



KANEKA

Japanese Manufacturer Uses Dynamic Simulation to Increase Productivity with No Additional CAPEX

3 months

Reduced Engineering Time

2%

Increased Productivity

CHALLENGE

- Greater demand for performance polymers requires increased production
- Unknown process behavior outside current operating envelopes, limiting optimization decisions
- High complexity in process chemistry and behavior, including impact from time-dependent variables, making it difficult to affect process conditions

SOLUTION

- Aspen Plus®
- Aspen Plus Dynamics™
- Aspen Polymers™
- Aspen Properties™

VALUE CREATED

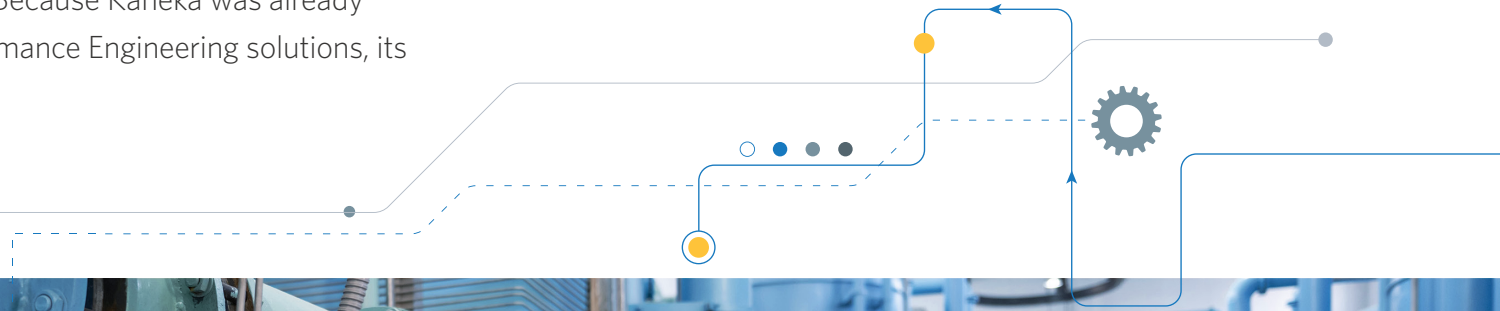
- Improved productivity of existing facilities by 2% without any additional capital investment
- Minimized number of experimental tests using commercial plants
- Reduced engineering time by three months

Overview

Kaneka Corporation is a Japanese chemicals manufacturer that specializes in the production of polymers and resins. Since its founding in 1949, Kaneka has achieved success by driving continuous innovation and delivering solutions that consider their impact on individuals, societies and the environment.

Higher market demand for functional resin (which is used in multiple industries) was resulting in significantly greater demand for one of Kaneka's high-value products. The company needed to increase production quickly in order to meet the rising demand. It wanted to do so without making any significant additional capital investment. Because Kaneka was already using Aspen Plus and AspenTech's Performance Engineering solutions, its

engineering development team understood the potential value that could come from adopting process simulation technology. The company turned to AspenTech to simulate its manufacturing process for functional resin to remove bottlenecks and identify opportunities through dynamic modeling to increase productivity at its existing facilities without significant CAPEX spending. Given the complexity of this process (due to the time-dependent relationships between process variables), the team would need to acquire new skill sets fast, in order to adapt to market changes quickly.



Dynamic Simulations for Optimal Recommendations, High-Accuracy Results

Kaneka's team realized it would need to reduce degassing time at the vacuum pump to increase capacity. Using Aspen Plus and Aspen Properties, Kaneka modeled the equilibrium of the liquid polymer with the solvent. After calibrating the properties, a flowsheet of the commercial plant was created using Aspen Plus Dynamics to model the transient behavior.

The dynamic simulation results were a good match to existing operations, providing the team with a high level of confidence in the model as well as the results. Rigorous polymers models and dynamic simulations enabled the team to provide optimal recommendations.

