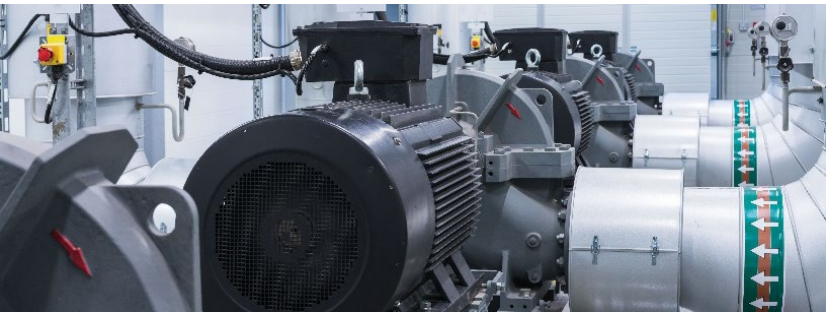
The CLEMAP Grid as monitoring of a district heating system

An important district heating system of a large Swiss energy supplier is fed by two powerful heat pumps of 1MW each. Their operational reliability is of utmost relevance in order to supply the supply area with heating and cooling. Two CLEMAP grids were installed to monitor the electrical system.

Real-time energy monitoring to ensure facility performance

The operational reliability of the heat pumps is of central importance for uninterrupted energy supply. In addition, the entire electrical system consisting of pumps, compressors and frequency converters plays a key role in providing power to the supply area. The energy supplier is therefore dependent on constant energy monitoring of its critical infrastructure in order to detect anomalies and failures and to be able to react as quickly as possible. To ensure that in the case of an irregularity in the electricity profile, immediate measures can be taken to fix it, the customer requested real-time monitoring of the energy data. At the same time, the system was to send automatic warnings as soon as a reference value was undershot or exceeded.



Anticipating failures and anomalies

In the sense of generating added value from energy data, the aim was not only to inform the customer when a fault or failure occurs, but also to predict its occurrence.

Thanks to machine learning, CLEMAP's condition monitoring module enables prediction of facility performance based on historical data and can identify when the facility is running abnormally. This gives the utility advance warning of when the next failure might occur or when components are running abnormally. As a result, the utility can adjust the operating pattern to avoid outages and identify which components are running abnormally. These predictive indicators can prevent failures and lead to shorter downtimes.

About CLEMAP

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- Data collection using own energy meters
- Automated data processing and intermediate storage on web servers
- Visualisation and control via user-friendly energy portals

CLEMAP supports you with clever energy solutions on your way to optimising consumption by controlling devices, identifying unused savings potential and avoiding idles.

About the project

A facility of a large Swiss energy supplier should have as few operating failures as possible. As a solution, CLEMAP installed two grid sensors, which were used to measure high consumption and visualise and monitor it in real time.

Overview:

- installed CLEMAP Grid
- Current measurement using Rogowski coils up to 6000 A
- Visualisation via energy portal CLEMAP Floem
- Real-time data transfer via SDAT
- Simple installation of the Rogowski coils on the secondary side of the transformers
- Advanced and flexible analytics methods

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Facility monitoring in real time simplifies everyday operations

After the quick installation of the CLEMAP Grid, which uses Rogowski coils, it took only a few minutes for the first measured values to become visible via the CLEMAP Floem energy portal. After a year-long period of data collection and fault detection, CLEMAP developed prediction and anomaly detection modules that detect abnormal operation (see illustration below). These can be linked to several different failure modes of the system to advise operators on how to correct operations to prevent failure. Many warnings of a critical operating condition can also be linked to predicted energy demand based on weather conditions and the last 48 hours of operation, especially if the heat pumps are operated at maximum capacity for extended periods of time.

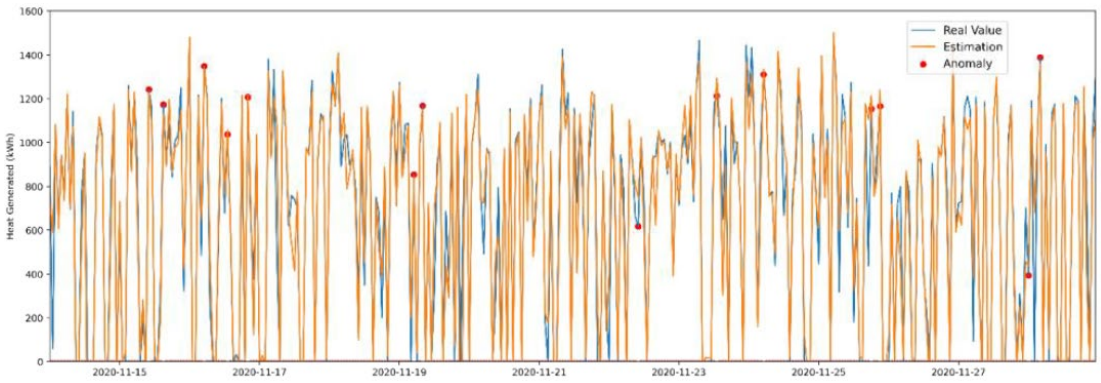
As time goes by, the CLEMAP Analytics modules will generate added value in the form of automatically generated alerts as soon as a benchmark value is undershot or exceeded.

In the future, this will make the daily routine of those responsible for the system much easier.

The customer benefits from a system that takes over the monitoring and analysis of the system fully automatically and without manual assistance and can thus focus fully on its mission to supply the connected neighbourhoods with heating and cooling. The facility will operate more efficiently, as faults are detected immediately and measures to fix them can be initiated almost as soon as they occur. With the CLEMAP Floem energy portal, the energy supplier now also has a system that provides him with all the necessary details about the facility's performance and informs him about its status at a glance.

For more information on our smart energy meters and intuitive energy portals, visit our product portfolio at:

www.clemap.ch/en/solutions/product-portfolio



Klimastiftung Schweiz

With the developed innovative products and the technologies, CLEMAP offers its customers real added value in the form of energy data analytics and is thus actively committed to protecting the environment. This contribution to climate protection has been recognised by the Swiss Climate Foundation, which is why CLEMAP has been included in its funding programme for Swiss innovation projects in 2019.

SmartGrid® ready

At CLEMAP, in-depth know-how of the development of innovative technologies meets many years of experience in the energy sector. This is why CLEMAP is part of the technical committee of the Smartgridready association for the interface between energy supply companies and building control systems and actively promotes the change towards environmentally friendly energy supply.

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