

Process Automation Improves Safety & Reduces Environmental Impact

Full Scale Implementation OR Pilot Scale/Study

1. Description of the project: What is the issue and how did you fix it?

Novis Works goal was to design pumping, blending and filling operations through process automation to drive zero in safety, resources, and reduced risk of environmental impact in the new manufacturing process. All the predictive and preventative maintenance activities would be designed in the automation system. Automation increases work safety and reduces risk of environmental impact. Process Automation reduces the risk of injury by removing workers from specific actions. Automation system typically respond faster to up-set conditions allowing for the what if scenarios. Programming error proofing activities reduce risk of injury and environmental impact. The success of a manufacturing company in today's business environment depends on flexibility, productivity and efficient use of raw materials

Novis Works teamed up with MT Systems engineers to develop process automation programming. The RealTime control system incorporated the features of the Smart Pump systems with PLC based control of other systems and equipment. These systems provided the unique control and the innovative processes. Integrated systems allow for improved safety through zero waste processes including recirculation systems, sample points, redundancy, accurate measurements, error proofing etc. Integrated systems pair machine manufacturing and operators to benefit from the time spent to build the controls and free employees for higher level tasks, monitoring and measuring, and understanding the integrated safety and environment risk.

Flexible Automation allows a facility to shift from large volume runs of the same product to smaller lots of greater diversity. This allows employees to work closer with the automated processes through new parts to the production, changing programming, inspecting new manufacturing and heightened engagement. Driving for continuous improvement is allowing for the change in safety and reducing

Green Foundry Project

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environmental impact through manufacturing processes building in interlocks, safeguards, designing for smaller footprints.

Time frame for completion/implementation of the full project was completed in segments over 2 years to balance resources and capital dollars. The different modules each had a timeline for the time requirements. Involving the employees in the reviews allowed for additional innovations in the safety improvements. Major obstacles encountered and overcome was the change management from the manual process to the automated process.

Other noteworthy circumstances: The facility has zero lost time accidents due to increased employee engagement and understanding of the key elements of the process.

2. Environmental Benefits: Conservation of raw materials or energy, reduction or elimination of emissions, wastes, toxics, water discharges, etc.

Significant conservation of raw materials with the elimination of waste was built into the system. There are zero waste discharges from the system, self-contained systems.

3. Other Benefits: Productivity, health and safety, employee morale, etc.

Integrated systems pair machine manufacturing and operators to benefit from the time spent to build the controls and free employees for higher level tasks, monitoring and measuring, and understanding the integrated safety and environment risk. In addition, Novis Works utilized Employee Training, built in instructions for Lock out Tag Out procedures,

Preventative Maintenance monitoring, Risk Assessments alarms, Process Hazard Reviews, while programming the manufacturing system. The facility has zero lost time accidents due to increased employee engagement and understanding of the key elements of the process.

4. Cost Savings: Capital cost, operating cost, ROI or other pertinent cost information.

Significant savings in operating costs and Return on Investment was amazing compared to other traditional methods. Time frame for completion/implementation of the full project was completed in segments over 2 years to balance resources and capital dollars. The different modules each had a timeline for the time requirements. Involving the employees in the reviews allowed for additional innovations in the safety improvements.

5. Applicability to other foundries and additional Comments

Yes, The process intelligence and automation processes with customized solutions can be utilized in other facilities.

6. Applicable Environmental Categories and Foundry Processes. Select all that apply.

Environmental Categories

- Carbon (GHG) Emissions Measurement and Reduction
- Air Quality Water Use and Discharge Waste Management
- Beneficial Use Stormwater Material and Resource Conservation
- Community Engagement

Foundry Process(es) Impacted

- Melt Pour Mold Core sand system/reclaim
- Shakeout Heat Treat Quench Finishing Shipping
- Maintenance Pattern Shop Casting Design
- Management Systems and Metrics
- Other, explain:

7. Add photos to enhance your application, if applicable.

