

AS-INTERFACE MASTER NEWS

THE BIHL+WIEDEMANN MAGAZINE



DIAGNOSTICS

Up against time

INTERVIEW

“Like a fitness check at the doctor”



**Bihl
+ Wiedemann**

THE AS-INTERFACE MASTERS

Diagnostics

Up against time

Stoppage is doubtless the safest condition for a production system – but it is also the most expensive. The better the safety and standard systems work together within a machine, the quicker any faltering components can be tracked down. With their compact safety controller with integrated fieldbus interface Bihl+Wiedemann adds a new team player to the mix whose amazingly low cost predestines it for smaller and medium-size systems.

It has long seemed that those responsible for system safety tend to be somewhat more conservative than their colleagues on the standard equipment side of the aisle. While deployment of automated production systems was becoming a matter of course, cumbersome parallel wiring long remained firmly entrenched on the safety side. Real forward progress was not made until around the turn of the millennium, when AS-Interface Safety at Work succeeded in making it possible to send both safe and non-safe signals over the same bus line.

But from then on the move towards automated safety rather quickly became a mega-trend. According to the 2009 study "Safety in Machine Building" around half of companies were already using safety-based communication technology in the field. The key motivations for this shift were simpler access to data and – perhaps most important – better diagnostics. In the opinion of market insiders this development is gaining even more momentum. In part, of course, thanks to the new EC Machinery Directive, but mainly because fewer and

fewer companies want and can afford longer downtimes, with the result that greater diagnostic capability is being demanded of the systems.

The AS-i Gateways from Bihl+Wiedemann with their numerous diagnostic features set new standards in automated safety



Compact safety controller with integrated fieldbus interface

- Stand-alone design: 12 terminals on the integrated safety monitor are configurable, e.g.:
 - as 6 safe outputs plus 3 safe two-channel inputs
 - as 6 safe two-channel inputs
 - as standard I/Os
 - or any combination
- Expandable: up to 62 safe or 496 standard I/Os (or any combination)
- For use in compact or large, distributed systems
- AS-i Power24V-capable: for use in compact systems with no additional AS-i power supply needed
- With expanded diagnostic capabilities such as duplicate address detection, integrated earth fault and EMC monitor



Sercos
the automation bus

EtherNet/IP™



CC-Link

CANopen

EtherCAT®

CIP Safety™

It's precisely in this respect that the AS-Interface Gateways with integrated Safety Monitor from Bihl+Wiedemann were a step ahead from the very outset: with onboard features like duplicate address detection, the EMC and earth fault monitor they immediately set standards in the area of classic automation technology.

They also contribute greatly to optimization of the diagnostic possibilities in the PLC: continuous sending of status information means the host controller can get a precise picture of the entire system state at any time.

The Holy Grail of the new safety compact controller is no longer clad in plastic, but rather in the stainless steel housing

Only when it came to the smallest systems with two or more safe signals did the safety specialists from Mannheim take a different path. "Reduce to the max" was the motto here: the purebred Safety Basic Monitor provides signaling contacts only. For very simple applications this is clearly the most economical alternative. But as soon as the demands for diagnostics increase and when there is already a fieldbus in the system or machine anyway, the breakeven point for automated diagnostics in the controller drops so greatly that many users begin wanting a fieldbus interface for the Safety Basic Monitor as well.

You would think nothing would be easier. But in fact it's not that simple – at least if you think it all the way through. Of course the fieldbus interfaces need to be mechanically rugged enough that the diagnostic data for the safety devices do not interfere with communication in the entire system. At the same time of course you need to ensure EMC compatibility of the interface. And while you're at it, a display for startup and diagnostics would be extremely useful. So for just these reasons the new compact safety controller makes its debut completely changed even externally compared with the Safety Basic Monitor: its Holy Grail is no longer clad in the 22.5mm plastic garb, but rather in one of the stainless steel enclosures that have by now become a trademark of Bihl+Wiedemann.

