

10 reasons why you and your manager should attend



1) Diagnostics & PST for Valves

Hun Koy Kung

Final element is a critical component in the process loop. Alerts and diagnostics are a way of identifying potential valve problems before they become serious and cause unscheduled shutdown of the loop. Alerts can provide a warning of the deterioration of valve performance due to low supply air, travel deviation, actuator leakage, downstream air leakage etc. Diagnostics can detect valve related problems such as packing deterioration, seat-leakage, seat load and excessive friction that might go unnoticed but could be contributing significantly to operating cost. Although Fieldbus SIS is currently unavailable in the market, it is possible to use Fieldbus smart positioner for partial stroke test and diagnostics. The primary shutdown function of the safety loop is the solenoid valve (SOV). This would help to meet the required safety integrity level (SIL) as well as maintain the SIL of the safety loop. In addition, smart positioner can also be used to verify the health of the SOV during its operation. A small pulse to the SOV is good enough to check its plunger integrity but large enough to improve reliability of Safety Instrumented Function loop.

2) Improved Operator Efficiency by Support of NAMUR 107 in FF

Kenneth Fridholm

The paper describes how the Operator efficiency can be improved by support of Namur 107 for standardization of diagnostics information from field devices, integrated e.g. via Foundation Fieldbus.

Market forces like the increasing global competition is one of the major driving factor for companies for searching for tools to increase their productivity, reduce costs and make the maintenance more efficient. Process devices like instruments are also becoming more intelligent in terms of functionality and internal diagnostics, which has called for a better and more efficient integration with the control system and its operators.

All the trends together will put more and more focus on the operator efficiency and the operator tasks, because a large part of production and quality losses are primarily the result of operator error, which mostly can be preventable by ensuring that right information is available to the right person - at the right time. By standardization of diagnostic information for field devices according to Namur 107, the operators will get a number of valuable benefits like :-

- Reliable and valuable status diagnostics from field devices
 - The Status diagnostics are categorized and presented as 4 standard status signals
- To ensuring that right information is available to the right person - at the right time, the Status diagnostics are

both presented in the context of the application and forwarded to the appropriated group of people.

3) FF for Safety Instrumented Systems

Alex Tomiyama

The use of Foundation Fieldbus protocol for process control is growing rapidly within a wide variety of industries. With every passing year, the level of installed Foundation Fieldbus technology is increasing significantly on a global basis and as a result it is becoming one of the most successful, modern digital communication protocols for process control. Following its success in process control applications, Fieldbus Foundation is moving to the next level by applying the proven benefits of its process control technology to Safety Instrumented Systems. Fieldbus Foundation is working together with several different suppliers of instrumentation and systems as well as end users and TÜV Rheinland to develop a technical standard and the technology to meet the requirements of safety standards such as IEC (AS) 61508 and IEC (AS) 61511.

The main objective of this paper is to discuss in a practical way, the main differences between the Foundation Fieldbus protocol utilised for process control and safety, while also discussing how Safety Instrumented Systems projects will be affected from a functional safety perspective. This paper will also go on to look at the advantages and disadvantages of applying a digital protocol as opposed to the analog protocol that currently dominates the safety market.

4) Applications in the Field

Jonathon Soanes

Control in the field is a well covered topic in FOUNDATION activities. The ability to migrate control from the controller to the process cell has been one of the technical drivers that has seen FOUNDATION Fieldbus emerge as a leading technology. Application in the field extends this topic looking at the integration of control and diagnostic concepts deployed in the process cell to improve accuracy, provide more useful and specific device and application diagnostics and provide extensible efficient control architecture. Additionally this presentation will review control in the field design considerations: Where it fits, where it may not fit, redundancy, integration with legacy systems and field device management facilities to assist operators, maintenance technicians and engineers keeping the process operating at peak efficiency.

