



Brüel & Kjær Vibro



Application Note

Monitoring strategy – Valve temperature monitoring on reciprocating compressors



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ABSTRACT

Fully automatic, EEx compliant monitoring solution. Reciprocating compressors play a vital role in the petrochemical industry, such as in gas treating facilities, refineries and chemical plants. Therefore uptime is a critical issue for these machines. This Application Note describes the Brüel & Kjær Vibro solution for monitoring valve problems using temperature measurements and alarm relays. The monitoring system as described below consists of the front-end, the VC-6000CM compact monitor and display options, and the intrinsically safe housing options.

Front-end

The part of the monitoring system consists of PT100 sensors mounted in thermo wells on the reciprocating compressor. These sensors are normally supplied and installed by the machine vendor as they may require machine modifications. Since most installations require an intrinsically safe design, the sensors are wired via junction boxes to isolators mounted on DIN rails (see Figure 1). The isolators receive the required power via the DIN rail.

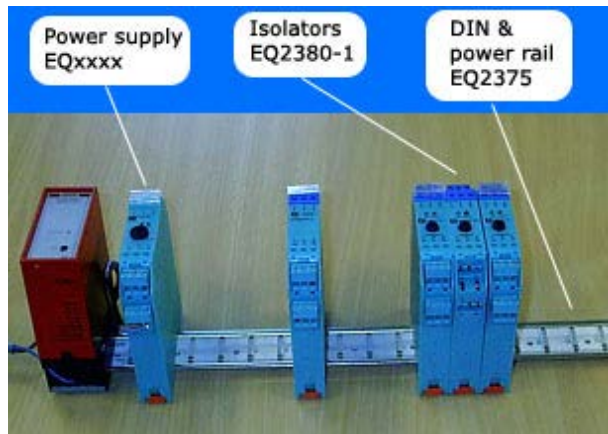


Figure 1. Isolator configuration assembly.

Valve temperature monitoring

The VC-6000CM compares the measured temperature values to the user-defined Alert and Danger levels. If the limits are exceeded, the corresponding Alert and/or Danger relays are activated (two relays for each sensor), as shown in Figure 2.

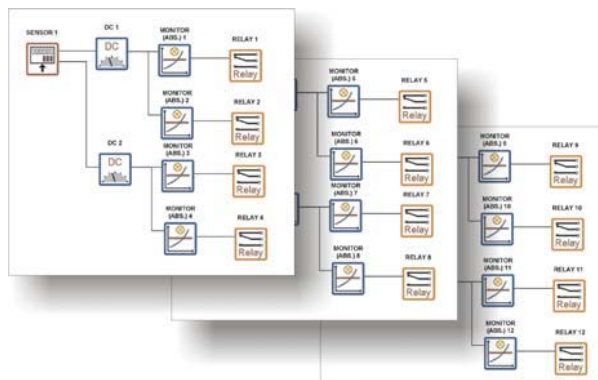


Figure 2. Measurement configuration.



The measurements and alarm limits are configured in the VC-6000CM using a computer connected to the VC-6000CM serial port.

No standard display of valve temperatures is available on the VC-6000CM, but it is possible to use an OPC interface for sending measurement values to a DCS or PLC for display. Media converters, gateways and OPC server software are available on request at Brüel & Kjær Vibro.

VC-6000cm housing options

Two options exist for mounting the VC-6000cm:

- 1. Intrinsic safety installation -**
This configuration is normally used if there is no field cabling between the compressor and the safe areas (e.g. a typical situation when revamping an existing compressor). See Figure 3.
- 2. Safe area installation (e.g. Instrument Room) -** This configuration is normally used if there is already field cabling between the compressor and safe area (e.g. a typical situation for a new compressor where all cabling can still be installed). Isolators are still required in order to ensure safe power to the sensors on the machine.

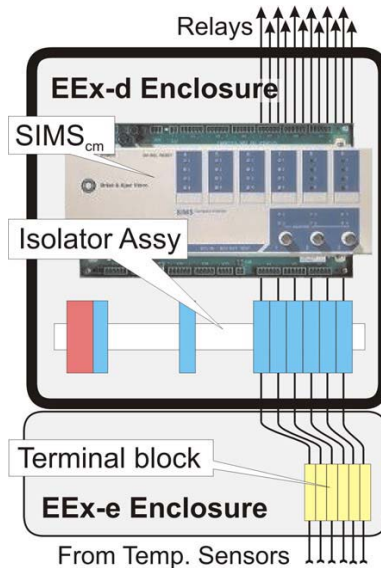


Figure 3. Intrinsic safety enclosure Configuration.



Figure 4. Cabinet installation in a safe area.

PRODUCT DESCRIPTION

| | |
|-------------|---|
| EQ2xxx | Power supply for isolators (230VAC) |
| EQ2380-1 | Isolators for PT100 |
| EQ2375 | Power rail |
| UT-100 | User terminal |
| UD-112-6-AC | VC-6000CM, 6 temp. channel (230 VAC) (24 VDC) |
| TPS-EXD2 | EEx-d housing with EEx-compartment |

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