The range of functions for the new all-rounders has increased along with the number of diagnostic options

What else distinguishes these new multi-talents from the devices of other manufacturers? The fieldbus interface was integrated directly into the safety unit. This means the controller can simply and easily call up all the safety information without any additional software parameter settings. Specifically: the status of all the safety devices is available there in real-time as a standard signal. Now the controller is able for example to bring the machine into the desired state before the safety unit shuts off the power after Stop 1.

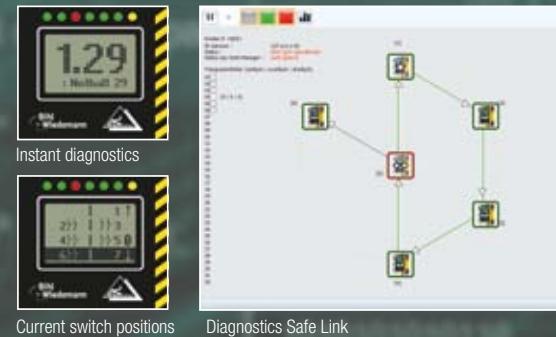
Integrating the fieldbus interface into the safety unit also offers advantages when it comes to diagnostics. Among other things, the directly readable shut-off history saves the user considerable time, since the often tedious search for the trigger of a shutdown is now a thing of the past even for small systems. Of course the corresponding information is also available through a web server for remote maintenance. It is also possible to view the status of the system on the device's own display. Available there are not only spontaneous diagnostics messages for things such as critical guard doors, but also an overview of the switching states of the individual components.

The range of functions for the new compact safety controller from Bihl+Wiedemann has increased along with the number of diagnostic options. Twelve freely configurable terminals allow the user for example to access up to six (2-channel) outputs, six (2-channel) inputs or standard inputs. Depending on the application, potential-free, antivalent or OSSD signals can be read. And with the new ASIMON 3 G2 software, it is just as easy to redefine safety outputs as safety inputs if needed.

As versatile as the new unit itself are of course the ways in which it can be used. As a small AS-i Safety unit it stands out with optimal fieldbus compatibility and when interacting with a continually growing range of expansion modules. And even if the user does not (yet) want to switch over to automated safety and continues to use parallel wiring, the cost and/or performance comparison still falls on the positive side.

Diagnostic features

- Spontaneous diagnostics using display
- Detailed diagnostics and history of each switching state in display, over fieldbus or software
- All states are accessible over the fieldbus without additional efforts



Interview with Sven Meister, Key Account Manager at Bihl+Wiedemann

"Like a fitness check at the doctor"

The fact that the availability of machines and systems is becoming a virtual criterion for competitiveness on production floors around the world fits well with the almost legendary reliability of a system like AS-Interface. In the future there will be even fewer forced interruptions in AS-i applications: a new software allows faults to be discovered even before they result in downtime. Sven Meister, Key Account Manager for the automobile industry at Bihl+Wiedemann, explains how this works.

AS-i MASTER NEWS: Mr. Meister, the AS-i masters from Bihl+Wiedemann already offer all kinds of diagnostic capabilities as standard, such as continual monitoring of current, earth faults and interference voltage. Why is another tool needed?

SVEN MEISTER: : The keyword is "intelligent maintenance" – in other words, condition based maintenance. Relevant studies have shown that this results in significant

savings. But time pressures mean that many plants have little time for preventive diagnostics. AS-Interface now simplifies this down to the press of a button: if our software is used at regular intervals, you can often detect possible faults before they result in a failure. Targeted preventive ac-



AS-i MASTER NEWS: Taking a closer look at these three areas, what exactly does the software do for the systems builder?

SVEN MEISTER: Here the main goal is to study the conceptual structure of a network for possible weaknesses. For example, interference coming from an inverter may affect the bus only sporadically. This may not necessarily result in failure, but may in some cases affect system performance. Until now this may not have been easily noticed. But our software detects it and gives the designer the opportunity to fully exploit any possible optimization potential.

tions then minimize expensive downtime even more. You can think of it as a fitness checkup at the doctor, in this case for determining the overall health of the system.

