

In the Frankfurt plant, Basell was able to install the first Foundation fieldbus lines with Turck multibarriers in record time



# Flexibility Thanks to the Fieldbus

Turck power conditioners and multibarriers ensure plant operation at the Frankfurt-Hoechst Basell plant

**T**he polyethylene production plants at the Hoechst Industrial Park in Frankfurt have been in operation for more than 50 years. What started under the management of Hoechst AG is now operated by Basell Polyolefine GmbH. The Basell Group was founded six years ago by a joint venture between BASF and Shell, and is one of the leading suppliers of polyethylene, polypropylene, high-performance polyolefins and polyolefin catalysts. Basell supplies customers in over 120 countries and has production facilities in 21 countries on five continents. Its headquarters are based in Hoofddorp, near Amsterdam, in Holland. The company employs more than 6,500 employees from 35 countries.

Basell has three production facilities in Germany: one in Wesseling near Cologne, Münchsmünster near Ingolstadt and in Frankfurt. At the Frankfurt facility, about 160 employees produce raw materials for plastic film, small and large containers such as

tablet packaging or drums, special pipes or netting. Basell has also concentrated its research activities in Frankfurt where just 300 employees work to ensure the company's future.

## Plant rebuilt in record time

Production at the Frankfurt plant was actually meant to be ramped down at the beginning 2006 by moving sections of the plant to Poland. However, an explosion at the Münchsmünster plant in December 2005 put an end to this plan. The plant was completely destroyed, so instead of dismantling line 2 at the Frankfurt plant as originally planned, the line was modernized and operations from Münchsmünster were transferred there. The highly flexible production facility in Frankfurt is now in operation, producing more than 30 different products, including all the products from Münchsmünster.



The full galvanic isolation of the Turck multibarriers impressed the Basell decision makers immediately



Because the integrated power conditioners of the Rosemount interfaces (top left) were not powerful enough, external Turck power conditioners now feed the FF lines

For Harald Liebisch, team leader for automation at Basell in Frankfurt, an exciting phase started in December 2005 when the polymerization plant had to be rebuilt in record time: "Once the initial decisions regarding the new plant had been made at the end of the year, things moved very quickly", Liebisch summarizes. "We were able to update the plant within three months and equip it with Foundation fieldbus lines."

Liebisch had already had some initial experience with multibarriers, though he was not entirely satisfied with the results. When the Turck solution was presented, the decision was made very quickly: "We were immediately impressed by the full galvanic isolation of the Turck multibarriers," the automation manager explained, "it was exactly this feature that was missing before."

### Multibarriers with full galvanic isolation

The Turck MBD-49-T415/Ex multibarrier allows for the installation of Ex-i drop lines up to 120 m in length. The full galvanic isolation is provided both between the trunk line and the output circuits as well as between the four output circuits. This prevents compensation currents from developing due to potential differences. The integrated short-circuit protection is activated if a short-circuit occurs at a fieldbus node. Only the output affected

is disconnected – the trunk line and the other outputs of the affected fieldbus segment remain in operation.

Actual planning was able to be completed just as quickly as the decision process, thanks to the configuration tool from Turck. "We used the tool to make a preliminary plan of the segments. The length of the fieldbus lines, the division of the fieldbus barriers, the assignment of inputs to multibarriers – the configuration tool allowed us to define all these points very quickly," Liebisch explained.

### Broad base

A total of nine fieldbus lines are currently in operation at the Basell polymerization plant. Power conditioners connected upstream from each one are provided for supplying the fieldbus segments. The scope of this project also includes plans for expanding the Foun-

#### Quick read

In order to take over the production of another site at short notice, Basell Polyolefine GmbH was able to upgrade its Frankfurt-Hoechst plant within three months by installing the Foundation fieldbus system. Central elements of the new installation are the Turck power conditioners and multibarriers which offered more impressive features than just their channel-specific galvanic isolation.



“We are very happy with the Turck products. In addition to the galvanic isolation, their reliability and simple operation are outstanding.”

**Harald Liebisch,**  
Basell

## New Power Conditioner with FF Diagnostics Tool

The Foundation Fieldbus Diagnostic Power Conditioner system (DPC) is a brand new item in the Turck product portfolio. The power conditioner features an integrated diagnostics unit that supports the user in commissioning a fieldbus installation, and also detects faults and even inconspicuous changes within individual fieldbus segments. A suitable alarm function enables fieldbus-related installation faults to be prevented completely. The DPC system primarily provides a redundant supply of up to 16 segments with a max. 800mA output current and max. 30 VDC output voltage for each segment. In practical applications, this also enables the installation of long-distance segments up to 1900 m in length, along with the connection of stations with a high power consumption. Turck has also implemented full galvanic isolation on the new DPC system. In order to make complex fieldbus diagnostics transparent for the operator, the individual values and parameters are displayed graphically via a DTM (Device Type Manager) in the asset management system, which can be integrated in any FDT frame application as required.



**The new diagnostic power conditioner system with integrated diagnosis tool immediately detects even subtle changes in FF segments**

dition Fieldbus network to 15 segments. “We are very happy with the Turck products,” Harald Liebisch says. “In addition to the galvanic isolation, their reliability and simple operation are outstanding. Since we have completely migrated to Turck, we have not had any more difficulties. We therefore also intend to implement the next expansion stage using Turck products.”

Despite the time pressure under which the project was completed and the absence of a test phase, installation of the new technology was largely trouble-free. Rapid support was only required once in the initial phase when the first line could not be put into operation. This problem was caused by an insufficient power supply for the three multibarriers due to the internal power conditioners of the Rosemount interfaces used in Frankfurt. These interfaces connect the FF segments to the ABB Symphony control system.

We were able to rectify the problem within a few days. “Turck was a big help in solving it. The short communication routes within the company were very helpful,” reflects Liebisch on his experience. “Our problem was taken seriously and dealt with immediately. With the short implementation time available for the project, it was very important that we found a solution quickly.”

The multibarriers are now supplied with external Turck power conditioners that not only provide enough power, but also allow a clean separation between the interface converter and the fieldbus.

## Conclusion

The changeover to fieldbus technology has enabled the installation planners at Basell in Frankfurt to create the basis for a flexible response to market requirements. The speed at which the installations can be adapted has already been put to the test with the first FF project. The installation in the polymerization plant had to be made operational as quickly as possible without a test phase.

With its high-performance power conditioners and multibarriers with channel-specific galvanic isolation, Turck has provided the most suitable technology for the demanding Basell application. However, it was also the “soft facts” – from the configuration tool to easy handling to prompt availability – which enabled the Mülheim fieldbus, sensor and interface specialists to make such an impression that Turck has also remained supplier of choice for the planned expansions.

### Author



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