

Application News

Turbine Flow Meters Help in Meeting Strict Air Quality Regulations

Industry: Power Generation

Service: Flow Rate/Total

Fluid: Diesel #2

Overview

The State of California is divided into Air Quality Management Districts (AQMDs). Each AQMD has responsibility for controlling the amount of air pollution from stationary sources. In this case, the stationary sources were diesel fuel-powered gen-sets, which provide standby power to the Port of Los Angeles in case of outages from the port's primary source of electricity.

The AQMDs require that the amount of net fuel combusted by stationary sources be reported to state officials so that emissions released into the air as a result of this combustion can be calculated.

Situation

A system integrator assisting the Port of Los Angeles required a flow measurement system that could provide accurate "Net Burn" information to satisfy the air pollution reporting mandate issued by the California Air Resources Board (CARB). The integrator had tried another vendor's application solution, but found that the data was useless because the accuracy error was greater than the value of the net fuel consumption. The measurement indication with the engine running at idle speed showed that the engine was not consuming any fuel. This indication made the measurement system invalid.

Solution

The system integrator contacted Flow Technology for a better answer to the net burn application. In this case, the diesel fuel-powered generators had a supply source line and a return line for diesel #2 fuel. Both flows had to be measured in order to calculate the actual fuel consumption or net burn. The gen-sets were located outdoors, so operating temperatures varied based on environmental conditions.

Flow Technology provided a system employing its FT Series turbine flowmeter and flow straighteners, along with the LinearLink Temperature Compensated Interface (TCI) and the FC4000 rate/totalizer. The LinearLink TCI automatically compensates for any changes in fuel viscosity resulting from temperature variations. The FC4000 rate/totalizer accepts flow rate inputs and determines the net flow rate and total. This reading provides an accurate indication of the actual fuel consumption, which can then be used to calculate the amount of combustion emissions released into the air.

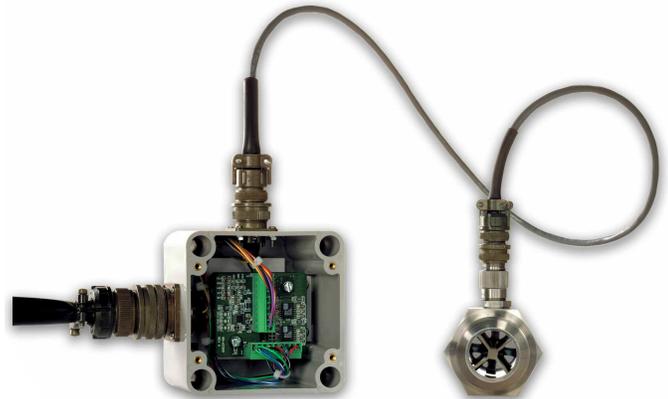
System Description

The FT4-8 turbine meter, employing an integral temperature sensor in its pickoff, was selected to cover the flow range of the net burn application. Two meters are installed per engine—one for the fuel supply line, and one for the fuel return line. Flow straightener sets remove any turbulence or swirling in the fuel that may cause inaccurate measurements.

A two viscosity Universal Viscosity Calibration (UVC) was chosen for use with the Linear Link TCI units, which are mounted directly onto the flowmeters. The FC4000 can be installed into the gen-set power panel or in a nearby enclosure for display. Analog outputs from the Linear Link TCI and FC4000 units are supplied to a data acquisition system for further analysis and/or generating a report for AQMD.

Technical Information

Flow Meters (Model Number):	FT4-8AEU2-LEAT5
Electronics (Model Number):	LNT-3-C0-MA-9
Flow Straightener Set (Model Number):	FTFS4-8AE10-5-0
Flow Rate:	0.03 to 3.0 GPM
Fluid:	Diesel #2



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