

Value Engineering Workshop – Digital Fieldbus Wiring March 10 – 14, 2003

Team

Pete Picard – Instructor, Jaron Vande Hoef, Lowell Dykstra, David Krahling
Jeff White, Brian Olsen, Ron Vander Ploeg

Executive Summary

This was the original workshop for the Value Engineering (VE) strategic program. Mr. Picard from the University of Nebraska conducted this workshop and trained us in the value method.

The project that we used for our study was a recently completed methyl ester plant that included all of the Interstates services with the exception of instrumentation. The major cost breakdowns for this project were explored and documented to allow us to evaluate where alternative methods would most impact the project.

Evaluation

- A matrix was developed that we used to evaluate the various alternatives. It helped us to identify the key issues and to identify those assumptions that needed validation.
- The alternatives we evaluated for this project were: Traditional analog wiring vs. Foundation Fieldbus wiring and traditional discrete wiring vs. AS-I Fieldbus wiring.
- We developed a list of advantages and disadvantages of using Fieldbus technology:

Advantages

- Reduced I/O cards
- Smaller cabinets
- Fewer loop drawings
- Reduced cabling costs
- Expandability
- Potentially easier setup, checkout
- Diagnostic capability

Disadvantages

- Increased instrument cost
- Increased coordination between field and engineering
- Maintenance / troubleshooting require highly skilled technician

General Observations and Recommendations

- AS-I Fieldbus should generate considerable cabling and wiring savings in non Class I areas with a large number of discrete devices. The process area for this project was entirely Class I, Div. 2 and it had a small number of discrete devices so it was determined that it was not feasible to consider the AS-I Fieldbus alternative for this project. For these reasons we felt AS-I Fieldbus should warrant consideration for Ethanol plants.
- The greater the homerun length and the higher the density of devices, the greater the potential savings from use of Fieldbus technologies.
- Flex I/O and remote I/O often capture some of the savings from Fieldbus.
- Foundation Fieldbus advantages appear to be less pronounced in Class I areas because the Fieldbus utilizes intrinsic safety to meet the class requirements, which limits the number of devices that can be on a Fieldbus segment to 6, rather than the 10 to 12 available in non Class 1 areas.
- For this project Foundation Fieldbus appeared to be a feasible alternative to traditional analog wiring methods.

If you are interested in this study and wish to know more detail about it, please contact Jeff White or one of the team members listed above and request a copy of the full VE report.