

## Peak shaving project

*50% lower power during peak hours*

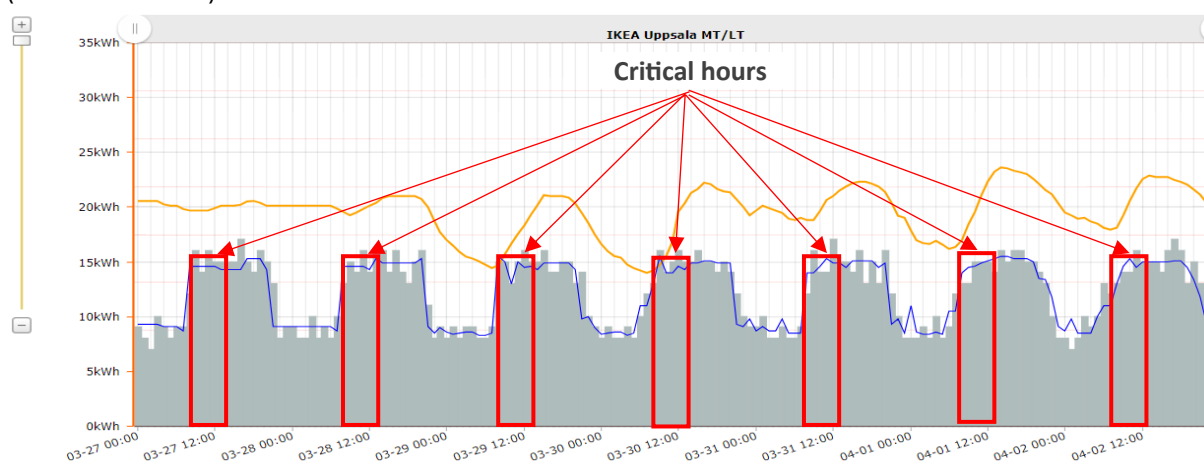
*20% less kWh consumption overall*

In recent years, warnings about potential power shortages in parts of Sweden have become more frequent. During peak hours, this could lead to extremely high electricity prices, and some businesses might face power cuts, forcing them to halt production.

The risk is highest in winter when demand is high, but peaks also occur during hot weather due to increased air conditioning use, amplified by climate change. To reduce the risk of power cuts, many consumers could lower their electricity usage slightly during critical hours.

### Guidance for Shifting Power Demand and Optimising Refrigeration Systems

In collaboration with Caverion and RISE, ClimaCheck analysed and optimised refrigeration systems for six months, from leading property owners in Sweden (ICA and IKEA).



*Before optimisation*

The savings were substantial, and it was possible to reduce the power consumption by 50% during peak hours as well as it was possible to optimise the system and save 20% on the overall consumption. The optimisation also led to a system with a more stable operation and a reduced risk of failure. Which is beneficial in the organisation's sustainability work.

**ClimaCheck Sweden AB**

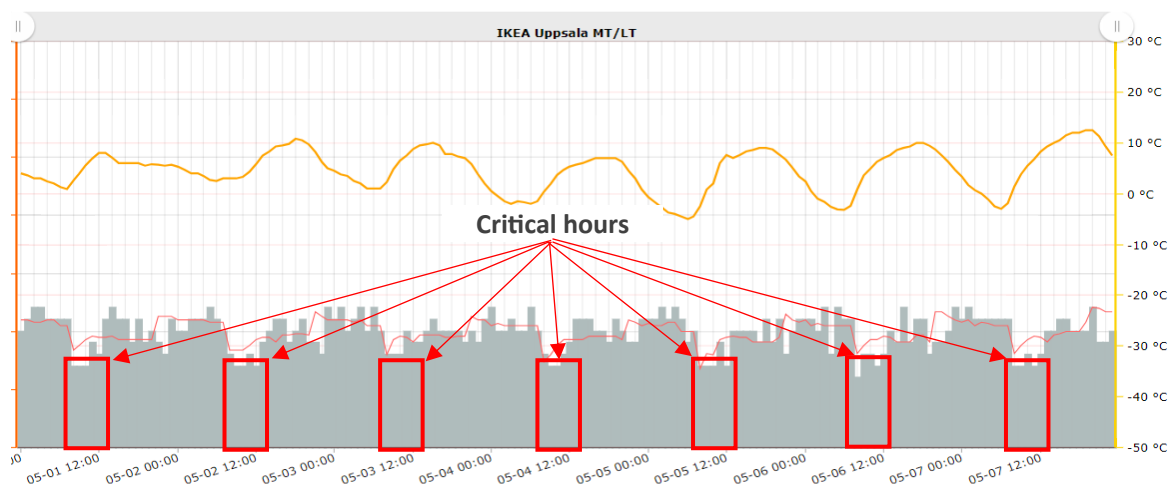
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## The result



*After optimisation*

As seen in the graphs (before and after optimisation) from ClimaCheck *online*, the load during the critical period is reduced. Moreover, the tests demonstrate how the load was reduced and balanced throughout the day through efficiency measures, nighttime load shifting, and extending the low-load period by limiting compressor capacity during critical hours.

The savings potential in most refrigeration systems occurs because they are rarely optimised during commissioning, and they are not adjusted for the continuous changes that happen in a store.

Additionally, the initial setup often takes place when the store is just starting up. Over time, stores undergo continuous changes, such as the installation of new displays and shifts in consumer habits. Therefore, optimisation must often be an ongoing process to maintain optimal performance.

Today, there are opportunities to analyse performance in real-time, enabling the detection of performance deviations as they occur, long before they cause operational disruptions. This allows for ongoing optimisation efforts.

Special thanks to IKEA and ICA for their participation. IKEA provided a refrigeration system for kitchens and cooling displays, while ICA contributed a Maxi store for practical trials. Their staff were actively involved. The project was funded by Vinnova.

## More information

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