

Bayer Crop Science Recognizes Significant Savings with AMS Device Manager

RESULTS

- Saved as much as \$100,000 per hour by preventing a unit shutdown
- Saved as much as \$25,000 per hour by identifying plugged sensor tubing on a critical mass flow meter measuring catalyst slurry
- Achieved a high level of production reliability based on asset prioritization



APPLICATION

Process control equipment in the Glyphosate Technicals (GT) unit, part of a crop protection products plant in Muscatine, Iowa.

CUSTOMER

Bayer Crop Science is one of the world's largest agricultural companies. Using the tools of modern biology, Bayer Crop Science helps farmers achieve and sustain greater crop yields while conserving their natural resources. Bayer Crop Science's business is structured into six business segments: Digital Farming Systems, Seed & Traits, Crop Protection, R&D Innovation, and Climate Change.

CHALLENGE

All equipment and instrumentation degrade with age, and in a plant with hundreds or thousands of I/O points, it's just not possible to recognize and respond to every instance of reduced performance. In order to improve overall production reliability, it was necessary to prioritize production assets by identifying equipment that is critical to maximizing production. Management needed to know which components could cause all or part of a process to shut down if a failure occurred. It was also necessary to recognize potential problems quickly, so repairs could be planned to reduce any negative impacts on production.

SOLUTION

After the Glyphosate Technical (GT) unit received the AMS Device Manager: Intelligent Device Manager predictive maintenance software from another Bayer Crop Science facility, some process engineers viewed it as another "toy". However, the software helped reveal some critical control valve travel deviation issues, and one severely bent valve stem was identified. These are conditions that operators cannot determine by simply looking at or listening to a control valve, but they can lead to big trouble. That discovery demonstrated the value of predictive intelligence to many plant personnel.

"By prioritizing all of our facility's assets we have been able to achieve a high level of process reliability."

Joel Holmes,
Principal Engineer – Site Electrical Reliability
Muscatine, Iowa

The Alert Monitor in AMS Device Manager also exposed a drive gain issue on a critical mass flow meter measuring catalyst slurry. At the time, production personnel were unaware of any potential blockage issues or inaccurate measurements. If this problem had gone unrecognized, it could have amounted to the loss of as much as \$25,000 per hour. However, by monitoring the flow meter's diagnostics, AMS Device Manager recognized what was happening, and a Status Alert was raised. The problem was corrected by backflushing the sensor tubes until all diagnostic indicators were back in the normal range.

In another case, the AMS Device Manager provided a pre-warn alarm of control valve deviation on a critical distillate receiver control valve, which led to recognition of a stem packing leak. The potential negative impact of the failure of critical control valves like this one can amount to as much as \$100,000 per hour.

Now, when critically important field devices and valves are having performance problems, maintenance managers know just where to focus their maintenance efforts. Those components that are deemed less critical receive lower priority preventive maintenance or are allowed to run to failure, if it will not result in harm to other equipment, unsafe conditions, or compliance issues. Reliability and maintenance personnel at the Muscatine plant can make informed decisions regarding when to make repairs and when to allow the equipment to run.

Single-sheet "GT Success Stories" describing how the diagnostic alerts had prevented costly production slowdowns were circulated throughout the plant. Reliability became more of an expectation than an aspiration. Then, a plant-wide Reliability Group was established with production and maintenance personnel working together to identify Key Performance Indicators (KPIs) and track them as a means of recognizing performance issues. Concurrently, the use of AMS Device Manager is being expanded across the entire site.

According to Joel Holmes, Principal Engineer – Site Electrical Reliability, "Just as a football team protects its star quarterback, we provide special protection for our key assets to keep them productive and prevent costly downtime. Our ultimate goal is to avoid unexpected outages due to instrumentation or equipment issues by continually enhancing manufacturing reliability."



"By tapping into device diagnostic information, we are able to predict with reasonable accuracy how long an instrument or valve will continue to perform satisfactorily before repairs or replacement will be necessary."

Joel Holmes,
Principal Engineer – Site Electrical Reliability
Muscatine, Iowa

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