

AI for transmission and distribution efficiencies

Improving TSO operational efficiency through Artificial Intelligence (AI) solutions

SECTOR

Energy & Utilities

COMPETENCIES



Artificial Intelligence



Data Visualisation and Augmented BI



AI Engineering



Data Architecture



Cloud Foundation



Network and IoT



Low Code Platform



THE CHALLENGE

Transmission System Operators and Distribution System Operators (TSOs and DSOs) primary needs include **operational efficiency, gas network balancing, and infrastructure network management**. AI can help TSOs and DSOs by providing better forecasting capabilities, optimal assets control and root-cause identification of main issues ultimately leading to improved efficiency of core processes as well as economical rewards (due to regulations).



OUR SOLUTION

Bip proposes the implementation of a framework, available both on-prem and in cloud, which leverages on specific AI capabilities including:

- **Delivered Gas Forecasting** – predict the daily volume of delivered gas
- **Settlement Process Support** – predict the difference between gas injected by the TSO and shippers redelivery
- **Compressor Stations Optimizer** – optimize pressure profile to minimize operational costs
- **Unaccounted Gas Analysis** – identify root causes of increments of UAG
- **Leak Detection** – detect gas leaks along the pipeline network.

The framework also includes the development of the underlying data model and data processing features that fuel the AI use cases as well as the introduction of dashboards and reports for business users.



RESULTS

Bip is supporting various TSOs and DSOs in their AI journey, including Snam, TAG and Eni. The introduction of the AI framework impacts physical and commercial gas dispatching as well as infrastructure asset management. More specifically, clients have benefited from:

- **operative and commercial process efficiency**, leveraging on data-driven methods for efficient planning and management of gas provisioning
- **optimization of available resources** by implementing mathematical methods to minimize operational cost

Generation of tangible and measurable economic rewards due to authority/government incentives (where applicable).

BENEFIT



Prediction error <3% on day-ahead delivery forecasts



Over 10M € of yearly subsidies (for the Italian TSO)



8-10% reduction of compressor station operational costs



5% saving in terms of maintenance costs



Lower gas procurement prices (to be estimated based on client conditions)



CLIENT TESTIMONIAL

We are the first in Europe to apply machine learning techniques and neural networks to forecast gas delivery. What we can transfer to others is not just the technology, but a highly transversal methodology: everyone brought their knowledge to develop this system.

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