

Application News

Magnetic Flow Meter Helps Military Vehicle Stay Cool Under Extreme Conditions

Industry: Automotive

Service: Flow Rate/Total

Fluid: Water & Ethylene Glycol

Overview

The U.S. Army's High Mobility Multipurpose Wheeled Vehicle (HMMWV®) is more commonly known as the Hummer or Humvee. This technologically advanced 1 1/4 ton, 4 x 4, multipurpose vehicle answered the armed forces' need for superior mobility in a tactical field environment. The HMMWV is versatile, mobile and fast, and replaced an assortment of outdated jeeps and trucks.

Situation

HMMWVs operate in extreme temperature environments. A radiator is used to release temperature stress on the engine. However, it could be a target for disabling the vehicle. Ballistic grills are used to deflect fragments and protect the radiator. But the grill can affect the radiator's ability to release heat. Measuring the flow rate of water & ethylene glycol coolant is important as the differential temperature across the radiator times the circuit's flow rate equals the heat rejection factor. Grill and radiator efficiency are tested in the lab during the development phase.

Solution

Flow Technology's EL2200 Series electromagnetic flow meter was selected for the demanding radiator testing application due to its advanced design, which features no moving parts in the circuit. This eliminates mechanical calibration shift, as well as fluid filtration requirements. The EL2200 sensor utilizes an innovative structure to route the electromagnetic signal generated by electrodes, providing an extremely wide measurement range. The meter is capable of a measurement range up to 1000:1 without the aid of linearization software.

System Description

Minimal pressure drop, combined with high accuracy and affordable cost, made the EL2200 with MC308 magnetic flow transmitter a logical choice for measuring radiator coolant flow. The MC308 is capable of displaying rate and total flows as well as providing multiple digital and analog outputs. This transmitter can also provide reverse flow indication, alarms, filtering and diagnostics for empty pipe detection and electrode malfunction.

Technical Information

Flow Meters (Model Number): EL2200-040A15FP5CA
Electronics (Model Number): MC308CCVM2D3C21N
Flow Rate: 5 - 100 GPM
Fluid: Water & Ethylene Glycol



8930 S. Beck Ave., Suite 107 • Tempe, AZ, 85284 USA
Tel: 480.240.3400 • Fax: 480.240.3401 • Toll-free: 800.528.4225
E-mail: fmarket@fimeters.com • Web: www.fimeters.com
©2009 Flow Technology, Inc. DB-69597 Rev A