



FCI ST100L with
Vortab® flow
conditioner

Refinery Nitrogen Blanket Monitoring

Application Note Case Study ANCS 003

Problem

Flint Hills Resources needed to monitor the flow rate of nitrogen for a blanketing application. The blanketed tanks hold various process liquids and by-products that may be flammable; as these liquids are pumped out, the nitrogen makes up the difference. This is a critical application since nitrogen displaces explosive oxygen (O₂) to reduce the chance of fire or explosion. Currently, the system is consuming too much nitrogen leading to excessive cost and supply shortages.

Flow Conditions

- Pipe diameter: 1" Sch 80 [DN25]
- Flow rate: 36 SCFH to 600 SCFH [1 NCMH to 17 NCMH]
- Temperature: 70 °F [21 °C]
- Pressure: 60 psig [4 bar(g)]
- Media composition: 100% N₂
- Straight-run: Minimal (used Vortab® flow conditioner to overcome)

Solution

An ST100L is installed in the nitrogen gas feed line to measure and better control the nitrogen consumption. Application conditions fit perfectly with the standard measurement range of the Model ST100L. Flint Hills has been using FCI thermal flow meters for many years and were confident in applying it for this application. Several ST100L flow meters have been installed and are working well.

FCI Model ST100L-41DE000210B1EHC0001

Benefits

- No moving parts (zero maintenance) and a long track record of excellent performance at the refinery made FCI the right choice for a safety-critical application.
- The ST100L in particular was chosen because of its wide measurement range.