



APPLICATION SPOTLIGHT

Turbine Meters Measure Foam on Fireboats to Extinguish Fires



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APPLICATION:

A pumping system used on two city fireboats dispenses foam as a fire retardant in extinguishing fires. The foam is used when oil is present in the water or when quickly needing to smother a fire, such as when a fiberglass boat catches fire and produces black smoke.

A fish-friendly foam product called Novacool UEF that easily dissolves in the water is used by the two fireboats. Foam stored on the fireboats is limited to 150 gallons, which limits the amount of time for its use.

Before it is dispensed, foam is mix with water through a 3-way selector valve activated by a PLC control logic through a ½" pipe. If the required foam amount exceeds 9 GPM, the PLC control logic directs the 3-way selector valve to open foam flow through a 2" pipe. The foam's target amount at PLC control is 3% by volume. Flow meters ensure the accurate flow of foam to ensure the right flow ratio of foam to water.

PRODUCTS SUPPLIED:

- AW-Lake TRG-11.500 (1/2") Turbine Flow Meter
- AW-Lake TRG-1110 (2") Turbine Flow Meter
- AW-Lake Meter-Mounted RT-30 Flow Rate Transmitter with Display
- AZBIL 8" Magmeter
- Foam Flow Pipes (Fire Lion Global)

CHALLENGES:

As the Novacool UEF has a viscosity and specific gravity very close to "water", the flow accuracy provided by turbine flow meters must be very accurate to provide foam flow when required at 3% by volume.

Mounting space in the lower deck of the fireboat specified for flow meter installation is very limited. As a result, the flow meters required a small face-to-face dimension. Flow meter calibration also posed a challenge to meet the volume of foam to water ratio.

SOLUTION:

AW-Lake's TRG Turbine Flow Meters monitor the flow of the foam through the pump so operators can maintain a correct flow rate to ensure a 3% to 5% by volume of foam to water ratio. With a rugged stainless steel body construction, the TRG Turbine Flow Meters are suitable for use with water, solvents and other low viscosity fluids.

A ½" TRG-11.500 Turbine Meter is the primary foam flow meter ensuring flow ranges up through 9 GPM. The 2" TRG-1100 Turbines are only used when a large amount of foam is required with larger volumes of water flow. This meter maintains a flow range up through 53 GPM.



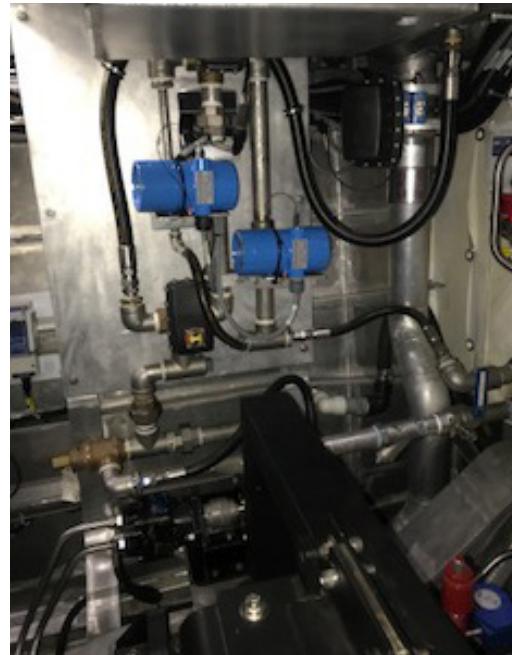
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The AW-Lake meter-mounted RT-30 Local Flow Transmitter with Display accepts pulses per gallon from the Turbine Flow Meters and provides a 4-20mA output signal to the fireboat PLC for control of foam flow.

The Turbine Flow Meters are mounted in the lower deck area toward the front of the fireboat just after foam pumps, where space is limited. There is one turbine flow meter per pump for the $\frac{1}{2}$ " and 2" size pipes. In addition to providing a very small footprint, the Turbine Flow Meters have a small face-to face-dimension.

Foam is directed through a 3-way selector valve controlled by the onboard PLC that is mounted next to the fireboat operator into an 8" river water pipeline. The foam is mixed into the 8" pipeline just before the 8" Magmeter location.

The AZBIL Magmeter measures the river water/foam mixture's flow rate up to 5,000 GPM. The water mixture then flows through two high-pressure spray nozzles positioned at the front of the boats at a rate of 500 to 600 GPM to achieve a desired spray height of approximately 500 feet to extinguish a fire.



The very small footprint of the AW-Lake Turbine Flow Meters met the installation challenge posed by the limited space of the bottom deck of the fire boats.