

**SABIC Continuously Optimizes its Utility System to Reduce Emissions and Increase Plant Energy Efficiencies**

Aspen Utilities Planner™ brings a wide range of visibility into utilities operations to enable new levels of sophistication, energy opportunity identification and improvement.

**>60K TONS  
per year<sup>2</sup>**

Reduced carbon emissions

## CHALLENGES

Variability in site's steam system, localized improvements and equipment availability was impacting progress toward its 2025 goals, which include reducing greenhouse gas emissions and cutting energy expenditures.

## SOLUTION

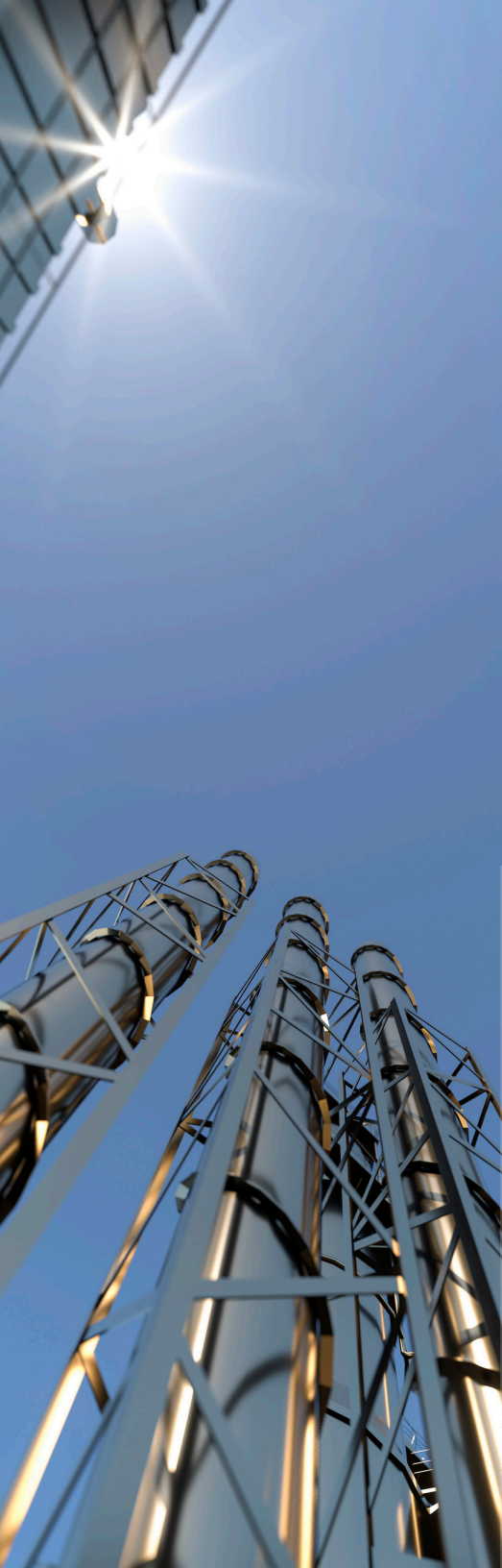
Aspen Utilities Planner was deployed by SABIC's CSD Operational Sustainability Team for its affiliate, Kemya.

The energy optimizer determines energy losses and performs an overall utility system optimization to maximize energy gains through a utilities site-wide energy simulation.<sup>1</sup>

## VALUE CREATED

Having a comprehensive view of its utility system enabled SABIC to:

