

Temperature Converter Detects Limit Values

Monitoring of Coolant Pumps
for Safe Operation in the Process
Industry

At a Glance

- The failure of a coolant pump can risk the entire process and result in significant consequential damage
- To monitor the drive, temperatures are measured at different points of the pump
- If predefined limit values are reached, defined problem-solving processes and/or processes to shut down the pump can be triggered
- The temperature converter with trip relay KFD2-GUT is ideal for applications up to SIL 2 and has two configurable relay outputs for activating different actions if the drive overheats



The Application

Numerous process engineering plants require the process medium to be cooled in a targeted way. Coolants are used for this, which have a different viscosity depending on the temperature. If foreign matter has entered the cooling system or if the temperature and the viscosity of the coolant are too low, the coolant pump may fail.

This results in the required performance of the cooling circuit declining. This in turn can have unforeseen consequences for the ongoing process and the process plant. Depending on the process, there may also be an immediate danger to people and the surrounding area.

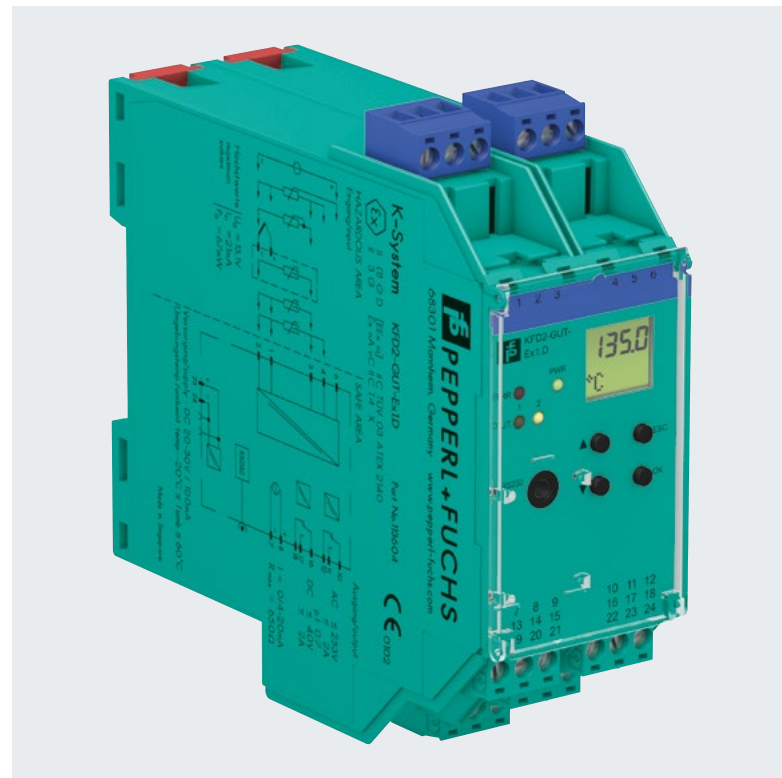
The Goal

Electrical drives are usually monitored by measuring the temperature of the stator, bearings, and surfaces. An increase in temperature in these areas of a motor indicates problems concerning field current, lubricant pressure, and drive cooling, for example.

Normally, the temperature sensors in the stator are securely encapsulated with the stator winding. Since they are subjected to high mechanical loads in this location, they are designed redundantly to ensure that the temperature is measured correctly even if a sensor fails. If certain limit values are reached or exceeded, precisely defined processes must be triggered to react to the situation in a targeted way. In the simplest case, the respective drive is just switched off.

The Solution

An optimal component for the continuous monitoring of coolant drives is the temperature converter KFD2-GUT with trip relay from Pepperl+Fuchs. It is suitable for applications where the requirements of functional safety up to SIL 2 must be met. Two individually configurable relay outputs allow the precise definition of temperature limit values and provide a corresponding switching signal when these values are reached. The temperature converter is therefore ideal as a safety component that enables previously defined measures to be triggered to eliminate extensive damage as a result of a cooling circuit failing.



The Benefits

The trip amplifier is galvanically isolated and offers two independent switch points for temperature probes, thermocouples, and voltage and potentiometer signals. The primary function of the amplifier is to convert the signal into a proportional output current. The trip point, hysteresis, and high and low level alarm can be configured via a PC. The component provides the required isolation and a simple logical function for limit values. The KFD2-GUT is available as a signal conditioner for safe areas and as a version for intrinsically safe signals.