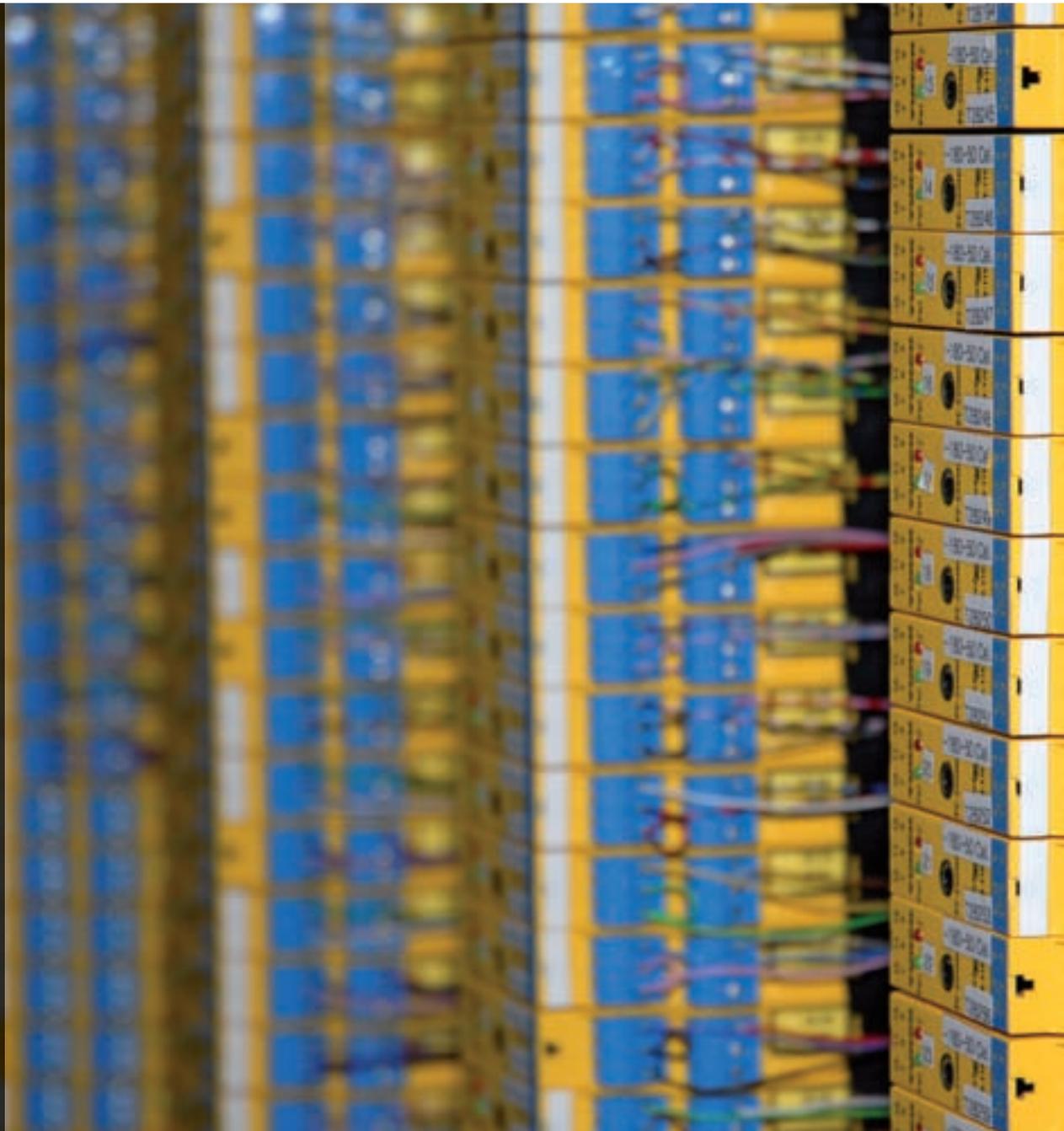


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IM34 tempera-  
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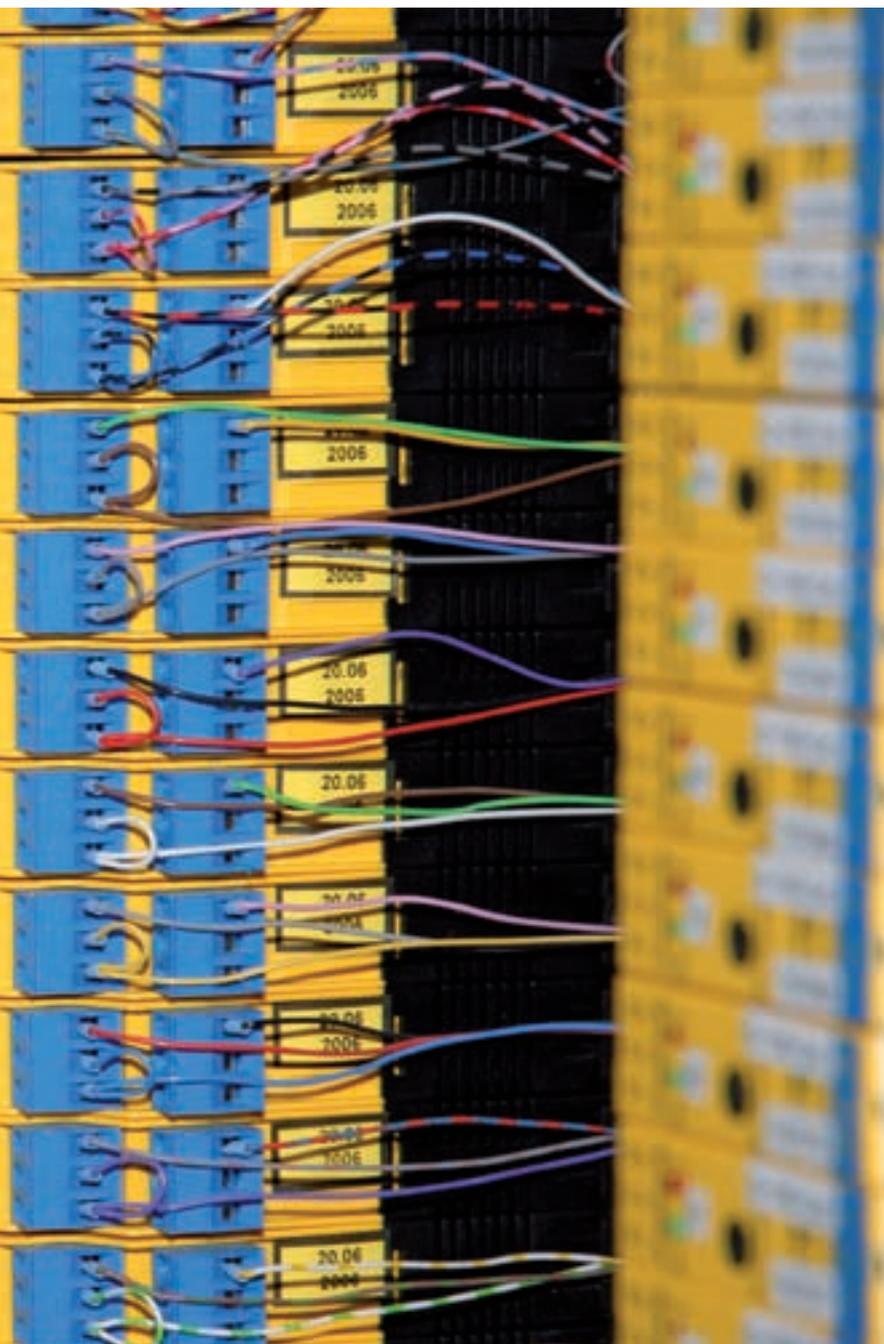


## To the Rails

BP Lingen oil refinery modernizes temperature measurement with Turck IM34 temperature transducer for DIN rail assembly

**R**ectification, distillation, hydrotreating, reforming, cracking – even the terms used to refer to the various processes required to turn crude oil into a finished product like gasoline, kerosene or chemical primary products sound complicated. Many of these processes are based on heating up and cooling down the oil and its intermediate products – temperature is therefore one of the most important process parameters for refining crude oil.

