



Production Optimization of Natural Gas Pipelines & Production Facilities Using Performance Engineering

Revenue increase of
\$280 million
in one year



CHALLENGE

Natural production of gas reservoirs in two of Bolivia's major gas fields was in decline.

SOLUTION

An integrated Aspen HYSYS® digital twin model was used to debottleneck all processing plants, pipelines and compression stations and identify ideal operation conditions.

BENEFITS

- Total capacity increase of 18% in gas production
- Revenue by increase in production estimated at \$280 million USD in one year
- No fines and penalties by gas customers



AspenTech is helping YPFB achieve this vision by providing solutions to achieve optimal operations at gas processing facilities, as well as to maximize

YPFB is the national oil company in Bolivia and a key natural gas producer throughout South America. In recent years, Bolivia has expanded its gas export pipelines and processing facilities and made important reserve findings.

Between 2004 and 2010, Bolivia doubled its natural gas production export capacity from 680 MMSCFD to 1,360 MMSCFD, and now has major contracts to supply gas to Brazil and Argentina. Further development of the existing gas mega-fields, along with additional exploration and discovery, points to a bright future for Bolivia, as it gradually becomes one of the main energy suppliers in South America.

AspenTech is helping YPFB achieve this vision by providing solutions to achieve optimal operations at gas processing facilities, as well as to maximize production and profit.

The Need for More Production

YPFB was seeing a considerable production decline in two of its major gas fields (San Antonio and San Alberto), which are operated by its subsidiary, YPFB Andina. The fields were at “full open well” and “full flow production” conditions to cover market demands, and conceptual projects for well compression were still in development.

AspenTech solutions provided the necessary tools for optimizing operations and increasing production. An important point is that many opportunities for production optimization could be hidden “beyond” production and processing facilities. That is why it is best to integrate them with pipeline systems to identify possible operation conditions adjustments.

Using an integrated digital twin to model the facilities and pipelines in Aspen HYSYS, the San Alberto oil field has increased its gas production an estimated average of 8%, while the San Antonio has seen an average increase of 10%. This boost in production is valued at approximately \$280 million USD per year.

Rigorous, Integrated Model is Key to Success

Facing the additional pressures of covering the internal market while also maintaining regulatory compliance, the company used Aspen HYSYS and Aspen Exchanger Design and Rating (EDR) to debottleneck operations. These solutions helped identify a 35% pressure decrease opportunity at the San Alberto Field through the implementation of a pipeline compression system.

The unique capabilities of Aspen HYSYS and Aspen EDR to create a rigorous integrated digital twin model of all field processing plants, sales and export pipelines, compression stations and cryo plants contributed to a model used in plant debottlenecking, compression station capacity and efficiency checks, pipeline capacity evaluations and flow-assurance analysis.

During debottlenecking, this model predicted a 35% pressure decrease in the San Antonio Gas Processing Plant by modifying pressures in the entire pipeline system at existing full-flow requirements.

Using Aspen HYSYS to create an integrated model of processing facilities and pipeline systems can help identify possible adjustments to operating conditions. And using the models simultaneously to project conceptualization can drive considerable savings on well or inlet plant compression projects.



AspenTech is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets faster, safer, longer and greener.

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