Marine Fuel Consumption Measurement

Superior measurement for outstanding results

EMERSON™

Best-in-Class Fuel Consumption for the Marine Industry only from Micro Motion®

Fuel usage costs make up 50-70% of a ship's total operating expense and, with volatile fuel prices, can represent an unpredictable expenditure to marine companies. Even the slightest improvement in fuel efficiency and better understanding of a ship's fuel consumption can quickly benefit the bottom line for shipping companies. Emerson's Micro Motion Coriolis flow, density and viscosity devices deliver the world's best measurement for optimal fuel consumption and consistency control.

Lower Cost

- Meter accuracy between +/-0.1% and +/-0.2%
- Increase fuel efficiency and lower fuel waste by understanding actual fuel usage and overall vessel engine performance
- Avoid engine damage, premature fuel pump failure, or sticking of piston rings by ensuring fuel viscosity is correct and burning more efficiently

Improved Performance

- Monitor fuel quality to determine when fuel additives are required to ensure engine is burning fuel optimally
- Immediate feedback to heater systems to control fuel viscosity going into fuel injectors for optimal engine performance
- The most accurate fuel consumption calculation in the marine industry by use of Adaptive Consumption Measurement (ACM) software

Manage Emissions

- Control and monitor emissions with better consumption and fuel usage insight
- Precision fuel viscosity measurement and manipulation to engines ensures lower emissions and higher quality fuel burn

Inherent Advantages of Micro Motion Coriolis

- Direct mass flow measurement of all fluids, slurries and gases with one instrument
- No moving parts result in no maintenance or repair
- Install anywhere with no flow conditioning or straight pipe run required
- Simple and fast installation and commissioning at start-up
- Smart Meter Verification eliminates the need for periodic and disruptive calibration checks

MVD™ technology

Micro Motion Products and Approvals for Marine	Fuel Consistency Viscomaster	Fuel Consumption F-Series Coriolis Meters
Lloyds London, United Kingdom	x	x
Germanische Lloyd, Germany	x	x
Det Norske Veritas, Norway	x	x
Bureau Veritas, France	x	x
RINA, Italy	x	
American Bureau of Shipping, USA	x	x
Nippon Kaiji, Japan	x	x
Russian Maritime Register of Shipping, Russia	x	
Korean Register of Shipping, South Korea	x	

Positive Displacement (PD) or turbine meters are the most common technologies used today for fuel consumption. The many issues with these volumetric-based measurement devices include needing to convert the measurement to mass flow, moving parts within the device that can cause leaks and require maintenance, manual readings, and overall low accuracy.

For viscosity measurement, capillary viscometers or torsional viscosity meters are typically used. These technologies present challenges in marine environments as they are challenging to clean, devices can leak, and offer lower accuracy.

Emerson's Micro Motion measurement technology delivers a clear improvement over older technologies and tremendous results for ship operators.

