



**Aspen ProMV™ Saves Petrochemical
Company Over \$1 Million USD in Losses to Flare**



No More Looking for “Needles in Haystacks”

CHALLENGE

This petrochemical company was seeing an incremental loss to flare of more than \$1 million USD annually. Pressurization in the downstream column was causing the light component losses that resulted in the flare.

SOLUTION

Using Aspen ProMV for Continuous Processes, the company developed a model to investigate and determine the causes of pressurization. They identified the process variables most highly correlated to the light product loss, then used Aspen ProMV Optimizer tool to provide the changes in operating conditions necessary to reduce losses.

BENEFITS

Using Aspen ProMV, the customer was able to:

- Decipher which of the 45 process variables was most heavily impacting the losses to flare, resolving the issue within 2 days of implementing the recommended fix
- Save approximately \$1M USD per year by eliminating and/or limiting the losses to flare
- Enact the Aspen ProMV Online solution to monitor and prevent future losses



Aspen ProMV can highlight the most important process variables to reduce financial losses.

The customer is a large petrochemical company from Latin America, producing compounds like ethylene and propylene, mostly from naphtha. These compounds are key feedstocks in the manufacturing of thermoplastic resins.

The company has a successful history of innovation and advanced technologies use, including simulation for conceptual design, revamps and process monitoring, as well as several profitable advanced process control implementations and real-time optimization.

The company was evaluating potential solutions to support operation decisions based on advanced analytics technologies. Among these solutions there is a specific initiative on process analytics to make profitable use of the rich historical data information for process knowledge improvement, troubleshooting, optimization and process monitoring. This effort could also complement their current use of technologies like simulation using Aspen Plus®.

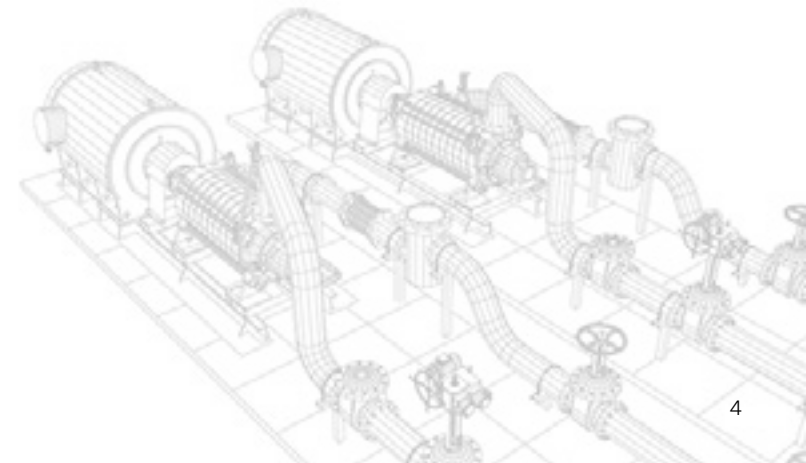
Aspen ProMV was able to demonstrate that by changing the operation conditions, the column product losses can be reduced. Previous studies concluded that the reboiler capacity should be higher to reduce the losses, a modification which required capital expenditure.

The Problem and the Investigation Goals

The company was experiencing an increased loss to flare, costing over \$1 million USD per year. Initial investigations into the process revealed that this was due to light component losses that go to the bottom of a fractionation column and were then pressurizing the downstream column. Because of this pressure, downstream column production was lost to flare.

With significant profit at stake, the company had two process-specific analysis questions:

- How should we operate the column to minimize C3 losses?
- Would the reboiler capacity increases prior studies suggested really solve the problem?



Finding the Source of Component Losses

The customer provided 18 months of data with hourly average frequency. There were 45 variables, including feed composition and process variables, and one output variable, which was the light component losses.

The analysis was performed using Aspen ProMV for Continuous Process. Using only the customer's historical data, the tools within Aspen ProMV revealed the three process variables that correlated most closely with the high losses. Of these, two could be modified, including a temperature within a column and the number of reboilers used.

Using Aspen ProMV, the customer was able to demonstrate how to achieve low levels of losses using only one reboiler. This meant a significant savings in proposed CapEx, in addition to the savings in flare losses.

Aspen ProMV enabled the users to explore a model that maps the operating space of the process represented in the historical data. It also enabled the users to augment the experience and domain knowledge of process and control engineers to quickly discover actionable information from process data.



Fast Results

A few weeks after analysis was completed, the company made some manual modifications to the column, raising the temperature of the particular tray that was identified as a major contributor to losses. Besides the clear reduction of variability of the column, the reduction in light product losses at the bottom of the column was seen less than two days after the change. In addition, the value and variability in pressure of the downstream column was also reduced.

The challenge for the company was to reduce the light component losses at the bottom of a fractionation column that were resulting in valuable material lost to flare at the downstream column (in 2017 the loss was \$1M USD). Prior to this project, studies concluded that the reboiler capacity should be increased, which requires capital expenditure.

The key features that differentiate Aspen ProMV are that the user doesn't have to do a lot of data massaging prior to the upload of data, and the results are provided clearly. Aspen ProMV can prune the variables that are noise. From hundreds of input variables, it shows which key variables most influence quality, yield and throughput.

The company is now executing its digital transformation plan, and Aspen ProMV technology is part of the vision.

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.

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