

Expert talk «Sensor technology»



# Extra performance to guarantee added value

Optical sensors have become indispensable in factory automation. If they even deliver «extra performance», users will derive additional benefits. Product Manager Markus Imbach and Bernhard Furrer, Head of Business Unit Position Sensors at Baumer, talk about performance capacities of present-day sensors.



Bernhard Furrer, Head of Business Unit Position Sensors and Markus Imbach, Product Manager at Baumer (f.l.)

## Which sensor types does Baumer offer?

**Imbach:** The Baumer portfolio provides nearly every physical measuring principle, which allows us to respond to most varied requirements. It's like nature. We have more than a single sense organ to go through life. In machinery, sensors act as sense organs and actuators act as muscles, reason why we utilize sev-

eral sensing principles: inductive, magnetic, capacitive, ultrasound and radar. We have sensors to measure pressure, temperature, conductivity and force, further there are sensors to detect rotation angles, inclination and vibration, just to mention the most important ones.

From the start it has been our objective to offer customers the optimum sensors for their applications. Using this approach, we have built expert competence in each of these technologies.

**The Baumer claim for optical sensors is «Extra performance in a compact design». Can you describe this extra performance in more detail?**

**Imbach:** Our smallest optical sensor reliably detects black and glossy objects up to 180 mm distance. The equivalent competitive product features a range of almost 120 mm but comes in a much bigger physical design. Such extra performance offers users additional freedom, for example in installation by separated and protected sensor mounting.

**Furrer:** Range is only one aspect, reliability is another. Our sensors reliably detect even demanding objects

like highly reflecting metal sheets in inclined positions. Such extra performance is not achieved by every manufacturer and something we are really proud of.

By the way, there is another, completely different aspect where the compact design of our sensors is even more important. Space or ground is scarce, so it is not a surprise that equipment and plant manufacturers attach increasing importance to the ever-increasing demand for compact and space-saving designs. As a result, miniaturized sensor designs will play a key role also in the future. However, without compromising on performance. To us, extra performance means extended sensing range, significantly higher reliability in the detection of demanding objects and reliable operation even under challenging ambient conditions.

**Is such extra performance based on purchased know-how, or has it been built by specific Baumer research and developments?**

**Furrer:** Today, our sensors hardly integrate any standard market components or parts. In the past, Baumer has invested a great deal of money in sensor research so that our sensors are now based almost entirely on own developments. For example, optics are our designs, the same applies to opto-electronic components or the highly complex, ASIC-based receivers.

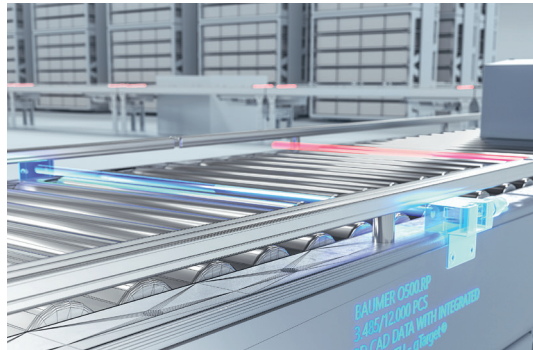


«Already very early it had been our objective to offer customers the optimum sensors for their applications.»

**We talked about the benefits of optical sensors in factory automation. Are there other areas where these can play to their strengths?**

**Imbach:** Another area of application is for example logistics/intralogistics, particularly container manage-

ment in goods picking. Such installations integrate thousands of sensors, and plug-and play solutions like our sensors that are immediately ready for use without any prior alignments save time and in the end provide users with added value. These are Baumer photoelectric sensors and photoelectric proximity switches with 3D CAD data with integrated beam path. This is only feasible thanks to the aligned and consistent beam path ensured throughout the entire product series which saves time from design-in to integration. This eliminates the tedious effort of beam path patterns, sensor alignments and even interpretation errors.



Installed as designed - 2 smart features save valuable time: 1. Easy sensor integration already at designing stage thanks to 3D CAD data with integrated beam path. 2. Quick mounting without fine adjustments thanks to the aligned light beam (qTarget®) and ensured consistent precision throughout the entire product series.

**Furrer:** More applications of our optical sensors can be found in lab automation, which experienced a huge boost induced by the Covid-19 pandemic. Our sensors are ideal for use in such installations, as they are ultimately performant despite their compact design.



The high-performance Baumer sensors come in compact designs.

### How do the Baumer sensors get along with typical factory interference?

**Imbach:** Here, LED light sources are a vital aspect. They use the same frequency range as sensors and hence are a potential source of interference. A sensor interfered by extraneous light can no longer distinguish any object-remitted light, which finally would result in switching errors. Another effect is slowed-down measuring cycle time, which in turn has a negative impact on the process cycle time and worst case would lead to machine downtime or even crash. Identifying the interference light source is often not easy at all, since lighting conditions may differ according to equipment location or by additional lighting installed.

The easiest solution is using sensors insensitive to ambient light, such as our photoelectric sensors and photoelectric proximity switches that feature a special control circuit and ambient light algorithm. They will not be influenced by interfering light emitted by LEDs or sensors in the near vicinity.

### What options does Baumer offer for sensor parameterization and monitoring?

**Imbach:** We have developed an app for sensor parameterization via IO-Link wireless master for data transmission via Bluetooth or WLAN.

**Furrer:** Another option is the Baumer Sensor Suite launched one year ago, which rapidly gains more and more widespread use. Using this software, sensors connected to USB- Master can be visualized on a PC to see what the sensor is seeing. For example signal height, signal distance or signal reserve. This is of particular interest in special machine engineering, since it not only allows for ideal sensor adjustment to the application, but also for immediate checks whether the sensor is operational.