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## Key technologies for Fieldbus infrastructures

### Pepperl+Fuchs FieldConnex workshop at the NAMUR General Meeting

When it comes to Fieldbus solutions, Pepperl+Fuchs is one of the leading innovators, who has repeatedly developed new ideas to drive the technological development. The products and system components of the company's FieldConnex range demonstrate, how easy it can be to install and operate a Fieldbus infrastructure. During a special workshop at the NAMUR General Meeting, experts from Pepperl+Fuchs provided an interested audience with practical insight into the underlying technologies, tools and concepts.

The workshop was entitled „Operational Excellence – efficient use of the Fieldbus simplifies process plants.“ It centered around aspects, such as fast implementation, online monitoring of the Fieldbus physical layer, preventive maintenance concepts and the advantages of the Pepperl+Fuchs High-Power Trunk concept in explosion hazardous areas.

Pepperl+Fuchs emphasized that the practical advantages of its FieldConnex products already start during planning, installation and implementation of a Fieldbus infrastructure. One example to illustrate this was the Commissioning Wizard which was the subject of a practical demonstration at the workshop. The tool is part of the Advanced Diagnostic Manager (ADM) of the company and greatly contributes to substantial time savings for commissioning and documentation of a Fieldbus infrastructure.

Another interesting subject was online monitoring. In this connection, the Advanced Diagnostic concept of Pepperl+Fuchs was demonstrated. It provides comprehensive monitoring of all vital system parameters affecting the signal quality of a Fieldbus infrastructure, and detects developing problems at an early stage, which allows addressing them as part of the standard procedures of a preventive maintenance strategy. In this way, unscheduled plant shutdowns become the absolute exception, while the availability of the

plant is improved drastically. The participants of the workshop gained valuable insight into the technologies and procedures behind the concept. They also got to know an intelligent diagnosis tools, which allows targeted and time-saving troubleshooting, thereby reducing shut downs to an absolute minimum.

The High-Power Trunk concept offers a number of specific advantages for explosion hazardous areas. Not only does it overcome the well-known disadvantages, such as limited cable length and restricted number of participants. It also allows easy maintenance work without the need of a hot permit. Pepperl+Fuchs is a pioneer in this field and used the workshop for a detailed presentation of its High-Power Trunk concept.

Summing up, the Pepperl+Fuchs workshop at the NAMUR General Meeting offered valuable insight into the present state of the technological development and provided a transparent view of the related products, tools and technical concepts which contribute to the protection of investments into the automation system of a plant, add more availability and efficiency to process plants, and considerably reduce operating costs.

The workshop was not only interesting for participants of the conference with a technical background. It also offered valuable aspects for those participants, who are responsible for investment decisions in the process industry and primarily focus on subjects, such as economic viability, efficient processes and proactive maintenance.

Key words: Pepperl+Fuchs, Advanced Diagnostics, physical layer, fieldbus, PROFIBUS PA, FOUNDATION fieldbus H1, training, workshop

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Characters: 2,969, without space characters

Characters short text: 532, without space characters

Pictures: No. 93\_1228\_17, No. 93\_1228\_19, No. 93\_1228\_20

October 2009

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Fig. 1:

Monitoring the Fieldbus physical layer: With the diagnosis module integrated into the power supply, any deterioration of the signal quality of an installation becomes visible instantly.

Segment Tag:

Segment Bus-Communication Status:

Motherboard Properties			
Label	Actual Configuration	Status	Information
Motherboard Properties	Standard 500mA		
Redundancy	Redundant		
Module A	Galvanic isolated	<input checked="" type="checkbox"/>	Excellent
Module B	Galvanic isolated	<input checked="" type="checkbox"/>	Excellent

