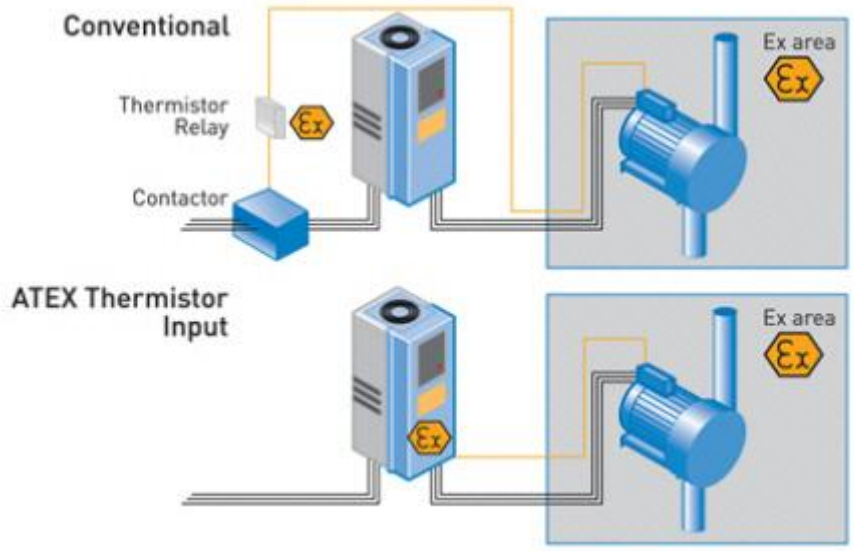
ATEX-certified thermistor input integrated in Vacon NXP drive

As Vacon AC drives often control motors placed in potentially explosive environments, Vacon has investigated the requirements this places on the AC drive.

Normally Ex motors are protected using a thermistor and a thermistor relay to switch off electrical energy from the motor. In contrast to this, Vacon has developed a thermistor input that can be fully integrated in the Vacon NXP drive. This unique feature simplifies the use of drives together with Ex motors. If overtemperature is detected, the drive is immediately prevented from feeding energy to the motor and thus further overheating of the motor is avoided. As no external components are needed, the amount of cabling is kept to a minimum. This improves reliability and saves both space and costs.

Vacon's ATEX-certified thermistor input is integrated in Vacon's new OPT-AF board. It contains a thermistor temperature supervision circuit designed according to the reliability requirements of the ATEX Directive to protect motors placed in Zones 1, 2, 21 and 22. The corresponding equipment categories are 2 and 3. The protective function is approved for these zones and categories by the notified body VTT Finland, an impartial expert organization.



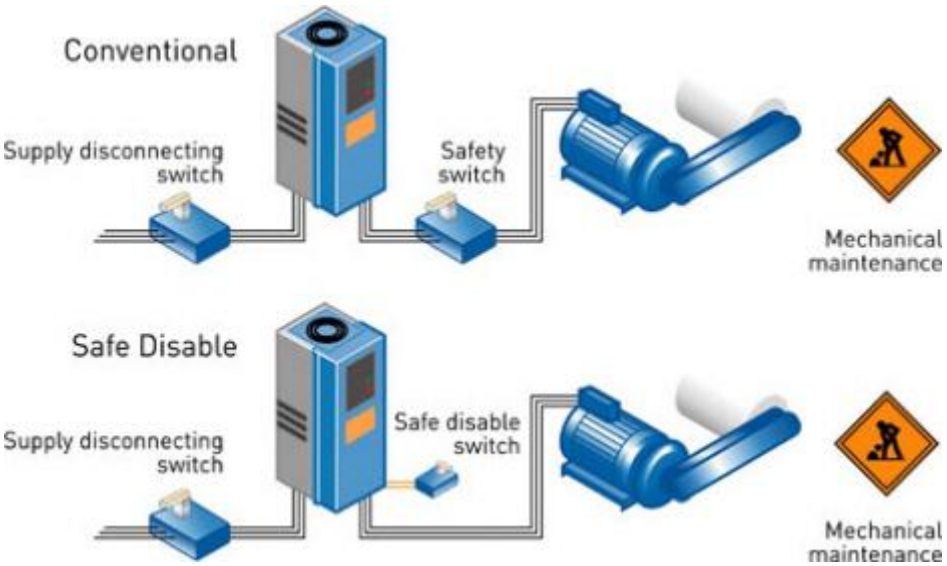
Supervision of motor temperatures is widely used for example in the chemical, petrochemical, marine, metal, mechanical woodworking, mining and oil drilling industries.

In many countries, where Vacon is a significant supplier of AC drives to the chemical industry, ATEX is a very important issue. Furthermore, as low power AC drives are very common in the chemical industry, the integrated thermistor input becomes even a more attractive alternative. The integrated thermistor input brings considerable savings when the cost of several relays can be avoided.

The thermistor input is available for the Vacon NXP drives in the power range of 0.75 kW – 5 MW in voltages 380-500 V and 525-690 V. This function is now certified to comply with the ATEX requirements. "However, the drives as such cannot be placed in a hazardous area," says Mr Heikki Hiltunen, Executive Vice President, Vacon.

Integrated operational safety of a machine

In addition to the integrated thermistor input, Vacon also offers an integrated safe disable function. This simplifies the design phase, cuts costs and increases user safety. Certified according to EN-954-1, category 3, this function can be used to ensure that the drive will not start during maintenance or servicing of the machine. Thus, it can be used to replace the conventional safety switch during mechanical maintenance. The safe disable function cannot be used for electrical maintenance.



Customer need as starting point

“As usual, designing the integrated thermistor input and safe disable functions started from a customer need,” says Mr Hiltunen. Vacon R&D designers started the development projects by defining the requirements together with SGS FIMKO, one of the world’s leading inspection, verification, testing and certification companies. SGS FIMKO put Vacon R&D designers in contact with BGIA, a German certification company with special know-how in this area. In cooperation with BGIA and VTT in Finland, Vacon designers started developing a technical solution, which is, after many tests and adjustments, now available for the customers.

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