

# Natural gas odorizer monitoring



## Oil and Gas Case Study 202-5

### Application

Natural gas pipelines across North America may be roughly classified into five major categories in the following order of appearance:

- › Production Gas Lines - at wellheads 2 inch and larger depending on volume.
- › Gas Gathering Systems – like spokes of a wheel leading to a central collection and/or compressor station and then on to a gas processing plant.
- › Gas Transmission Lines – Usually high-pressure heavy-wall lines of significant length and diameter.
- › Gas Distribution Systems – Downstream of transmission lines and pressure reducing stations.
- › Gas Service Lines – Final delivery line to an individual customer or “point of use” line.

Natural gas odorization is mandated at any residential point of use and many larger service lines as well. Odorization is accomplished by installing an injection system that emits concentrated odorant (Mercaptan) on

a rate proportional-to-flow basis. Gas companies may elect to odorize at any point upstream of the point-of-use, but they are required by regulatory agencies to provide odorization at or before point-of-use. The usual point-of-use is gas distribution or gas transmission.

### Challenge

It is not economically feasible to own, operate, and maintain thousands of odorizers at each point of use location. In addition, the D.O.T. sometimes mandates odorization in high pressure transmission lines if they pass through residential or other high density areas. Since upstream main line flows are more sporadic in pressure and flow rates due to huge seasonal demand and spot-market price swings, large quantities of a variety of different size flow meters would be required.

### Project parameters

User Gas company  
Location Oklahoma, USA

Media Natural gas  
Flow Range 74,000 to  
4,000,000 SCFH  
[2,095 to  
113,267 NCMH]  
Pressure Range 275 to 500 psig  
[19 to 34.5 bar(g)]  
Temperature Range 70°F  
[21.1°C]

### Solution

FCI's GF90 thermal mass flow meters are the proven flow meter of choice for this application for a variety of reasons:

- › Wide flow range up to 1000:1.
- › Extreme sensitivity to low flow rates.
- › No moving parts and no fouling resulting in minimal, if any, cleaning and inspection.
- › Optional retractable packing gland assemblies for hot-tap installation and removal without process shutdown.
- › Direct mass flow reading eliminates the need for pressure and temperature transmitters.
- › Optional solar powered electronics.
- › All 316 series stainless steel materials of construction.

### FCI flow meter specifications

Model GF90 mass flow meter  
Media All gases  
Flow Range 0.25 to 1600 SFPS  
[0.08 to 488 NMPS]  
Pressure Range to 1000 psig  
[69 bar(g)]  
Temperature Range -100° to +850°F  
[-73° to +454°C]

### Your local FCI representative:



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FCI is ISO 9001 certified/conformance to AS9000