Eneco: Harnessing Optimization for Smarter Energy Dispatching

With Gurobi, Eneco can achieve optimal energy resource allocation while minimizing losses and maximizing profits in energy trades.

Eneco is an integrated, independent, and growing international energy company operating in the Netherlands, Belgium, Germany, and the United Kingdom. Based on their mission, "everyone's sustainable energy," Eneco helps consumers and companies switch to renewable energy.

Industry: Power & Utilities
Location: Europe
Use Cases: Portfolio Optimization, Forecasting
Website: www.eneco.com

Results

- Uptime increased from 95% to 99.9%
- Solve times decreased from 10 minutes to 40 seconds

As one of Europe's largest utility providers, Eneco generates power through their own assets and manages a diverse energy portfolio of renewable sources, ranging from wind and solar farms to electrode boilers and heat pumps.

The company's mission—to be "everyone's sustainable energy"—centers on sustainability and innovation, striving to optimize energy distribution and support the evolving demands of the energy market.

Serving both B2B and B2C customers, Eneco is committed to delivering reliable energy solutions that meet the needs of both major corporations and residential consumers.

Navigating a Complex Energy Landscape

Today's energy market is characterized by a multifaceted structure, rapid evolution, and high operational complexity. And as the energy landscape shifts toward renewable sources and decentralized generation, companies like Eneco face the daunting task of efficiently managing a vast array of assets across multiple markets.

Amid so much complexity, mathematical optimization plays a crucial role in the way Eneco ultimately allocates certain assets, mines their batteries, and schedules their power plants—helping them do so in a way that minimizes losses while maximizing profits.

Optimization is also central to the Eneco Energy Trade, which creates value and financial security for Eneco's partners, boosting sustainable initiatives and unlocking the full potential of assets and energy grids.

"For energy trade, we have to look at our portfolio as a whole and try to identify opportunities for optimization in ancillary markets," explains Quinten de Wit, Product Manager at Eneco. "This means gathering all incoming

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schedules, forecasting asset availability, and analyzing varying market prices. Ultimately, we want to know how we can best trade our flexible capacity in the market, leveraging real-time prices and value to maximize returns at any given moment."

Building Optimal Energy Portfolios that Maximize Profits and Sustainability

"My team, which works within our virtual power plant, is responsible for the asset optimization domain, where we try to optimally plan our assets on the different markets," says de Wit. "And since the energy market is very complex, we really need optimization. It's crucial to helping us decide how we allocate our assets and utilize our batteries."

Eneco previously relied on an external vendor for optimization solutions. But as the company underwent rapid growth, they decided to bring optimization in-house, and realized the need for a solver that could scale with them. They chose Gurobi for its ease of use and strong reputation within the industry.

"Gurobi was chosen because it is very user-friendly, and a lot of people on the team already had experience using it from their academic work," says de Wit. "It feels quite natural to write constraints, and it's very nicely integrated with Python. It's also extremely fast and offers great support."

Eneco runs the Gurobi Optimizer at least every 15 minutes, for different countries—including the Netherlands, Belgium, and Germany.

"On a really easy day, there might be 10 or 20 calculations. But say, on a windy day, with a changing, dynamic market, it could be hundreds of calculations a day. Therefore, we need to be really robust, with 24/7 uptime—and that's something we've been able to maintain with the Gurobi Compute Server," de Wit explains.

Maximum Uptime, Exponentially Faster Solves

Since Eneco began using Gurobi to power its trading solver, uptime has increased from 95% to 99.9%. In addition, solve times that used to take 10 minutes now take just 40 seconds with Gurobi.

And with straightforward documentation, it was easy for the Eneco team to get up and running with Gurobi.

"Our platform team installed the Gurobi Compute Server, and it was really quite easy," says de Wit. "There was really good documentation around it, so for new people who are joining, they can easily start writing constraints and making adjustments."

Continuous Innovation

As for future plans, Eneco is working on an asset-specific product that will help determine how heat grids and gas power plants can work together optimally.

While Eneco continues to expand and embrace new technologies, optimization remains at the core of its strategy. And with Gurobi, they can ensure that both sustainability and profitability are achieved for years to come.

"The support we've gotten has been amazing, and while I think we're already quite competitive with our virtual power plant, I believe Gurobi will help us a lot with all the new optimization we're doing," says de Wit. "We evaluated different options, and I'm very happy that we are with Gurobi."