“When our refinery was built over 50 years ago, the number of temperature measurements was still straightforward. With increasing automation and process complexity, the number has rapidly risen” says Holger Nitschke, who handles the issue of temperature measurement in EMSR technology at BP Lingen. The refinery in Lingen, Northern Germany, was optimized for the production of fuels thanks to continual modernization and expansion efforts in its processing plants. With its high processing depth,



The BP Lingen Emsland oil refinery primarily produces gasoline and diesel fuels, jet fuel, light heating oil and chemical primary products



Holger Nitschke, BP Lingen, is impressed by the compact design and the simple assembly of the Turck IM34 temperature transducer

even difficult crude oils are able to be refined into high quality products in Lingen. To do so, a reliable, robust, and state-of-the-art measurement technology is required.

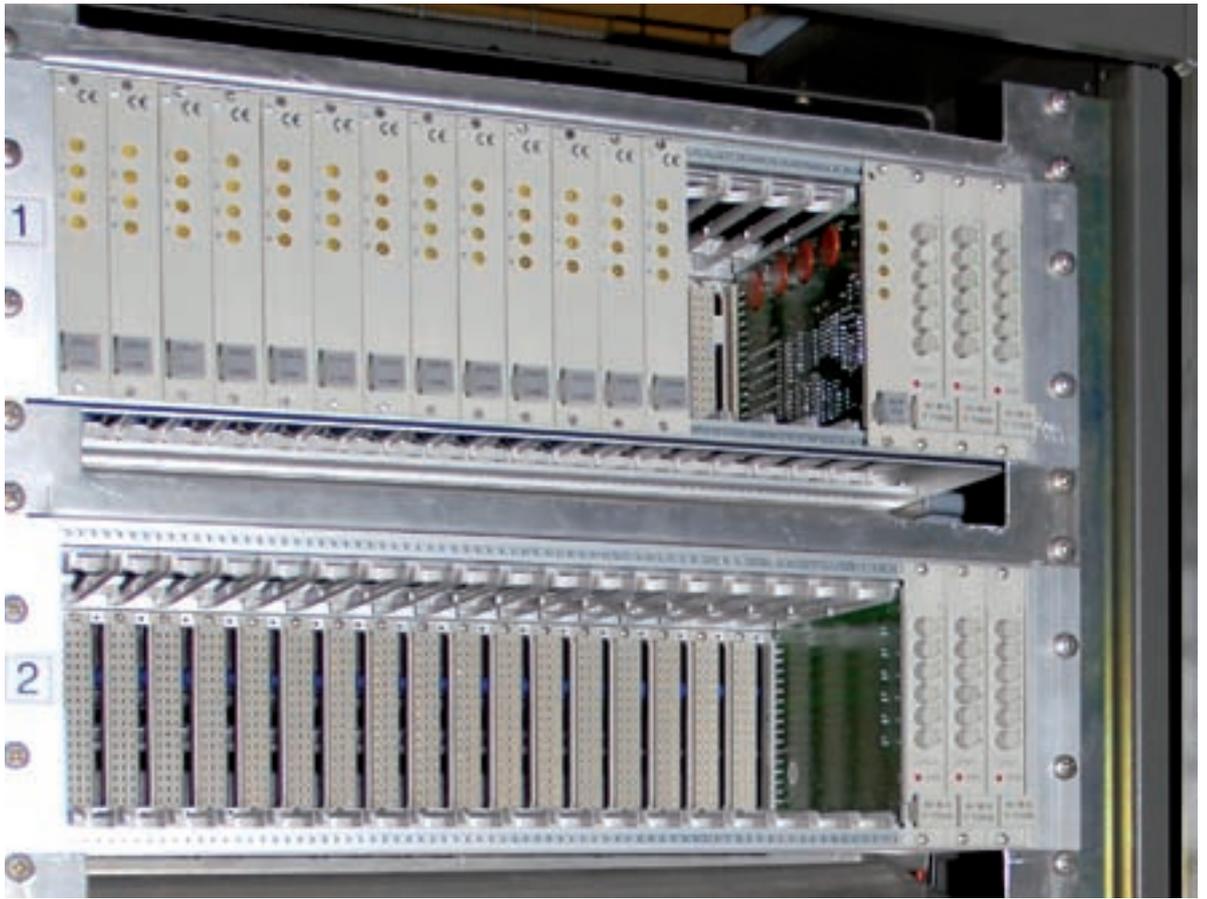
### DIN rail replaces 19-inch technology

Replacing the temperature transducers installed in the 1980's has also been a topic for about three years. In contrast to the 19-inch transducers used during

#### ▶ Quick read

When it comes to refining oil, temperature ranks among the most important process parameters. That is why higher demands are being made on temperature measurement in order to operate refineries more efficiently. At the BP refinery in Lingen, the EMSR specialists are relying on the universal IM34 temperature transducer from Turck as part of the company's plant modernization efforts.

