.

The main focus is now on saving time in troubleshooting potential problems and improving worker safety in this Zone 1 plant. AMS Suite makes this possible by enabling personnel to check out abnormal conditions without ever leaving the control room, saving an hour or two of technician time every day – an estimated 400 hours per year on routine maintenance.

The next step will be to prioritise the importance of each piece of field equipment to the overall production process so that the diagnostics can be applied to optimise maintenance on the most critical devices. In time, the plant intends to use the data to drive predictive maintenance, as well. Even greater savings are expected when AMS Suite software starts to be used proactively.