Optimization of a District Heating Network: Proven Control System Reduces Peak Loads and Increases Efficiency

Heating Networks Under Pressure

Heating networks are gaining importance in energy transition. The pressure is growing to increase security of supply, manage limited network capacities, and lower operating costs. At the same time, end customers expect reliable heat at affordable prices. New solutions are required.

Energie 360°, **Yuon Control AG** and **Hoval AG** have jointly realized a strategically important project in a shared heating system operated by Energie 360° in the city of Zurich. This technical implementation demonstrates how heating networks can be operated more efficiently with measurable benefits.

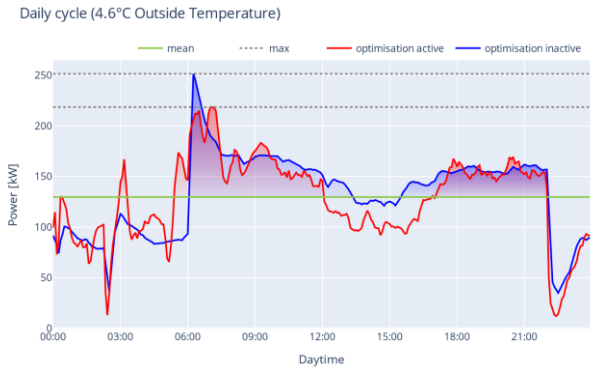
Project Implementation in the Heart of Zurich

The implementation took place in an urban district heating network in Zurich, supplying three connected buildings via a central heating system with two 450 kW gas boilers. The buildings equipped with Hoval control systems were integrated into the optimization solution. The combination of urban context and existing infrastructure provided ideal conditions, as it reflects the typical setup of many Swiss heating networks and is therefore well suited for scalable, practical use.

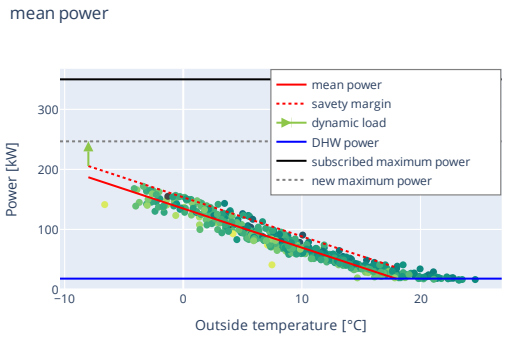
Location of the Optimization Project on Hofwiesenstrasse in Zurich

Clear Results: Lower Peaks, Greater Efficiency, Reduced Costs

The optimization resulted in clearly measurable gains in system performance and energy use. Peak loads were reduced by 33% (from 100 kW to 67 kW). As a result, the contracted capacity could be



Peak loads reduced by 33%

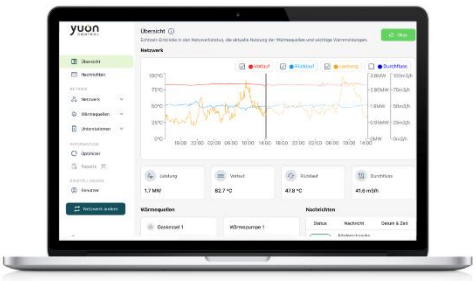


Contracted capacity reduced by 26%

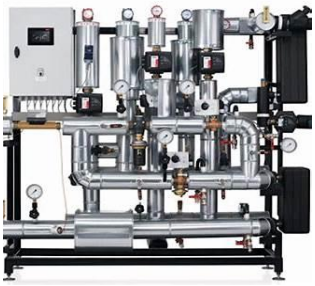
lowered by around 26% (from 645 kW to 477 kW), which would lead to noticeable cost savings. Annual energy consumption was reduced by approximately 39'400 kWh, resulting in lower CO_2 emissions. The optimization also improved network performance, with return temperatures reduced by up to 8 °C without compromising user comfort.

Technological Core: Digital Control System

At the heart of the project is a fully digital optimization approach. The existing Hoval control systems are intelligently supplemented by Yuon's predictive control software. Building models incorporating thermal inertia and weather forecasts allow for forward-looking control of heating and boiler cycles. The system runs automatically, is continuously monitored, and alerts users in case of deviations. The solution is modular, hardware-independent and compatible with standard control systems making it easily transferable to other networks.



Full transparency with the Yuon dashboard



Hoval control technology in operation

Scalable Solution with Demonstration Value

The collaboration between the three project partners shows that intelligent operational optimization can be implemented efficiently in existing heating networks. The combination of control systems, data analysis and operational integration delivers measurable benefits for energy suppliers as well as end customers.

The optimization implemented in Zurich goes beyond a one-off solution and serves as a scalable model for the future-oriented operation of modern heating networks.

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