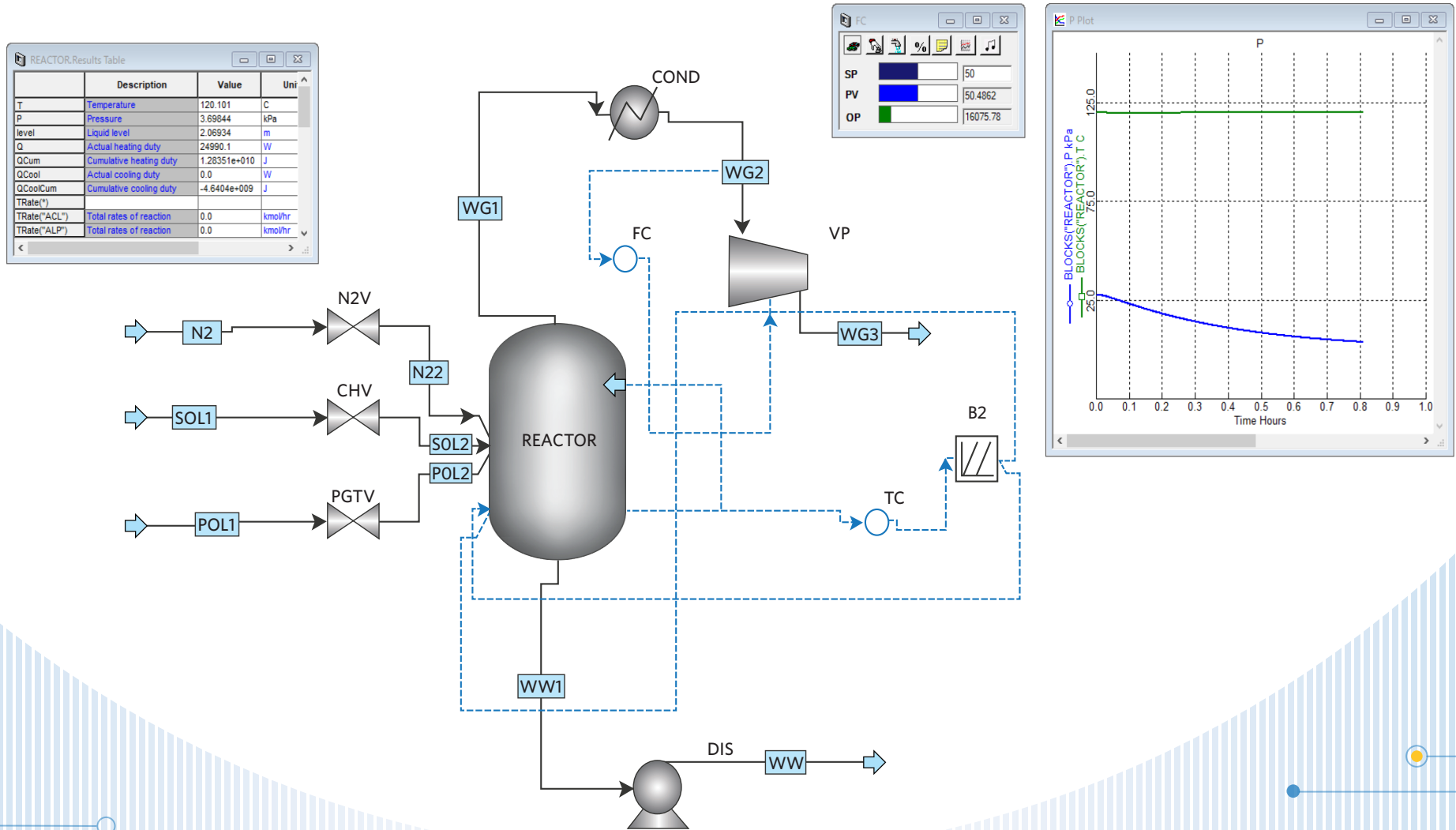
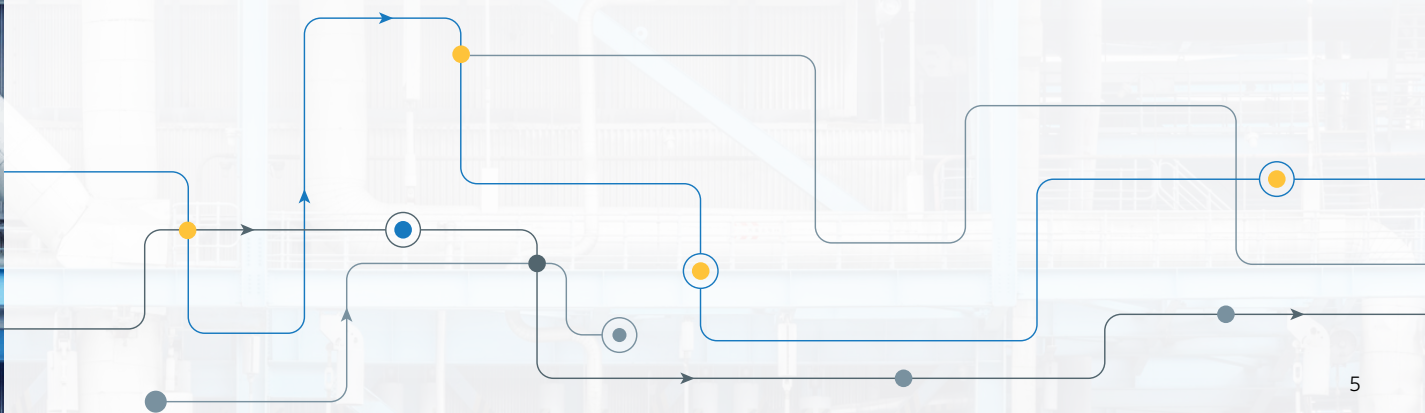
