

Thermowell Condition Indicator

APPLICATION

Thermowells used for RTDs, thermocouples and other temperature measurement devices are an important part of the temperature measurement system by protecting the sensor and keeping the fluid in the vessel inside the vessel. In processes where the fluid may be hazardous if a spill occurs, it may be necessary to have a real-time indicator of the thermowell integrity. Corrosion, erosion, vibration, or weld failure can cause a thermowell to leak the process fluids into the connection head or onto the factory floor and the sooner it is detected the easier the clean-up.

A chemical processor asked us to provide a visual indicator of the thermowell condition to prevent spills of hydrochloric acid if the well were to fail. A thermowell was specified with a corrosion resistant Tantalum sleeve as the first line of defense, but some sort of indicator of the well health was desired to minimize hazards of a spill.

CHALLENGE

If the thermowell stem fails, fluid can leak into the connection head and into the connecting conduit possibly traveling back to control rooms or panels potentially causing expensive damage to equipment or becoming a safety hazard for workers. If the flange weld were to fail, fluid could leak outside of the connection head and be readily noticed so the challenge was to add a visual indicator for the stem failure mode.

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▶ Thermowell w/ Flange Process Connection and Tantalum sleeve

SOLUTION

Two solutions were offered as visual indicators of a well failure. First was to add a 1/8" diameter weep hole drilled into the instrument connection portion of the thermowell and is a very simple inexpensive solution. This still allows a small amount of fluid to escape in the event of a failure which may not be desirable. The second option effectively seals the thermowell instrument connection with a probe style that has a welded NPT connection. Then a tapped hole is added to the instrument connection housing and a pressure gauge is installed. Taking this one step further the gauge can be connected to a visual or audible alarm for complete containment and rapid notice of a failure.

For more detail on this solution or assistance with your temperature measurement challenge, email

info@burnsengineering.com or call the application engineers at Burns, 800-328-3871.