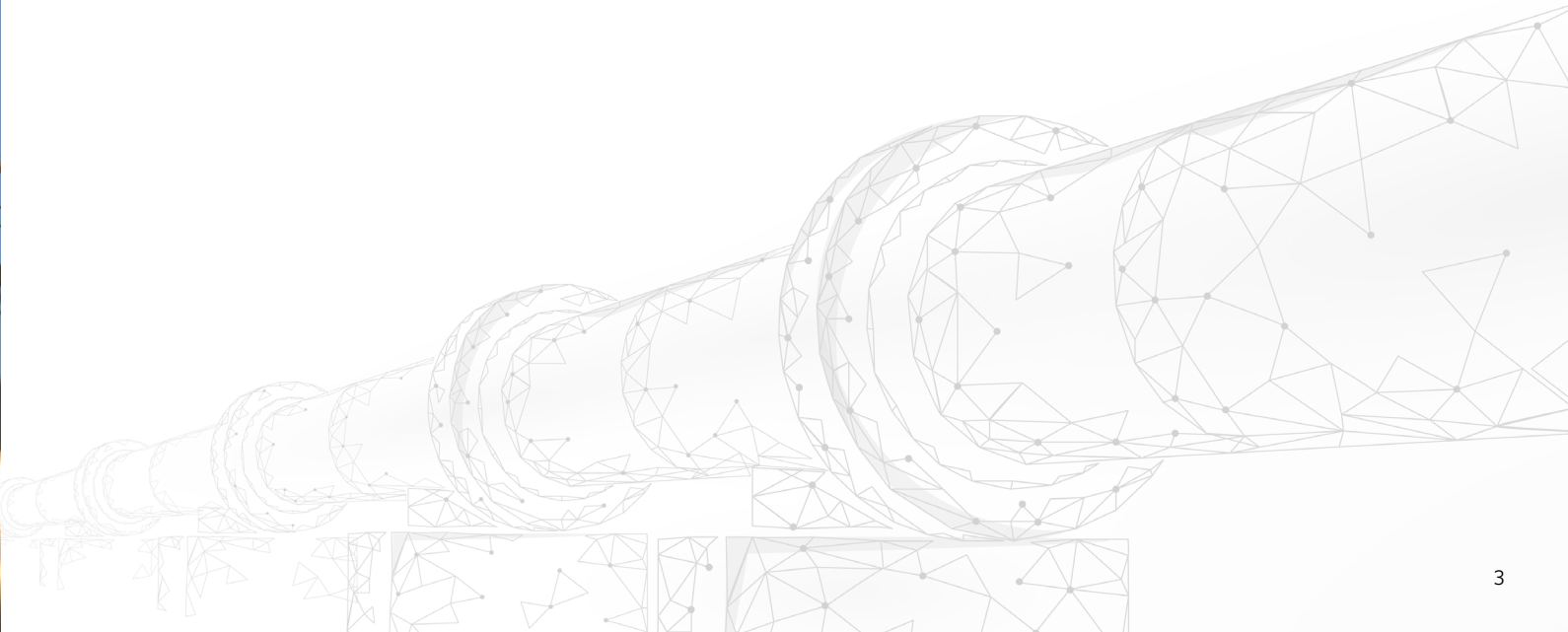
- Minimize steam losses
- Optimize compressed air supply
- Optimize boiler loads
- Minimize greenhouse gas emissions



SABIC is a leading multinational manufacturing company, specializing in the manufacture of petrochemicals, chemicals, industrial polymers, fertilizers and metals. The company has 17 affiliated companies, including Kemya, which is a 50/50 joint venture between SABIC and ExxonMobil affiliate Exxon Chemical Arabia, located in Jubail, and established in 1980. As part of its 2025 goals, SABIC looks to reduce greenhouse gas (GHG) emissions, energy consumption and fresh water use by 25% compared to its 2010 numbers and is looking into many investments combined with digitalization and strategic actions.<sup>1</sup>

Energy efficiency is a key focus area for SABIC. Over the last 11 years, SABIC has invested significantly to improve efficiency by 9.4%. To close the gap towards achieving 2025 goals, SABIC identified the need to quantify energy losses and execute actions to optimize operations while addressing daily plant challenges. SABIC developed a utilities site energy model using Aspen Utilities Planner. The optimizer provided a comprehensive view of its utility system to more easily identify energy losses at the equipment level and perform an overall system optimization to maximize energy gains.

SABIC has created models for 10 plants, obtaining numerous benefits to maximize energy gains and reduce GHG emissions. The utilities optimizer provides a comprehensive view of its utility system to identify and implement actions for improvement.







## Improving Utilities Systems to Reduce Fuel Use and Carbon Emissions

SABIC's Energy Management solution was used on a site with two utility steam systems integrated at MP steam level and an integrated compressed air system. It was necessary to determine the most optimal operating conditions to minimize fuel use and CO<sub>2</sub> emissions for a scenario with reduced utilities demand from the business, and some equipment being unavailable due to maintenance activity.

The model also provides SABIC with potential areas for improvement. At the site mentioned above, it provided insights to run a smaller compressor to supply compressed air requirements, utilize MP steam interconnection to import and export steam between utility systems, reduce steam venting through service condensers and optimize boiler load, favoring boilers with greater efficiency.

## Obtaining Insights from Energy Management Solution

The site energy optimizer helps SABIC to identify opportunities and answer questions, such as:

- Which boilers to use for steam generation?
- How to utilize the best source of steam to conserve energy?
- What would be the impact of maintenance activities on steam system optimization?
- How to optimize steam supply through different steam levels?
- Which drive to use in multi-drive equipment with electrical motors like pumps or turbines?



# Accelerating Digitalization and Sustainability

Digitalization continues to play a vital role in SABIC's ability to accelerate its sustainability journey. Specifically, the Aspen Utilities Planner solution helped them gain visibility on consumption patterns, enabling them to regulate energy and utility losses at the equipment level. During a short period, SABIC gained nearly 130 GJ/h for a single site, equivalent to nearly 60,000 tons CO<sub>2</sub> reduction per year (assumes natural gas usage).<sup>2</sup>

As a next step, SABIC plans to deploy the online energy optimizer for a real-time decision-making tool, improving the efficiency of the process even more.

Read more about [Aspen Utilities Planner](#) solutions.

## Citations

<sup>1</sup>Originally presented by the customer as part of the OPTIMIZE '21 conference, held in May 2021. Contact your AspenTech representative for more details.

<sup>2</sup>Based on natural gas usage and gains of nearly 130 GJ/h.







## 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.

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