



## BMW Group Relies on PSI Technics' TPCC Sensor Cooling Technology

**The BMW Group is one of the most successful manufacturers of cars and motorcycles worldwide and has three of the most recognizable premium brands in the automotive industry.**

### The Challenge

BMW's light-metal foundry in Landshut, Germany, produces cylinder heads for the group's three-cylinder engines. A melting furnace in the lost foam casting area supplies liquid aluminum during the casting process. The flow of aluminum is controlled by an automated tipping feeder and a runner transports the molten metal from the furnace to the molds. To ensure a constant flow of aluminum the runner's fill-levels are constantly monitored to ensure continuous casting.

The aluminum's high heat radiation causes environmental temperatures to rise to up to 176°F (80°C) which led to disruptions of the casting process, particularly during the summer months.

The high temperatures caused the SICK DT500 sensor that was used for monitoring the fill-level to malfunction, resulting in a safety shutdown of the melting furnace which could no longer supply aluminum to the molds, directly impacting production.

### The Solution

- >> Installation of PSI Technics' Thermo Protection Cooling Case (TPCC®)
- >> The TPCC®'s cooling technology keeps the optical sensor at an ambient temperature of approximately 71.6°F (22°C) and ensures precise measurements while increasing the laser diode's lifespan\*

\*Temperatures exceeding 104°F (40°C) can reduce the lifespan of optical sensors, such as laser sensors, bar code scanners or camera systems, by half.



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*Cool, despite the heat –  
PSI Technics' TPCC®*



## Project Brief

### Description

The TPCC® is an ideal solution for cooling optical sensors that are exposed to high environmental temperatures. It expands the sensors' application range and considerably extends their usable life.

### Customer

BMW AG, Landshut Factory, Germany

### Industry

Automotive

### Scope

Installation of the TPCC® for the thermal protection (thermoelectric cooling) of a SICK DT500 laser sensor without modifying the existing infrastructure.

### Project Duration

The TPCC® was installed in a single day.



Left: Light-metal foundry at BMW's Landshut factory  
Right: TPCC®-protected sensor monitoring the fill-level

**PSI Technics is your reliable partner for intelligent and efficient solutions that improve productivity and quality in a variety of fields, such as factory automation, retrofitting/modernizations, industrial positioning systems, industrial image processing, thermal protection of sensors as well as R&D for energy efficiency and energy management.**

### Unbeatable protection in high-temperature environments and easy to install

The innovative cooling case is made of lightweight composite material that provides excellent insulation and cooling properties. Since the TPCC® is specifically designed for easy integration into existing industrial plants the mounting and electrical installation at the factory went smoothly. The TPCC®'s 24V cooling system is based on thermo-electric processes, so no additional modification of the system or the installation of water lines or lines of compressed-air was required. The TPCC® protects sensitive optical sensors from high temperatures and extreme temperature fluctuations. Since the TPCC® can be used at environmental temperatures of up to 176°F (80°C) it was the perfect solution for BMW AG.

*According to Mr. Sommerer from Equipment Planning, no malfunctions occurred after the TPCC® was installed and downtimes caused by sensor malfunctions were completely eliminated.*

*The TPCC® perfectly protects the SICK DT500 sensor from heat, effectively preventing measurement errors. The sensor's susceptibility to the high radiant heat that previously led to a loss of production was completely remedied and BMW's investment in the TPCC® paid off very quickly.*

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