AS-i MASTER NEWS: What about the third area – technical support...

SVEN MEISTER: What our specialists need in order to provide quick and uncomplicated help remotely is exact information about the system: from the array of devices to how the peripherals are designed to the configuration of elements such as the safety programs. Until now the customer had to first assemble this data, and of course errors always crept in as part of the sending process, which sometimes resulted in time-consuming detours. Thanks to the new tool this is all yesterday's news.

AS-i MASTER NEWS: But doesn't this require the user to become familiar with the arbitrary logic of new software?

SVEN MEISTER: Not at all. Intuitive operation was one of the key objectives in our development. Efficiently working with the program requires neither reading of a weighty manual nor great specialized knowledge of AS-Interface. This is of key importance if for no other reason than the fact that those responsible for maintenance in their plants have to be concerned not just with AS-i networks, but with many other technologies as well. And so it would be rather unrealistic to expect too much in depth knowledge.

AS-i MASTER NEWS: What kind of equipment is needed besides the software to get started?

SVEN MEISTER: A standard PC and a cable for connecting the PC to the AS-i master in the system – that's it. And this is one of the unique strengths of the concept: the software needs no additional test equipment, it simply listens continuously to

the original diagnostic data from an AS-i network and evaluates it accordingly.

AS-i MASTER NEWS: Innovations at Bihl+Wiedemann don't generally come down from product developers sitting in an ivory tower, but rather in dialog with customers. Does the same apply to the new software?

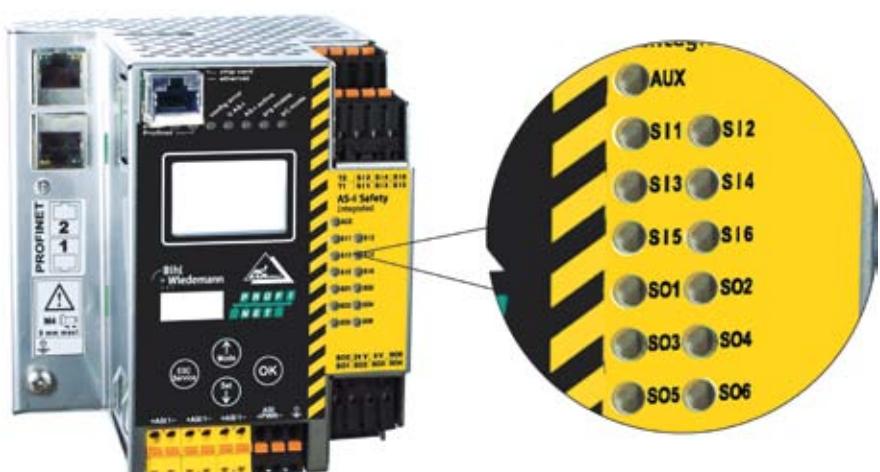
SVEN MEISTER: Yes, in this case the first idea came in discussions with our customers in the automobile industry, where availability of the production systems is of especially critical importance. There we recently introduced the software and encountered great interest from all sides: maintenance, process planning and design. But we are also being welcomed with open arms at our regular customers from other industries. This new tool is clearly right for its time.

AS-i MASTER NEWS: Mr. Meister, we thank you for the interview.

Bihl+Wiedemann New for SPS IPC Drives

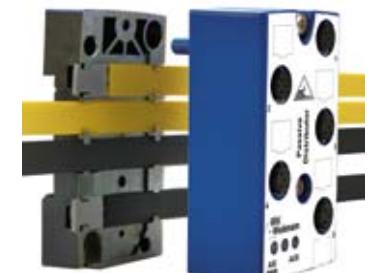
New Safety Gateways with 6 safe outputs

- Expand the range of AS-i 3.0 Gateways with integrated Safety Monitor ■ Available for PROFIBUS (BWU2793, BWU2822) and PROFINET (BWU2798, BWU2828), for PROFIsafe via PROFINET (BWU2794) and for EtherCAT (BWU2797) ■ Greatest possible flexibility when using the local I/Os built in the integrated safety monitor ■ 12 terminals on the integrated safety monitor are configurable, e.g.: ✓ as 6 safe outputs plus 3 safe two-channel inputs ✓ as 6 safe two-channel inputs ✓ as standard I/Os ✓ as a combination ■ Integrated AS-i Master controls up to 31 safe or 248 standard I/Os (or any combination) ■ AS-i Power24V-capable



