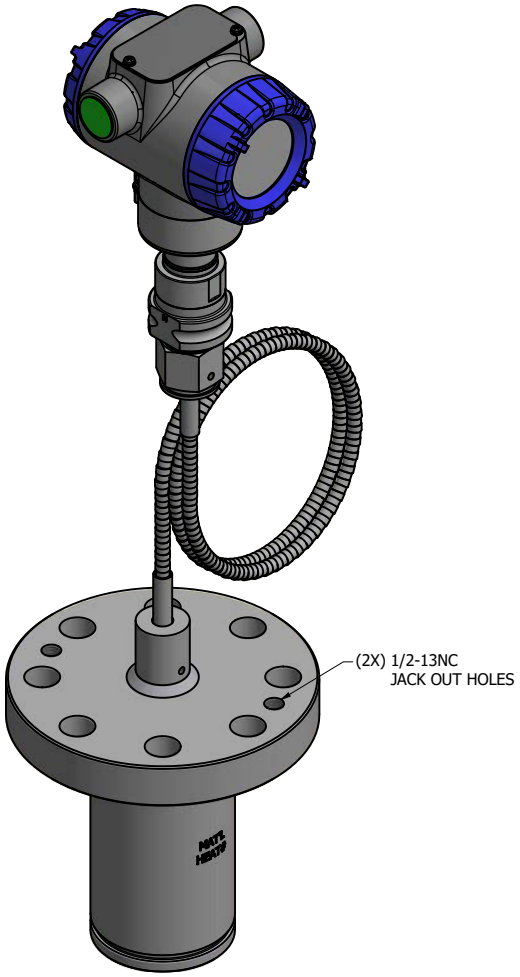
Case Study

Non-clogging Pressure Measurement in Jacketed Pipe

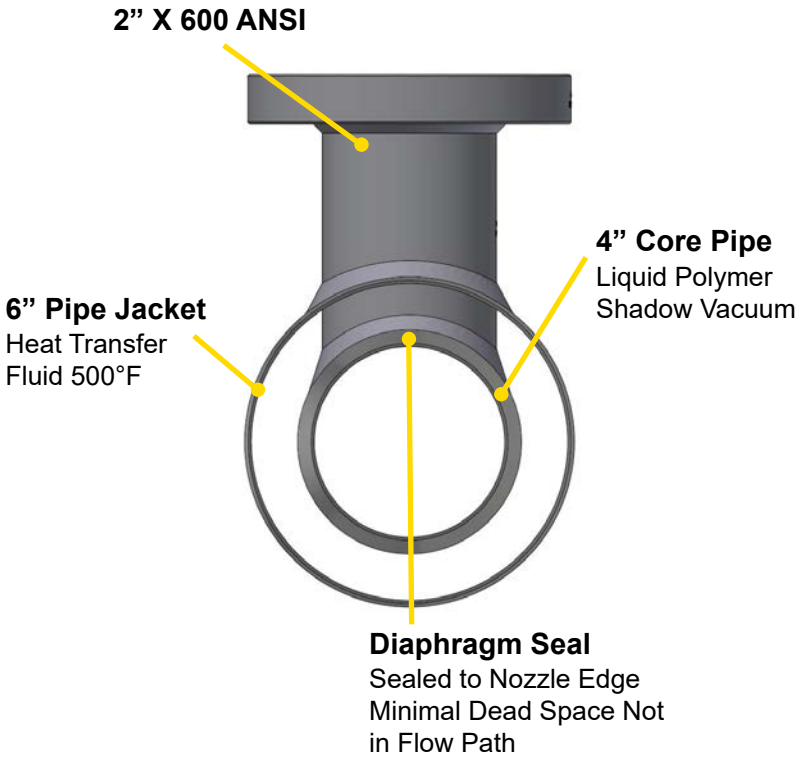
Background: A chemical company in the US is measuring pressure on a polymer that needs to maintain high temp and vacuum in order to stay in a liquid phase.

A traditional extended seal fit to an ANSI pipe nozzle does not seal at the diaphragm surface and thus the polymer would coat the inside of the nozzle then harden, not allowing for removal of the diaphragm seal.



DESIGN CONSTRAINTS

- Core Pipe operating in shallow vacuum, with purge pressures up to 150psi
- Jacketed pipe running heat transfer oil at >500°F
- Diaphragm to be outside of process flow with minimal dead leg
- Process fluid to be contained at or near the diaphragm surface where it will remain liquid
- All welding and construction to ANSI Class 600
- Need ultimate protection against possible process fluid leak



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Solution: Reotemp designed and manufactured a custom flanged extended diaphragm seal with triple gasketed protection to mate against a custom fabricated nozzle.

The nozzle was welded to the core pipe, then the jacketed pipe was custom fit and welded around the circumference of the nozzle. This design allows for all weld testing to be performed by Reotemp, so that the customer only had to weld the ends into the pipeline and limit the NDT performed in the field.

Triple Sealing

The diaphragm seal system was completely welded, including a weld of the fill port, for optimal performance in long-duration vacuum service. The system was filled with a high-temp, low pressure optimized fill fluid and installed with high-temperature o-rings - contact Reotemp for specific details.

Lastly, a custom plug was designed and manufactured for installation whenever the pressure transmitter needs to be removed from service for calibration or repair.