BURNS ENGINEERING

Application Note

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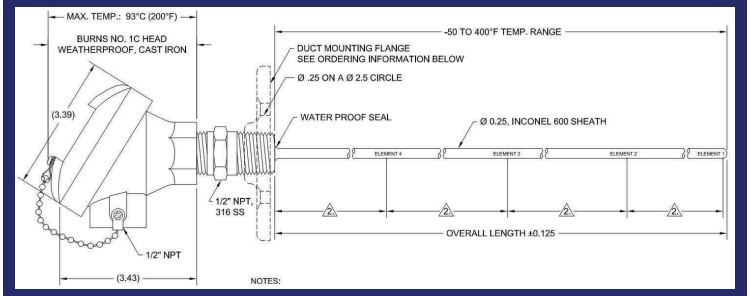

Short Length Averaging RTD

APPLICATION

An accurate average temperature measurement of air flowing in an 18" diameter duct was required to help control product quality. Measuring air temperature in a duct can be done more accurately if the temperature variations across the duct can be averaged together. Larger ducts can have significant temperature gradients as well as a significant boundary layer where the air flow stalls or slows down due to friction near the duct walls. Turbulence within the flow can also cause large variations in temperature and can happen in small ducts as well as larger ones.

During these days of rising energy costs and ever increasing emphasis on not only product quality but building efficiency and comfort, accurate temperature measurement has become paramount to a high tech environmental control system.

CHALLENGE

Accomplishing an accurate air temperature in a duct involves measuring several points in a given cross section then averaging them together. Having several single point sensors installed and connected to something that would average the readings together is expensive and difficult to set up. The 18" cross section of the duct required a scaled down version of a standard averaging RTD. Shortest lengths available in those are 36".

SOLUTION

Burns design engineers developed a solution that combines several sensing elements into one probe and averages them together giving the user a single 100 ohm .00385 coefficient output that meets the requirements of IEC 60751 and ASTM E1137 for platinum resistance thermometers. Probe length can be specified at 12", 16", or 20" to accommodate a variety of duct sizes. For larger ducts check out our Model 15297 averaging RTD available in lengths from 3 feet to 60 feet in aluminum or 316 SS sheath materials. The bendable design allows for full coverage of all shapes of ductwork. For more details or to configure a model, enter "averaging" in the search box at www.burnsengineering.com.

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