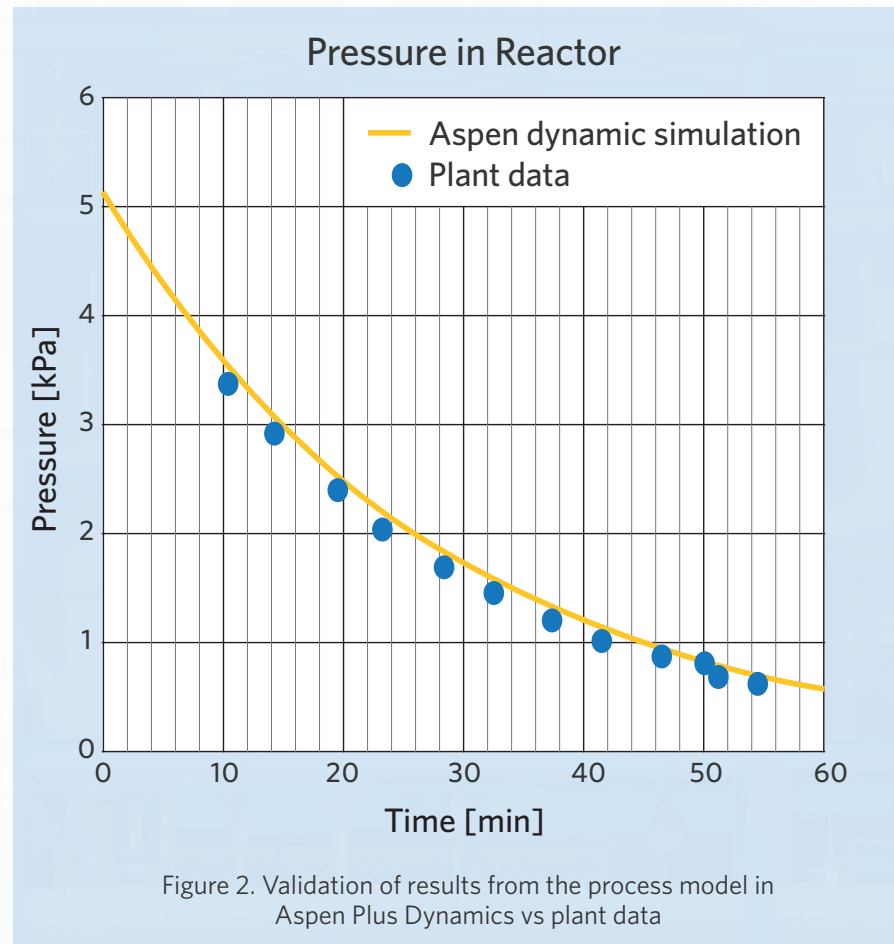


