

1.7 roxar sand and pig Monitoring system

1.8 Topside

The hardware versions of the Roxar topside sand and PIG monitoring systems are identical; the only difference is in the software configuration for the CIU.

1.8.1 Detector

The complete detector is shown in Figure 7. It comprises a sensor, detector housing with spring assembly, and a strap-on detector socket with stainless steel strap assembly.

The sensor is an acoustic emission transducer designed to be clamped onto the outside of the production pipe, see Appendix I item 4. The sensor detects the noise that propagates in the pipe wall, and converts it to a digital signal that is transmitted via the sensor power cable to the safe area electronics.

The detector is powered from the same source as the CIU, although the TC power must pass through a safety barrier before entering the hazardous area. For standard installation a shunt diode barrier MTL7087+ or equivalent is used, see Figure 9.

Figure 7 shows the standard detector, which is divided into four main parts:



Figure 7 - Standard detectors main parts.

The stainless steel strap assembly is used for fastening the detector socket on the pipe. The sensor is then mounted inside the detector housing, which is then mounted on the detector socket using a bayonet fitting.

As an alternative option for the standard detector housing, Roxar also supplies a high temperature housing which must be used instead of the standard housing if the pipe surface temperature exceeds 115°C. This is shown in Figure 8.



Figure 8: The high temperature housing.

4.3.2 Temperature Consideration

The detector can be operated at ambient temperatures up to 80°C and complies with its certificate temperature rating T5.

If the pipe surface temperature exceeds 80 °C, special precautions shall be taken. The detector shall be mounted horizontally on the pipe as shown in Figure 82 or underneath the pipe. The pipe can have a maximum temperature as high as 115 °C without bringing the ambient temperature of the sensor above 80 °C, provided that the temperature of the ambient atmosphere does not exceed 50 °C, and the detector is mounted freely without any other shielding or insulation than that provided by the detector housing.

If the pipe surface exceeds 115 °C, a high temperature fixture must be used. In order to safely use the detector at a pipe surface temperature higher than 115 °C, the detector must be equipped with a waveguide extension and prolonged detector housing with heat evacuation holes in it.

The detector must be mounted horizontally in order to obtain optimum heat evacuation, see Figure 83.

For safe use of the detector, the ultimate requirement is that the ambient temperature of the sensor is kept below 80 °C. It is the responsibility of the end user to ensure that this requirement is met.

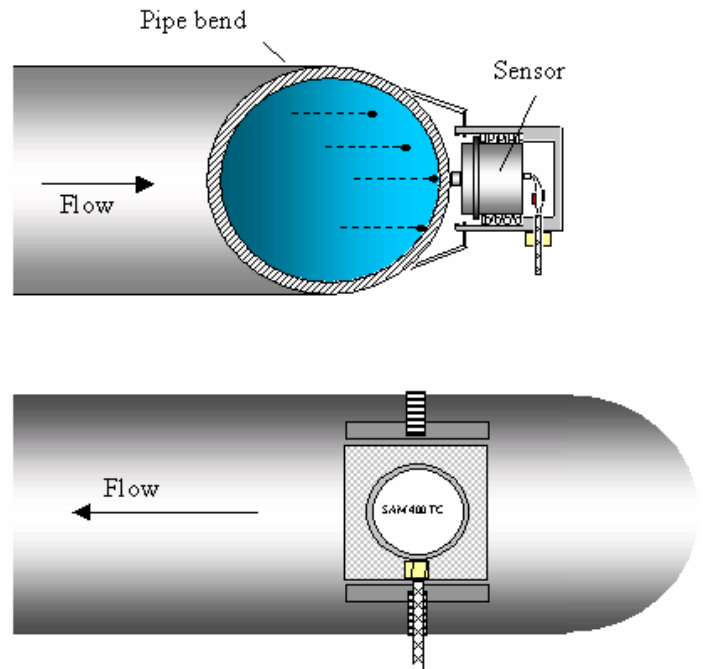


Figure 82 – Mounting of the detector with standard housing when pipe surface exceeds 80 °C.

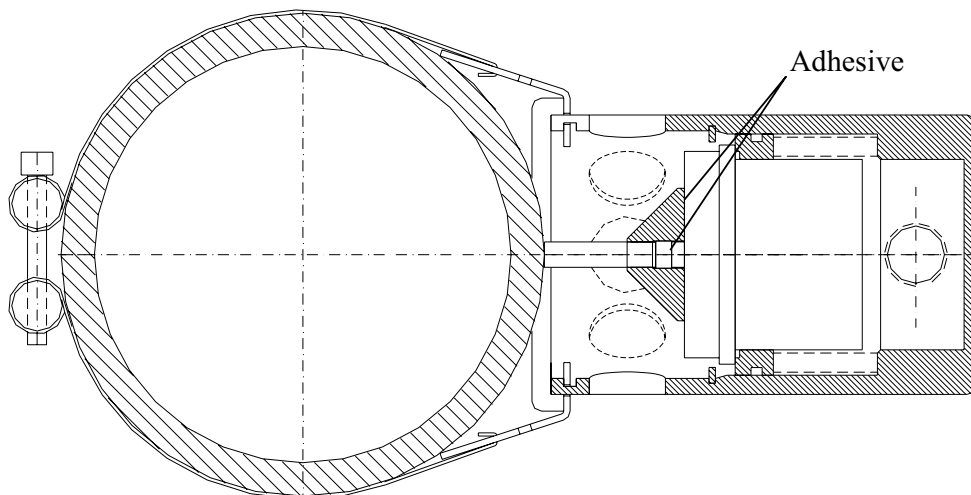


Figure 83 - Mounting of the detector with high temperature fixture.