



Petrofac



**Petrofac Improves Process Design Accuracy
by Debottlenecking Gas Processes Increasing
Capacity by 20%**

“The rigorous Aspen Exchanger Design & Rating models available within Aspen HYSYS® have enabled us to solve debottlenecking problems in a way not otherwise achievable.”

Lakshmi Venkatesh
Senior Manager Process, Petrofac

20%
capacity increase

CHALLENGE

Ensure technical and economic feasibility of a gas plant expansion.

SOLUTION

Aspen HYSYS and Integrated Aspen Exchanger Design & Rating

BENEFITS

- Achieved 20% capacity increase with payback in less than a month
- Rapidly simulated and evaluated complex alternatives previously difficult to understand with standalone tools
- Achieved heat exchanger block accuracy for better selection of heat exchangers
- Improved understanding of process constraints and scale-up



Incorporating Aspen EDR within Aspen HYSYS revealed that only two of the three critical heat exchangers required replacement resulting in significant CAPEX savings.

Petrofac is the largest UK-listed service provider to the international oil and gas industry with over 11,500 employees across the globe. Consistently recognized as one of the top engineering, procurement and construction contractors in the Middle East by *Oil & Gas Middle East*, Petrofac is committed to excellence and strives for increased innovation by continuing to utilize a unique, holistic approach to process modeling.

Petrofac was asked to find a feasible way to increase a gas plant's capacity with minimal changes to plant hardware. Using AspenTech products, Petrofac was able to validate the technical and economic feasibility of multiple process improvement schemes. To model the process, Petrofac used Aspen HYSYS—a process simulator for oil and gas applications—and incorporated Aspen Exchanger Design & Rating (EDR) files into the design, resulting in a revamp plan with a one-month payback period. Petrofac integrated rigorous heat exchanger models into Aspen HYSYS process flowsheets to debottleneck a gas plant and meet 20% increased capacity requirements.

Rigorous Modeling Helps Debottleneck Gas Processes

Petrofac conducted a feasibility study to determine how best to revamp a gas plant with minimal changes to the process equipment. The revamp evaluated a 20% increase in production due to the addition of a new oil processing train. To accomplish this with minimal CAPEX, the study focused on using existing design margins and relaxing some of the design criteria.

This highly economical approach required accurate process simulation tools to ensure product specifications and plant safety. Petrofac used Aspen HYSYS to develop simulation models; however, the heat exchangers used in the flowsheet weren't rigorous enough for the study.



Integration of Heat Exchanger Models Saves Capital Costs

The study revealed that conventional heat exchanger modeling approaches were inadequate. They lacked accuracy in correctly predicting thermal and hydraulic performance, which is critical due to the interaction between cold product streams and hot feed streams in the self-refrigerated process. Integrating heat exchanger configurations using Aspen Plate Fin designs (from the Aspen EDR family) in Aspen HYSYS improved the design's accuracy and resulted in a realistic prediction of the sales gas specifications. Incorporating Aspen EDR within Aspen HYSYS revealed that only two of the three critical heat exchangers required replacement, resulting in significant CAPEX savings.

Value to Petrofac

The ability to integrate Aspen Plate Fin designs into the simulation flowsheet resulted in an optimal design that minimized CAPEX. This unique capability in Aspen HYSYS increases the accuracy of simulation results with minimal additional input. Ultimately, the plant could recover revamp costs in less than one month of operation.

About Aspen Technology

Aspen Technology (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 safer, greener, longer and faster. Visit [AspenTech.com](https://www.aspentech.com) to find out more.

