

# During a Naptha Cracker Revamp, Diagnostic Tools Saved 24,000 Hours on Commissioning

## RESULTS

- Avoided unnecessary valve repairs, saving at least \$1,200 USD per valve
- Improved control valve reliability and asset management
- Increased production throughput and efficiency by 1%
- Completed the turnaround on time and within budget



## APPLICATION

Control valves for a naptha cracker unit

## CUSTOMER

An ethylene production plant in Canada

## CHALLENGE

Managers at a petrochemical and refinery complex in Canada launched an upgrade to improve the utilization of natural gas liquids (NGLs) and expand ethylene production by 20% by 2018. Ethane from the Marcellus Shale Basin is the plant's primary feedstock, with lesser contributions of propane and butane.

Phase I of the project involved a revamp of the naptha cracker and the implementation of more advanced control strategies. Steam cracker units are facilities in which feedstock—liquefied petroleum gases such as ethane, propane or butane—is thermally cracked through the use of steam in a bank of pyrolysis furnaces to produce lighter hydrocarbons.

Goals for the revamp included adding an ethylene (C2) splitter and improving the monitoring and reliability of control valves. All the work for Phase I, from diagnostics and repairs to new product installations, had to be completed in 16 months.

Over many years, engineers from Lakeside Process Controls, Emerson's local business partner, have worked with site personnel to implement diagnostic resources such as Fisher™ FIELDVUE™ digital valve controllers, AMS Device Manager software with MUX cards, and ValveLink™ software with HART® multiplexers. These tools have been well used and faithfully upgraded over the years.

*Following a revamp of its naptha cracker, a petrochemical plant was processing 100% of its NGLs and producing 1.8 billion pounds of ethylene annually.*



*An ethane splitter was installed in 2014.*

**SOLUTION**

The investment in diagnostic tools proved invaluable when the naphtha cracker revamp began. Emerson services personnel conducted diagnostic tests on existing control valves, installed and calibrated 1,472 new devices, and supported more than 500 interlock checks of the site’s safety instrumented system (SIS). The diagnostic tools used in conjunction with AMS QuickCheck saved the project team thousands of hours on commissioning.

Lakeside employees worked with Emerson lifecycle services personnel from the Sarnia service center to identify the valves that needed repair. In addition, the diagnostic tools aided them with benchmark valve testing, calibration, and tracking—work which improved asset management and reliability long term.

Eighty-four of the eighty-eight valves they scanned did not actually need service. Some of those valves would have required a crane to move as well as a team of pipe fitters, riggers, and technicians to re-install and re-calibrate them. With an average repair cost of \$1,200 USD per valve, diagnostic capabilities saved the plant at least \$108,000 in avoided repairs.

All the critical valves at the plant have FIELDVUE DVC6200 digital valve controllers with advanced or performance diagnostics. Used in combination with a 5,000-tag AMS system, the devices help operators monitor valve performance, predict rather than simply react to any maintenance concerns, and minimize downtime.

The revamp was completed on schedule. The local team has documented benefits in throughput and efficiency.

**RESOURCES**

**Flyer: Diagnostic Services (D350976x012)**

<http://goo.gl/RH5LQ2>

 <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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*“Diagnostic resources like FIELDVUE digital valve controllers and AMS software have improved control valve monitoring and reliability. They enable us to work smarter, not harder.”*

**Operations Manager**  
 Petrochemical Plant



*This control valve photo was taken in January when the temperature was minus 21 Celsius. It illustrates why remote, online monitoring and diagnostics is important to operators at a petrochemical plant in Canada. With a 667 actuator and a FIELDVUE DVC6200-AD instrument, the Fisher ET recycle valve assembly provides reliable flow control for water lines near the cooling towers.*