
LVDT Use In Octane Analyzer

Seeking a precision sensor, a prominent manufacturer of engine test systems selected the Model 0216-00000 AC-AC LVDT and Model 1000-0012 O/D as a linear feedback system for their Octane Analyzer product line. This sophisticated analyzer is supplied to the energy and environmental sectors for the continuous monitoring of refinery, petrochemical and industrial processes. Its main task is to provide an accurate, cost effective means to determine octane numbers for various fuel mixtures. The Model 0216 was chosen over a competitor's equivalent AC LVDT because of its excellent housing length to stroke ratio. The search for such a device was initially started in an effort to replace an existing linear potentiometer, which was susceptible to wear and environmental conditions such as oil, dirt and vibration. Found to be impervious to the same elements, LVDT's were quickly installed into new builds and packaged into field kits to replace all potentiometers already in service.

The Octane Analyzer works in conjunction with a Waukesha CFR Knock Test Engine and in accordance

with ASTM Procedures, a worldwide standard for determining the octane quality of gasoline and fuel blending components. Among numerous other industrial sensors and controls, the Model 0216 AC LVDT is mounted directly on the combustion engine head and measures the height of an air cylinder. The position of the cylinder is used to determine the air/fuel compression



ratio. The accuracy of this reading is critical for establishing the appropriate fuel mixture, formulated by blending the necessary chemical additives. The analyzer continuously checks the fuel mixture until the desired octane level is reached.

In addition to the on-board process controls, several user-friendly items were added to the Octane Analyzer for ease of operation. Features include a Touch Screen Graphic Display, an Integrated Data Logging Printer, a Blend Control Computer Interface and an Engine Warm-up Function. For the design of this analyzer, all components, including the Model 0216 AC LVDT, were carefully selected for their ability to survive the harsh conditions often seen by this equipment.