

# Energy Management Dispatch Optimization



Cost and emissions reduction through optimized generation schedule for hybrid and non-hybrid fleets

## The challenge

Energy markets are becoming increasingly complex due to the influx of new generation assets like renewables, microgrids and the hybridization of traditional CCPPs with storage and other energy assets. All of which makes it more difficult for asset operators to quickly respond and optimize their generation.

Solutions that manage the distribution of generation are needed to economically optimize plant operations.

## Our digital solution

Energy Management Dispatch Optimization is a software that manages the utilization of generation assets, which can significantly improve economic return and profitability.

### Scope

- Customized mathematical solver based on asset and forecast models (technical, economic, regulatory, and weather)
- Cost optimized generation schedule for viewing, exporting or directly controlling assets
- Web application: Interactive web platform visualizing the generation schedule forecast

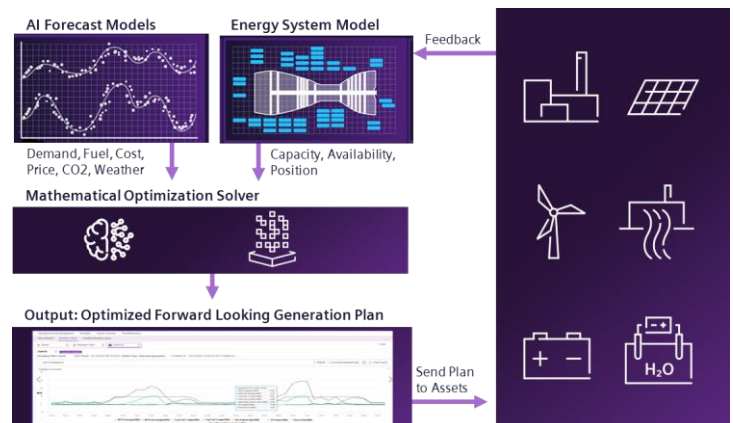


Figure 1: How Energy Management works

Our powerful software platform helps to optimize generation with three core steps:

- First, create a digital twin of the energy system to model operation and forecast production
- Second, virtualize the energy market and reserve requirements to forecast market prices and demand
- Finally, OPTIMIZE! Combine market and production forecasts using advanced optimization techniques to proactively determine the economically optimized generation plan specific to your plant

## Benefits

- Automate the dispatch of multiple energy assets
- Reduce fuel costs by dispatching your assets efficiently
- Reduce CO<sub>2</sub> emissions by utilizing low carbon generation when possible, and optimize burner usage when not
- Use digital plant models built by the experts – Siemens Energy engineers and data scientists
- Use real time plant state information to ensure dispatch plans match plant capability
- Plan proactively to inform generation and bidding strategies, through advanced forecasting techniques that deliver optimized schedules
- Visualize fuel cost, capability, power demand and current position
- Streamline team coordination by bringing operational and planning inputs together
- Improve transparency of decision-making process using digital dashboards.



### Cost Optimization

- Operating Expense



### Operational Excellence

- Personnel & Process
- Digitalization



### Efficiency

- Base Load Efficiency
- Transient Efficiency

In summary, Energy Management helps you to:

- Optimize your production
- Reduce your emissions
- Maximize your revenue

## Implementation steps

- Analyze control methods, signal identification, equipment & operating parameters
- Define EMS objectives
- Establish connections with customer systems and plant
- Ensure sensor data streaming for model training
- Setup energy system model and objectives for the optimization process
- Deploy cloud-based EMS instance with web application access
- Customer acceptance testing
- Customer training for system handling and typical configuration activities

## Watch Energy Management video

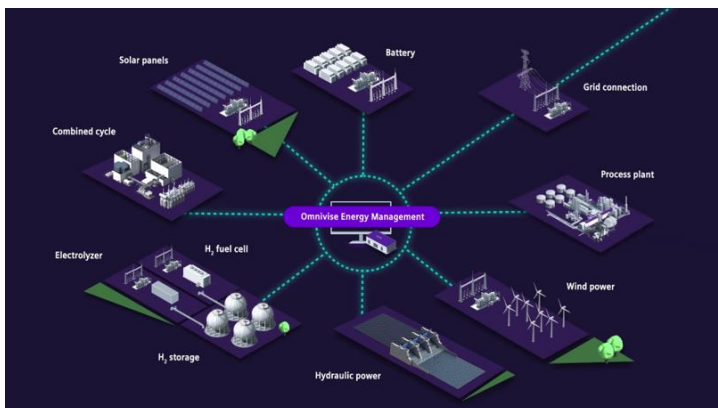
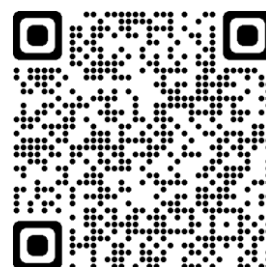


Figure 2: Energy Management video - overview

Discover how it works in this video (click on the image or scan the QR code):



## Success story: Hsinta reduced fuel cost by 0.33%

The Hsinta power station complex comprises a 2.1GW coal-fired plant with 4 units and a 2.4GW combined-cycle gas plant equipped with 5 units.