Fuel Consumption Measurement

Micro Motion Coriolis Meters

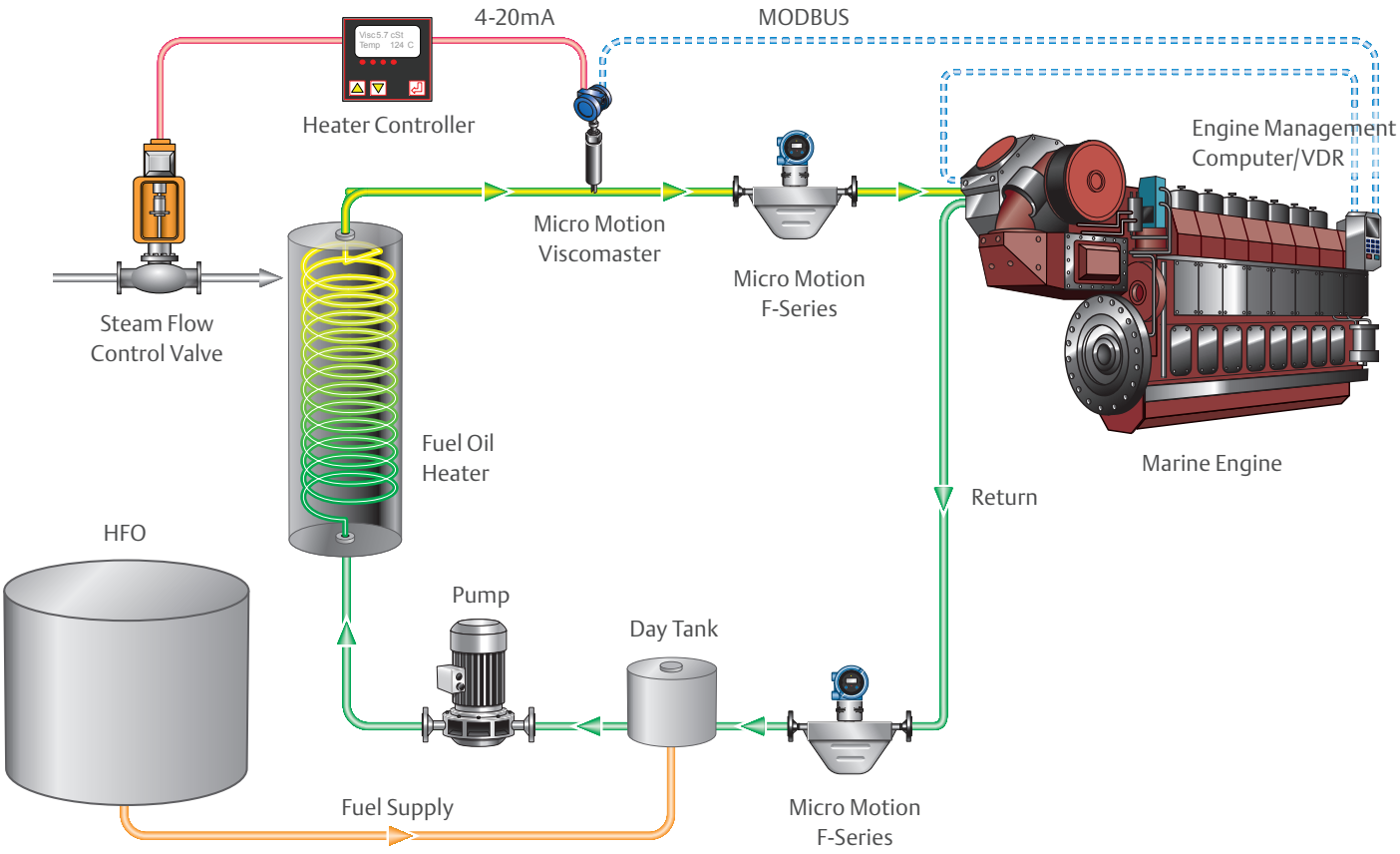
- Extremely high accuracy and wide rangeability that can help optimize fuel usage even when consumption is very low compared to the supply of fuel
- Even with extreme changes in fuels and fuel temperatures, measurement is immune to fuel properties and fuel consumption data will remain accurate
- No moving parts and no downtime for repair or maintenance keeps a ship operating and saves on expensive costs

Fuel Consistency Measurement

Micro Motion Viscomaster Viscosity Meter

- Better control optimizes engine performance and reduces damage and costly engine repairs
- Robust, easily cleanable devices and reduced maintenance minimize down-time and save on maintenance costs

Micro Motion Fuel Efficiency Measurement



Complete Expertise within Marine

Emerson's marine solutions are developed for harsh sea environment to ensure reliable, efficient and safe operation on board any type of ship and offshore unit.

- Integrated control and monitoring
- Cargo monitoring and tank gauging
- Valve remote control
- Fuel management

What really sets us apart is our dedication to the marine sector and engineering excellence. This is reflected in all aspects of our organization, from design and production to application know-how and global service network.

What really drives us is to provide innovative solutions for our customers to operate safely, efficiently and with peace of mind.

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