Segment Data  Ignore Secondary Bulk Power Supply when creating Snapshot

Label	Actual Value	Min. Value	Max. Value	Status	Information
Primary Voltage [V]	25,0	25,0	25,0	<input checked="" type="checkbox"/>	Excellent
Secondary Voltage [V]	25,0	25,0	25,0	<input checked="" type="checkbox"/>	Excellent
Voltage [V]	29,8	29,7	29,8	<input checked="" type="checkbox"/>	Excellent
Current [mA]	59,0	59,0	59,0	<input checked="" type="checkbox"/>	Excellent
Unbalance [%]	-2,0	-2,0	-2,0	<input checked="" type="checkbox"/>	Excellent
Noise [mV]	34,0	24,0	39,0	<input checked="" type="checkbox"/>	Excellent
Jitter [us]	0,8	0,4	0,9	<input checked="" type="checkbox"/>	Excellent
Min.Signal Level [mV]	783,0	779,0		<input checked="" type="checkbox"/>	Excellent
Max.Signal Level [mV]	828,0		828,0	<input checked="" type="checkbox"/>	Excellent

Field Device Data		Field Device Tag			
Add... /	Field Device Tag	Signal [mV]	Noise [mV]	Jitter [us]	Polarity
16	Host_TAG	783,0	34,0	0,6	Standard
20	P+F VC Box	792,0	29,0	0,7	Standard
21	P+F TI Mux	828,0	24,0	0,8	Standard

Fig. 2:

Transparent view of the Fieldbus segment: A few mouse clicks are sufficient to determine, whether the Fieldbus physical layer works properly and all values are within their respective.

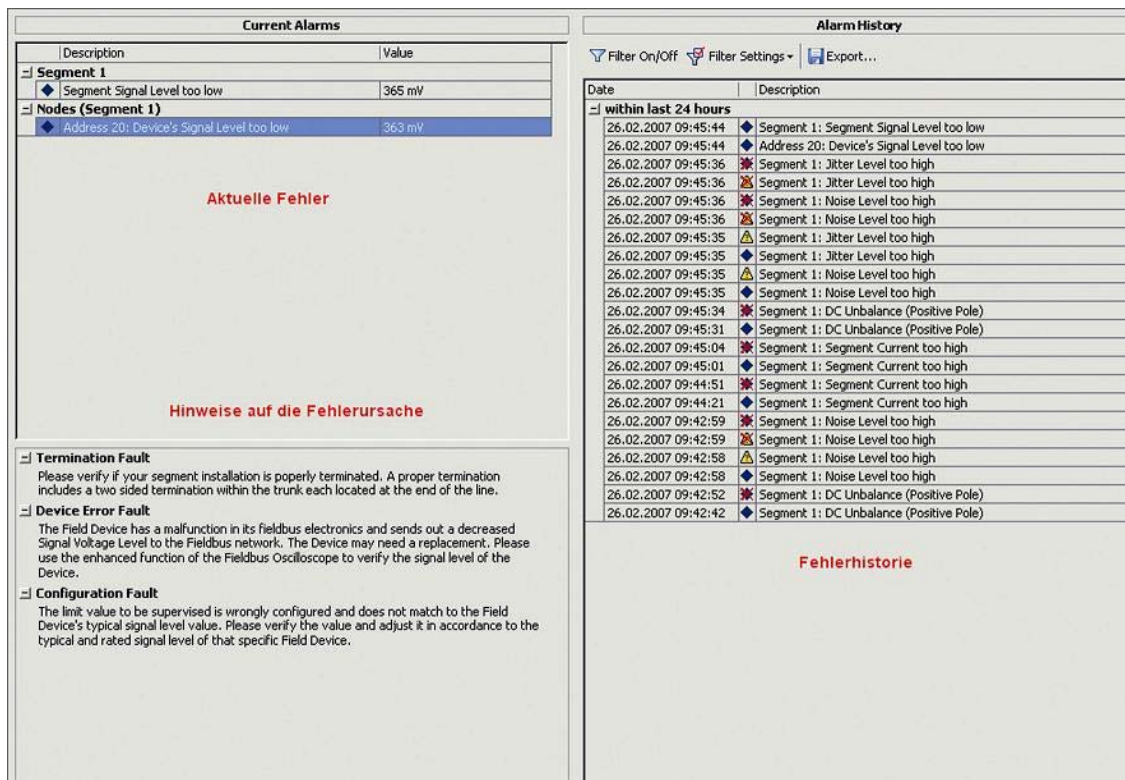


Fig. 3:

Information at one glance: Color coding according to NAMUR recommendation 107 and text messages inform about the condition of the Fieldbus physical layer. Upcoming problems can be recognized without the need of expert knowledge.