5) EDDL Making Fieldbus Setup and Diagnostics

Easier

Jonas Berge

Setting up and diagnosing FOUNDATION fieldbus devices used to mean a long list of parameters with cryptic names, not particularly user friendly. The new enhancements to the Electronic Device Description Language (EDDL) - a key technology embedded in the



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FOUNDATION fieldbus protocol - allows the device manufacturer to make the FOUNDATION fieldbus device easier to use for non-experts by organizing parameters logically and including illustrations and graphic representation. Setup and diagnostics of simple as well as advanced devices such as machinery health transmitters, bus diagnostics modules, and valve positioners etc. are supported. EDDL can exist on the control system itself, therefore device diagnostics can be integrated into operator consoles and therefore also incorporated into daily operations and maintenance work processes. Some plants have benefitted from this technology for more than two years. Leading systems and device manufacturers implement enhanced EDDL. Multi-vendor EDDL interoperability and consistent look & feel was demonstrated at ISA Expo 2008. EDDL also solves the problem of integrating variable speed drives and other products using other protocols. Characteristics of traditional DD such as easy system administration without software installation and license key, investment protection thanks to independence from Windows version, and handheld field communicator still remains.

6) Powering the Bus – Which PS to Use When

Michael Gauci

Despite the fact that Foundation Fieldbus technology has been available since the mid-1990's the demand for higher reliability with more devices per segment continues to drive the development of Fieldbus Power Supplies. The result has been a number of different solutions and offerings from Entity Intrinsically Safe, through FISCO, FNICO and High Energy Trunk; and the evolution continues.

This presentation will provide not only a short history of the evolution of power supplies but also criteria to help you select the appropriate Power Supply for the task at hand, including considerations on live working, redundancy, and reliability.

7) Design Engineering of FF Systems

Murali Krishnan

The presentation will cover the engineering aspects of designing a Foundation Fieldbus System. The presenter will cover the practical considerations for a good segment design such as segment grouping guidelines, designing within physical characteristics limits using Segment Design Tool, macrocycle concepts, Control in the Field versus Control in the Controller. Use of CIF for meeting control response requirement for fast loops will be explained using a project case study. Also, a brief overview of Ff components such as cables, power conditioners, field couplers and terminators will be covered.

9) Redundant FISCO – the Holy Grail of FF ?

Mike O'Neill

During the last year or so, a variety of approaches have been released offering users new fieldbus segments with redundancy and FISCO device connectivity. This paper describes and compares those new designs with regard to segment capacity, MTBF, overall availability, installation areas and implementation cost.

At first glance, fieldbus is mutually incompatible with intrinsic safety unless both compromise on segment design. Fieldbus works best when many devices are connected together on one cable and intrinsic safety is a design concept that minimises the available energy in any cable pair. Many companies and approval bodies have collaborated to generate FISCO (Fieldbus Intrinsically-Safe Concept) designs but power supply redundancy as commonly used in most segments has not been possible. There are now new and novel designs that incorporate redundant I.S. power supplies, others that incorporate redundant power supplies with common I.S. sections, and still others that have redundant power with field-mounted I.S. interfaces. These complex products and designs need detailed comparison in order for users to make sense of the implications of any particular concept for their application.

9) DART - the Next Generation FF Power Supply

Christian Stroehle

Currently different solutions are available for intrinsically safe fieldbus like Entity, FISCO or High-Power Trunk. But intrinsic safety there means either a limitation in power or a mix of protection methods. With Dynamic Arc Recognition and Termination (DART) that becomes different. This technology approaches the problem of explosion protection- the generation of a spark- from a different angle and enables the user to have 50W of power intrinsically safe.

This paper chronologically accounts the history of all intrinsically safe explosion protection concepts for fieldbus and gives an outlook on DART concepts. The paper then goes on to compare all methods one-on-one with a practical view on their merits and drawbacks. With DART a new era of process automation dawns and totally new applications become possible. The high power trunk, which nowadays needs a increased safety installation, becomes an intrinsic safe without having to forego the high power of this solution.

10) FF Future Technical Directions

Bill Tatum

This presentation describes the latest developments underway at FF including :-

FF-SIF Safety Instrumented Systems
Electronic Device Description Language
Information Integration ... HSE, & R I/O
Wireless Standards (SP-100)