Safety Basic Monitor with Ethernet diag- nostic interface (BWU2852)

- Now with Ethernet diagnostic interface ■ Enables connecting of multiple small applications using Safe Link (up to 31 Safety Basic Monitors can be coupled over Ethernet) ■ No safety PLC required ■ Cost-effective solution for expanding the gateways with safety I/Os ■ Integrated stand still and speed monitor function



5 X M12
3 5 4
2 1
max 4A

1: AS-i +
2: AUX +
3: AS-i -
4: AUX -
5: INC

max 8A

New AS-i Passive Distributor (BW2820)

- Provides five M12 connectors in one IP67 housing: The parallel splitting of the AS-i signal as well as the auxiliary voltage enables an economical connection of up to 5 AS-i actuators or sensors to the AS-i flat cable and to the auxiliary power through M12 connectors ■ Features 2x2 terminals for flat cable and flat cable seals in the lower part: Saves 2 flat cable branches as well as up to 4 AS-i end caps per module (compared with traditional installation)



Software for diagnostic, service and release measurements (BW2902)

- Assists machine and systems builder in their own diagnostics and fault elimination ■ Fault prevention and faster fault elimination saves time and money ■ PC-assisted measurement using existing hardware ■ Intuitive user interface for simple and easy operation ■ Assistance can be provided by Bihl+Wiedemann technical support

IO-Link

- ### AS-i / IO-Link Module, IO-Link Master with 4 IO-Link Ports (BWU2853)
- 4x IO-Link Master ■ 2 single slaves in one housing ■ I/Os powered from AUX (alternatively from AS-i)



Safety I/O Modules
can now be configured
with a plug-in using
the ASIMON 3 G2 soft-
ware

- New plug-in simplifies configuration of Safety I/O Modules (e.g. BWU2578 (above) or BWU2314) in ASIMON 3 G2 ■ 2 modes for configuring and diagnosing Safety I/O Modules available: ✓ Configure: Writes the configuration of individual connected and unplugged Safety I/O Modules ✓ Configure all: Sends an already existing configuration to the connected Safety I/O Modules (for quick start-up of pre-configured systems)

IMPRINT

Publisher
Bihl+Wiedemann GmbH
Flosswoerthstrasse 41
D-68199 Mannheim
Phone: +49 (621) 339960
Fax: +49 (621) 3392239
info@bihl-wiedemann.com
www.bihl-wiedemann.com

Created by
MILANO medien GmbH
Hanauer Landstraße 196A
D-60314 Frankfurt am Main
Phone: +49 (69) 48000540
Fax: +49 (69) 48000549
info@milanomedien.com
www.milanomedien.com

Edited by:
Peter Rosenberger
Phone: +49 (6251) 7056747
rosenberger@milanomedien.com

Potentials for savings in safety technology



- Safe Link over Ethernet: The simplest way of coupling many safe signals
- Optimal PLC connection via fieldbus, all diagnostic data in the controller, safety and standard signals mixed
- Universally expandable with Safety I/O Modules + Standard I/O Modules in IP20 or IP67, Speed Monitors for up to 40 axis, Safety Relay Output Modules



More information on your application safety at:
www.bihl-wiedemann.com

Bihl+Wiedemann GmbH | Phone: +49 (0) 621 339 96-0
Mannheim, Germany | Fax: +49 (0) 621 339 22 39



**Bihl
+ Wiedemann**