**More space:**  
BP Lingen is replacing more and more old 19-inch temperature transducers with DIN rail devices from Turck



its time in the control room, in this project, BP Lingen is upgrading to modern interface devices for DIN rail assembly. “The 19-inch technology is disappearing from our plants more and more because a DIN rail solution in our case is simply more cost effective and the assembly time considerably lower,” says Nitschke. “When necessary, I can replace devices from different manufacturers without any problem – I simply remove the old device from the rail and place the new one on it, add voltage supply, signal input and output, and finished.”

Despite the many products to choose from, when replacing their 19-inch technology, the BP specialists intentionally selected the IM34 temperature transducer from Turck: “At that time, we looked at the products from leading suppliers and subsequently decided in favor of Turck,” explains Holger Nitschke. “In addition to an excellent cost/benefit ratio, the compact design and the simple assembly were important for us because space in the control room is becoming increasingly expensive.”

Modernizing temperature measurement technology does not necessarily have to mean a completely new installation, as the example of the Lingen refinery shows. With the right technology, today’s requirements can be met by simply replacing the temperature transducer. “In the past, we performed many temperature measurements via type K thermocouples. That is why even in the older plants there is a high number of nickel-chromium/

### Data logger in the IM34

One highlight of the IM34 temperature transducer is the integrated data logger. The freely parameterizable memory offers 8,000 measuring points and provides a powerful tool for process diagnosis. Thus, the user can determine the time frame for entering the measured data, parameterize a trigger event and finally read out the data per FDT/DTM. This also enables the route between field device and process control system to be monitored. The IM34 interface module continually describes the integrated data memory for that purpose. Thanks to the non-volatile memory, data remain intact even during a power outage so that an interface device essentially becomes a transient recorder.



“ In addition to an excellent cost/benefit ratio, the compact design and the simple assembly were important for us because space in the control room is becoming increasingly expensive. ”

**Holger Nitschke,**  
**BP Lingen**



At the Lingen BP refinery, several hundred IM34 universal temperature transducers from Turck are ensuring modern measured data processing

nickel cables between the control rooms and the plant. All of the existing wiring in the plant – including the sensors – can continue to be used,” explains Nitschke.

### IM34 processes various input signals

In addition to thermocouples, Pt100 temperature sensors, based on the resistance change in platinum under the influence of temperature, are being increasingly used in process automation today. As a resistance thermometer for the temperature range of -200 to 500 °C, the Pt100 is more precise than a thermocouple. In contrast, the thermocouple, is suitable for a larger temperature range. Regardless of which measurement process is used, as a universal temperature transducer, the IM34 processes input signals from Ni100/Pt100 resistances, as well as thermocouples or millivolt signals. The device combines this universal capability with the high functionality of a freely parameterizable data logger and a PC interface for simple programming. The DTM (Device Type Manager) for the IM34 was developed in accordance to the current design guidelines of the FDT group.

“We use PACTware as a programming frame,” says Holger Nitschke. The term stands for “Process Automation Configuration Tool” and is an open configuration software into which any manufacturer can integrate the operation of its field devices. A configuration using DIP switches or rotary encoding

switches was not an option for Nitschke because: “How many DIP switches do you need to be able to adjust all the options that you want to adjust these days? With a temperature transducer like the IM34, there is already an array of parameters that would probably break the rack if adjustments were made via DIP switches, especially as there would barely be any space for all the DIP switches with the desired compact design. Even if the switches are set on the side, I first have to remove the devices from the rail before assembling the DIN rail. In this case, a PC interface is obviously much more comfortable.”

### Good cooperation counts

It wasn't just the device's technology and the price that influenced Nitschke's decision to stick with using the IM34 from Turck, he was also impressed by the company's service mentality. “When we installed the first devices about three years ago, there was suddenly a problem with the firmware. In such cases, you see how good the cooperation is between customer and supplier. Turck's service was 100% in this case,” acknowledges Nitschke. “In a short time, all installed devices were equipped with a new firmware. Since then, all IM34 devices – and there are several hundred of them – are running completely smoothly. That is the best reference you can give for such a device.”

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