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## **Question 47: What are the best practices for corrosion probe selection, installation and reliability, especially in high temperature and/or high H2S environments?**

### **Alec Klinghoffer (Coffeyville Resources)**

Some things to consider when selecting and installing corrosion probes are to match the metallurgy of the probe to the pipe. Also, it is very important to try and determine where the corrosion is actually occurring on the pipe when installing the corrosion probe. This is important because the probe is a “point” measurement and corrosion can take place in the vicinity of the probe without the probe actually measuring it. The probe depth should also be taken into consideration because one wants to measure on the edge/ID of the pipe and not somewhere in the middle of the pipe.

In high temperature, high H2S environments, it is important to match metallurgy and packing material. Typically, for normal applications, the packing is made out of Teflon. This cannot be used in high temperature applications so care must be taken to ensure a suitable packing material is used. In addition, metallurgy is a consideration in high temperature applications. It is best to use Hastelloy in high temperature, highly corrosive environments.

The probes need to be reliable as the data needs to be “long term”. Since corrosion is a slow process, data needs to be collected over a 5 – 6-month period to get an accurate representation of corrosion rates.

### **John Clower (Chevron)**

Recommended techniques for corrosion monitoring include the use of electric resistance probes and AUT (automated ultrasonic testing).

ER probes can be ordered with some consideration for the process environment and are available in retrievable, retractable, fixed, and flanged mountings. They are rated up to 6000 psig and 850 °F.

AUT is transducer mounted externally, and thus suitable for any process environment. AUT corrosion mapping has many advantages over internal corrosion probes or external UT monitoring:

- High sensitivity corrosion detection
- Quantitative thickness measurements
- Faster results versus manual UT
- Repeatable

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- No welding required
  - Ease of interpretation

**Sam Lordo (Nalco Company)**

Corrosion probe selection is based on the velocity, metallurgy and the operating conditions of the system to be monitored. They are very effective when properly installed and maintained.

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