

# Application News

## Electromagnetic Flow Meter Enhances Scramjet Engine Component Testing

**Industry:** Aerospace

**Service:** Flow Rate

**Fluid:** Water

### Overview

An engineering research and development company, providing inventive and distinctive solutions for Fluid Dynamics, Aerodynamics, Combustion Analysis, and Pressure/ Force Measurement applications, contacted Flow Technology's local representative looking for a flow measurement system for metering recirculated, treated cooling water.

### Situation

The customer's research engineers needed flow meters for the measurement of cooling tower water for research hardware used for direct-connect testing and evaluation of Scramjet engine components for hypersonic-propulsion applications. The hardware represents various Scramjet engine components, and must be cooled to prevent failure under extreme thermal loads experienced during testing. Research engineers use the flow rate measurement in conjunction with temperature measurements to estimate heat loss and the performance and efficiency of these components.

In the past, the customer had used turbine and Venturi flow meters. The turbine meters had not performed well due to the poor quality of the cooling water, and the Venturi meters' turn-down ratio was too low for this application. The customer required a meter that could provide the necessary flow range without complications due to water quality issues. The meter had to be easy to maintain with the periodic schedule of their testing.

### Solution

The customer's initial plan was to take advantage of the turbine flow meters' higher turndown ratio and use a filtration system on the water supply. After reviewing the application, addressing the customer's concerns, and confirming the water supply would exceed the minimum conductivity requirement, Flow Technology recommended its EL2200 Series Electromagnetic Flow Meters.

The EL2200 Series meters represent the state-of-the-art for mag meter performance. This new-generation sensor incorporates improvements to the magnetic distribution elements that enable accurate operation throughout all flow regimes. The meters require little maintenance since they have no moving parts to corrode or wear during times of inactivity.

### System Description

In this application, the EL2200 flow meters were selected for their ability to handle poor quality water, accuracy of 0.2% of reading, and low maintenance requirements. The meters' wide flow range of 1.38-69.21 GPM and 2.44-122.22 GPM met the customer's needs, and the conductivity of the treated water made an electromagnetic meter the perfect choice. Since no display was needed, an MC106 transmitter was selected for its versatile output options, compact design and economical price.

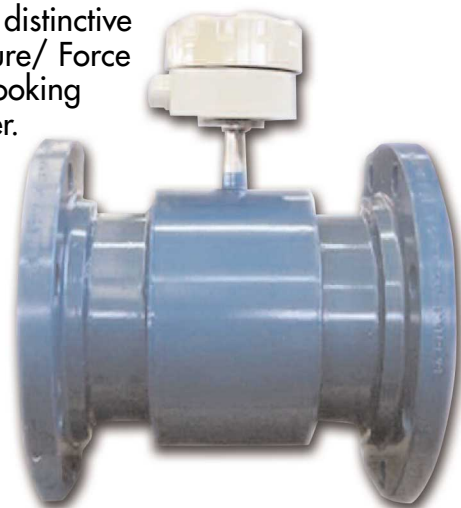
### Technical Information

Flow Meters (Model Number): EL2200-025A15SP5CA,  
EL2200-032A15SP5SA

Electronics (Model Number): C106ACVN0FPC21N

Flow Rate: 1.38-69.21 GPM and  
2.44-122.22 GPM

Fluid: Water



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: [ftmarket@ftimeters.com](mailto:ftmarket@ftimeters.com) • Web: [www.ftimeters.com](http://www.ftimeters.com)  
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