

# LNG Plant Implements Fisher™ JT Control Valve to Improve MCHE Performance

## RESULTS

- Improved MCHE cool down operation
- Reduced operator load and vigilance to manage plant
- Realized maximum licensor controller benefits
- Ability to run Master Rate LNG Controller in Full Cascade
- Precise controllability, valve response with signal change



## APPLICATION

The Joule-Thomson effect is leveraged throughout all of the primary liquefaction processes to achieve cooling of the feed gas or the refrigerant streams. It is used to achieve cooling of liquids, gases, or multi-phase fluids. This effect is facilitated by a control valve that reduces the pressure of the fluid significantly and induces the desired cooling. The Joule-Thomson (JT) control valve provides mixed refrigerant (MR) spray on the different sections of the main cryogenic heat exchanger (MCHE). It controls the flow of the MR through the bundles of the MCHE and takes majority of pressure drop.

## CUSTOMER

Large natural gas producer in Europe

## CHALLENGE

The producer was experiencing LNG production rate loss due to the poor regulation by the JT control valves in the plant. Due to this, the MCHE was running sub-optimally and maximum licensor controller benefits couldn't be realized. When the MCHE ran manually, it resulted in higher operator load and vigilance to manage the plant, increasing the possibility of human error that the operator couldn't practically manage under all scenarios.

Due to poor regulation of the JT control valve, the MCHE cool down was done in manual mode, increasing the cool down time and impacting the LNG throughput of the plant.

*I am satisfied with the demonstrated performance of special Fisher JT control valves. A very impressive performance from Emerson.*

Head of Instrumentation Department,  
LNG Plant



Fisher NPS 16 EWT-C JT control valve

## SOLUTION

The LNG producer chose Emerson to provide a special Fisher JT control valve. An NPS 16 Fisher EWT-C cryogenic globe valve with a Whisper Trim™ cage was offered because the Joule-Thomson application was experiencing outgassing and vibration. To achieve precise controllability, a low-friction cryogenic seal and high performance actuator were added. An optimized digital valve (ODV) tier Fisher FIELDVUE™ DVC6200 digital valve controller was chosen. It underwent special dynamic performance testing at cryogenic temperature (-196° C) to ensure 0.08% deadband and hysteresis.

This special Fisher JT control valve was built and tested to ensure optimal performance at real cryogenic temperatures (-196° C).

The Fisher JT control valve's performance according to special requirements of MCHC controller algorithm was very impressive and outstanding.

Instrument Engineer, LNG Plant

## RESOURCES

Control Valves for LNG Liquefaction

<https://www.emerson.com/documents/automation/brochure-control-valves-for-lng-liquefaction-en-125882.pdf>



<http://www.Facebook.com/FisherValves>



<http://www.YouTube.com/user/FisherControlValve>



<http://www.Twitter.com/FisherValves>



<http://www.Linkedin.com/groups/Fisher-3941826>

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