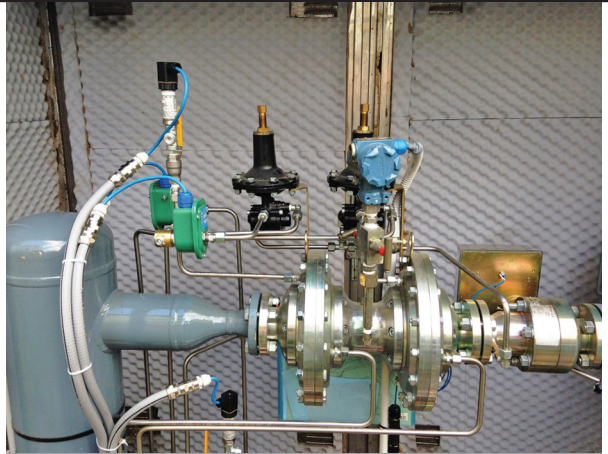


Toscana Energia Reduces Cost of Operating Low Pressure Natural Gas Pipelines

RESULTS

- Reduction of manual field adjustments through remote management of the outlet pressure at lowest optimal values
- Increased reliability, productivity and customer satisfaction through clearer insight into all main functional parameters and “real-time” diagnostics of grid and interconnected district stations
- Improved people safety and network integrity through active safety operational mode



APPLICATION

Natural gas low pressure grid.

CUSTOMER

Toscana Energia is the largest Tuscany utility company serving 104 municipalities, with more than 7,700 km of pipelines, 787,000 delivery points and 0.9 Bcm of distributed gas per year.

CHALLENGE

Managing a low pressure grid at the minimum possible pressure in a fully automated mode is one of the objectives that Toscana Energia has pursued in recent years. They wanted to optimize resources and operational activities linked to particular situations of their natural gas distribution system, specifically for the historical city of Florence.

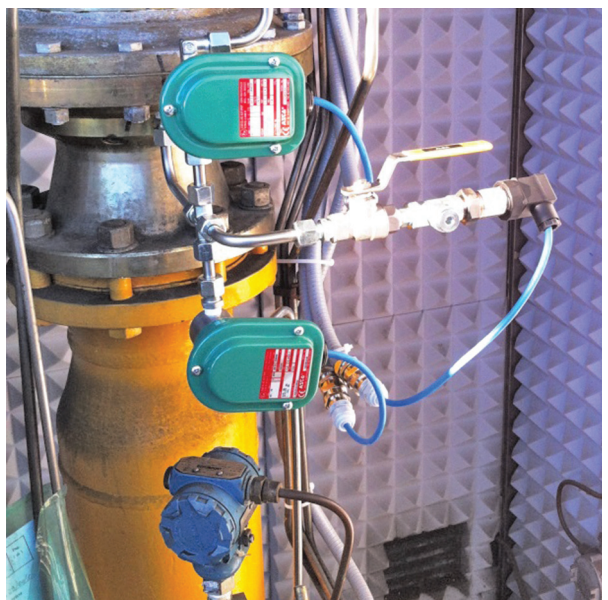
Due to the “grid” layout and the unique situation of certain historical cities, the delivery pressure is fluctuating, even with multiple district stations providing the pressure control for the same area. Several manual field adjustments are required to modify the District Station set point, in order to operate at the required pressure levels and fulfill variable demand requirements from users. This activity is time consuming and requires dedicated personnel to be on site.

This is more true and challenging if it is considered that gas grids are designed to satisfy the maximum demand in the extreme operating conditions that typically happens once or twice a year (or sometimes never) and for a limited time frame.

This means that gas grids are normally operated at the highest pressure level to ensure gas availability during high demand periods.

“Nowadays it is frequent to hear about ‘SMART’ adjective, sometimes inappropriately, but RAF system has all the requirements to be considered as such.”

Michele Conforti
Operations Manager



FL Regulator with RAF (Regulated Automated Flows)

SOLUTION

Based on the historical data of the Florence grid, and in collaboration with Emerson, Toscana Energia decided to add automation and control equipment to existing district stations of the city of Florence.

The RAF (Regulated Automated Flows) system which, linked to FL pilot operated regulators, provided SMART modulation of distribution pressure based on real daily consumption profile.

In addition to the great results in terms of improved operations, Toscana Energia realized that with this technology they are able to gather important data, through daily reporting or real time remote queries, which allowed them to:

- Constantly monitor all main functional parameters to perform a “real-time” diagnostics of the grid and interconnected district stations performances
- Remotely control the correct pressure level in each district station by increasing or decreasing the outlet pressure, to correctly balance the grid pressure level
- Increase service quality and customer satisfaction having the distributed natural gas always available with the right quantity to satisfy each demand level and at the lowest possible pressure
- Increase distribution grid safety level
- Have regulating lines working in parallel, allowing active safety operational mode (two or more lines always working together); the result is incremented flow capability, reduced noise emission and increased lifecycle

The RAF system can be used with all “loading type” pilot operated pressure regulators.

Its installation is easily adapted to existing infrastructure, as it is only required to alter the sensing line tubing of active regulators.



FL and RAF installation at customer's site

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