

Multi Point Thermocouple

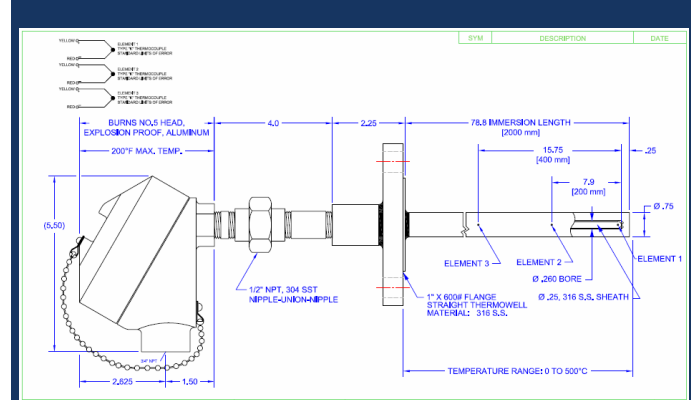
Case A071227

Application

A method of defining temperature gradients in a storage tank was required as a means of detecting the level and/or mixing of the fluid in the tank.

Challenge

Fast response, low cost, and highly localized temperature points were needed to accurately detect temperature gradients in the fluid over a short distance (16") near the bottom of a storage tank. Localized points were required to minimize the conduction effect between the points insuring an accurate representation of the gradients.



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Solution

A replaceable probe with three measuring junctions was designed that would install easily into a standard thermowell in the same manner as a standard RTD or thermocouple probe. A thermocouple was chosen as the best sensor type because of the very localized point measurement ability and they are small enough to fit three inside a 1/4" diameter probe. Spring loading of the probe keeps it firmly bottomed out in the thermowell to maintain a thermal conduction path. Each measuring junction was located in the probe to give the best possible conduction path from the probe to the thermowell insuring a localized measurement.