Taiwan Power Company is in the process of moving to independent management of its power generation and grid operations from 2027 on. They partnered with Siemens Energy to prepare for the increased competition arising from market deregulation

**“By implementing the Dispatch Optimizer solution from Siemens Energy, we were able to reduce fuel costs significantly and minimize our carbon footprint.”**

Mr. Huang, Chin-Chen  
Plant Manager of Hsinta Natural Gas Power Plant  
Taiwan Power Company

## Implementation of the Solution

Siemens Energy implemented Dispatch Optimizer, a software-based solution for creating revenue optimized production plans to dispatch plants efficiently.

The solution connects market-driven trading, including spot markets, with the production potential of the generation units.

It produces short, medium and long-term generation schedules and provides recommendations for cost and revenue-optimized generation.

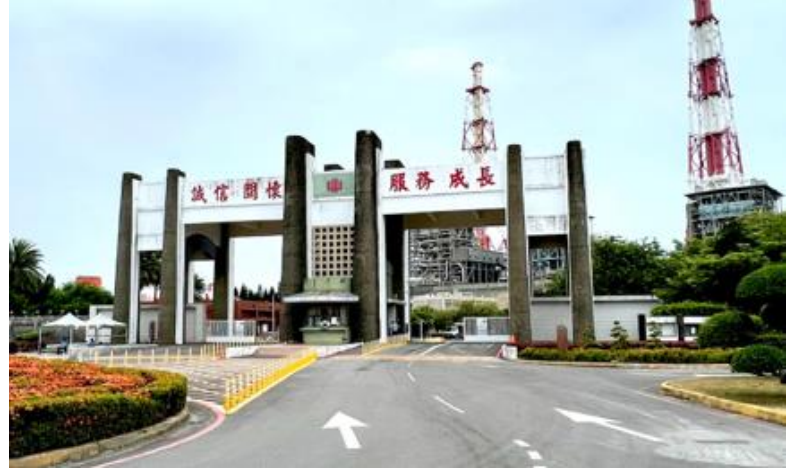


Figure 3: Hsinta power station, in Kaohsiung, is Taiwan's 2nd largest coal-fired power plant.

## Benefits

- Considers forecasts on electricity demand, weather, and price expectations to develop short-to long-term cost-optimized generation schedules.
- Supports the fulfillment of supply obligations with minimal use of resources through the best possible use of the plants.
- Provides decision support, including for fuel contracts, electricity contracts, CO2 planning and investment calculations for new or changed plants.

## The Result

- Fuel savings of 0.514%
- Cost savings of about \$12,000 / day
- Yearly saving potential of about \$4 Million / year

## Total value impact for 5 years\*

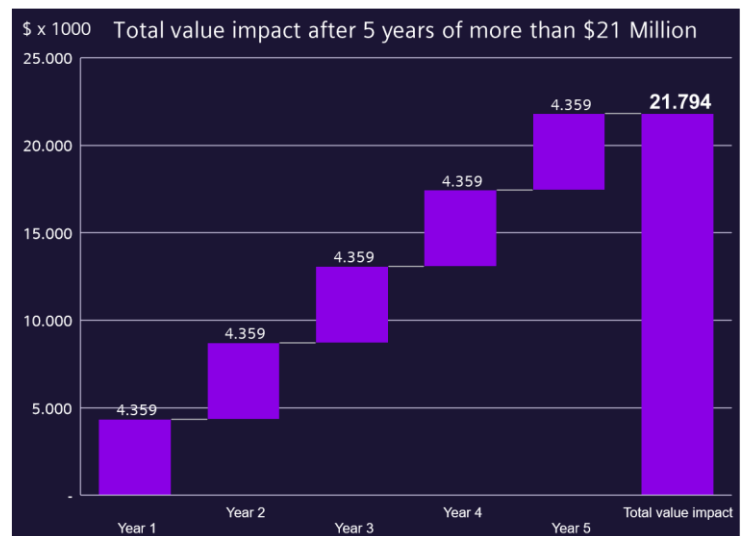


Figure 4: Total Value Impact after 5 years (in thousands \$)

\* It is a simulation of possible benefits based on specific project details that can vary

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Siemens Energy Global GmbH & Co. KG  
Gas Services  
Siemenspromenade 9  
91058 Erlangen, Germany

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[Omnivise Performance Solutions \(siemens-energy.com\)](https://www.siemens-energy.com)

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Siemens Energy, Inc.  
Gas Services  
4400 N Alafaya Trail  
Orlando, FL 32826, USA

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