

# INOXCVA LNG dispensing manufacturer reduces start-up time with Micro Motion ELITE meter

## RESULTS

- Reduced dispensing time and more accurate delivered loads with phase (liquid v. vapor) of LNG known instantly, on-line phase determination
- Reduced maintenance due to no moving parts, specifically designed for the cryogenic temperature cycling
- Diagnostics are superior to other flow technologies, ensuring more accurate and repeatable LNG deliveries.



## APPLICATION

INOXCVA, a leading global cryogenic equipment manufacturer, offers storage, transportation, and distribution solutions to the industrial gas, oilfield services, and LNG industries. The LNG industry is quickly growing and there is now a huge move to the United States. This huge move is due to the fact that the US has large amounts of natural gas deposits within the different shale across part of the US. LNG powered vehicles are growing in number due to the fact that LNG allows 1.5 times more range (in hours) than an equivalent CNG vehicle, but the problem is there is not a lot of pipeline or transportation infrastructure to handle this trend.

The company is contracted to design and build cryogenic liquid dispensing systems, which includes a mobile LNG dispensing solution. These trucks are typically purchased by energy companies, pre-loaded with LNG, and are then stationed strategically along a trucking line in order to provide LNG fueling points for trucks that use LNG fuel.

## CHALLENGE

The company historically sold turbine meters with their solutions to measure the flow of LNG supplied and other cryogenic liquids. With turbine meters, there are a number of challenges. Accuracy is density dependent, and there is mechanical wear due to rotating parts and numerous temperature cycles. Turbine meters also have limited turndown, and there is a different calibration factor for each liquid. Vapor eliminators and straightening vanes are required to ensure an accurate measurement, which requires an inordinate amount of real estate on the LNG trucks. Lastly, turbine meters are velocity-based volumetric flow measurement devices, which requires additional measurement devices to be output in mass, the industry's standard of delivery.

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Vehicle with the Micro Motion transmitter



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**EMERSON**  
Process Management

Since the LNG providers bill their customers based on mass, the company needed a measurement tool which could provide a direct mass measurement and which was certified in many world areas for custody transfer of LNG fuel. As an added benefit, they also wanted a flow technology that could determine if the LNG was in liquid phase or gas phase.

Turbine meters cannot differentiate between liquid and vapor. Temperature is typically used to provide an indication as to whether the flow meter was sufficiently cooled to ensure that the LNG was in a liquid state, so having a technology that can measure both density and temperature independent of mass flow was extremely attractive to the manufacturer.

### SOLUTION

The customer chose to install a Micro Motion® ELITE® meter. The following are some of the benefits they gained due to installing this meter:

- High mass accuracy (+/-0.10% of rate; optional +/-0.05%)
- Temperature ratings (-240 °C to +240 °C-rated for Cryogenic). Meter is able to handle the temperature cycle without causing wear since there are no moving parts.
- Approved for custody transfer of cryogenic liquids by various world agencies
- Three process measurements from one meter (mass flow, temperature, density)
- Accurate in empty-full-empty service, Smart Meter Verification (safety and accuracy)
- Phase (liquid v. vapor) of LNG known instantly
- OEM ready (direct Modbus communications)

Micro Motion has over 15 years of experience in the LNG industry. Working with INOXCVA, they were able to achieve the following business results:

- Environmentally cleaner, cheaper fuel costs, and safer operations provide good selling points for liquid natural gas
- INOXCVA's automated fuel delivery system saves time at the fuel station
- Micro Motion meters are highly accurate and provide a safe measurement environment by knowing exactly when the meter is ready for dispensing in a liquid-only state.
- Broad custody transfer approvals (state-to-state and country-to-country) of Micro Motion meters delivers great flexibility in LNG installations allowing supplier to standardize on their design
- For global distribution



Micro Motion sensor mounted at the back of the LNG vehicle