Figure 1. Process flowsheet in Aspen Plus Dynamics



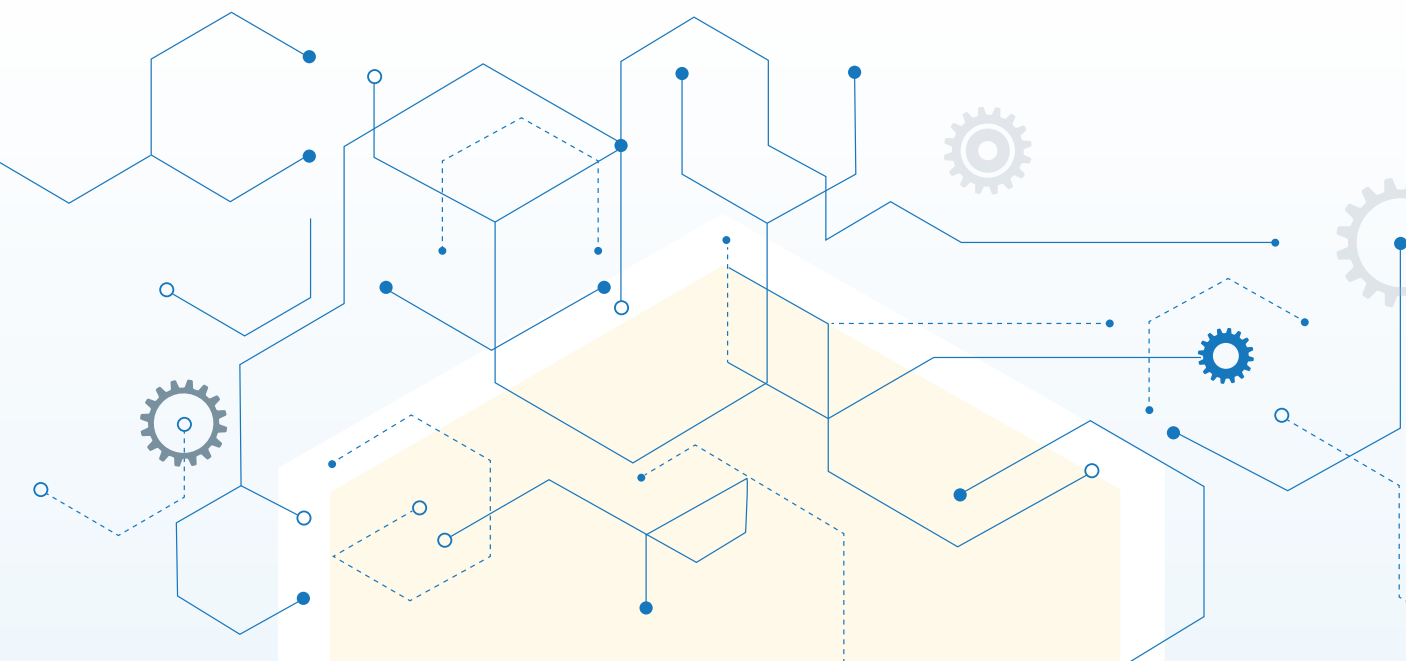
Using Model's Results to Inform Future Recommendations

Having an accurate model of the process using Aspen Plus helped Kaneka avoid testing that would disturb operations in its commercial plant. Leveraging Aspen Polymers and Aspen Plus Dynamics, the company also shortened the time needed by its engineering team to evaluate the process and provide recommendations by three months.

Leveraging results from AspenTech's solution to make better operational decisions, resulted in the company increasing productivity by two percent—without adding capital investment.

The model also provided further insights to the team: If additional production increases would be needed in the future, the vacuum pump would have to be replaced, at additional investment. The insights provided resulted in the team having more time to plan a revamp of the plant.

AspenTech played a crucial role in helping Kaneka's team get started and gain competency in using Aspen Polymers and Aspen Plus Dynamics over a three- to four-month period. Its team was also assisted by AspenTech's Customer Support team during this period to help accelerate the learning curve and ensure successful development of the models.





About Aspen Technology

Aspen Technology, Inc. (NASDAQ: AZPN) is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance lifecycle. Through our unique combination of deep domain expertise and innovation, customers in capital-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence.

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