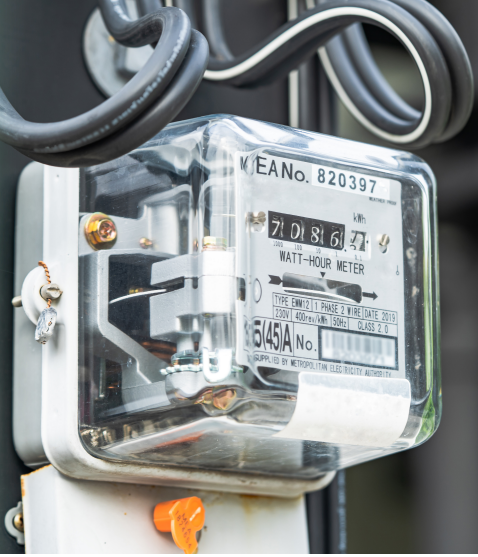# visplore

Reducing demand charge — avoiding peak loads by optimized asset operation

Challenge

A German chemical production site experienced recurring power load peaks that caused significant costs due to high demand charges. Despite using a commercial Energy Data Management (EDM) system, the energy department could not find out the reason in order to come up with a strategy for avoiding the peaks. While their 12 dryers were known to be the assets with the highest power demand overall, details of their consumption behavior were unknown and hard to extract as all assets on that site as well as the auxiliary consumption were aggregated in a single electric meter. Moreover, the 15-minute power load profile was stored in a separate data source than the data about asset operation, making an analysis even more challenging.

Highlights

€ **170.000€ savings** in one year by lower power demand charges due to reduction of peak load by 1200 kW.

€€ **Additional considerable future savings** by re-negotiation of power supply contract thanks to better predictability of load

🔍 **Increased situation awareness** of peak loads for adherence to guidelines

Solution

1) Using the data integration features of Visplore, the engineers in the energy department could easily merge roughly one year of data about the operation of their 12 dryers from the historian (AVEVA PI Asset Framework) with the load profile time series from the meter.
→ Within seconds, it became clear that the dryers use considerably more energy during their ramp ups.

2) Graphically selecting relevant load peaks enabled a comparison of the asset operations before, during, and after each of these peaks.
→ This revealed that the combined power loads when turning on multiple dryers simultaneously could cause the problematic peaks, especially when some dryers were already running. This occurred, for example, at material changeovers.

3) Based on this insight, the energy department derived guidelines advising operators against switching on dryers within a timeframe of less than 30 minutes if there are already a minimum of 2 dryers in operation. Operators were also advised to avoid switching dryers off for very short periods, as this was more energy-efficient and avoided peaks.

4) The energy department set up a report of peaks in Visplore that automatically detects and counts peaks for live data. Thus, operational personnel can be contacted in timely manner when peaks reoccur and track improvements of asset operation overall.
→ It took **less than one day** in total to prepare the data, do the analysis, and set up the peak report.

1) Advising the operators based on the identified guidelines reduced the amplitude of peaks by 37%. The annual peak of 2022 was 1200 kW lower than the peak of 2021 while the overall power consumption was roughly the same. This reduced the overall costs of 2022 by **more than 170.000€** as compared to 2021, due to significantly lower demand charges.

2) The reduction of peaks also improved the predictability of the power load. This enabled to re-negotiate the contract with their energy supplier, which will potentially lead to even more savings in the future.

3) An energy peak dashboard creates situation awareness regarding energy consumption patterns. This is key to monitoring that guidelines are followed.

> **"The integrated analysis of energy load and asset operation was key to unlock massive cost saving potentials. With Visplore, our energy department achieved a major optimization goal with an overall analysis effort of less than one day."**
>
> — Head of energy department, chemical company site
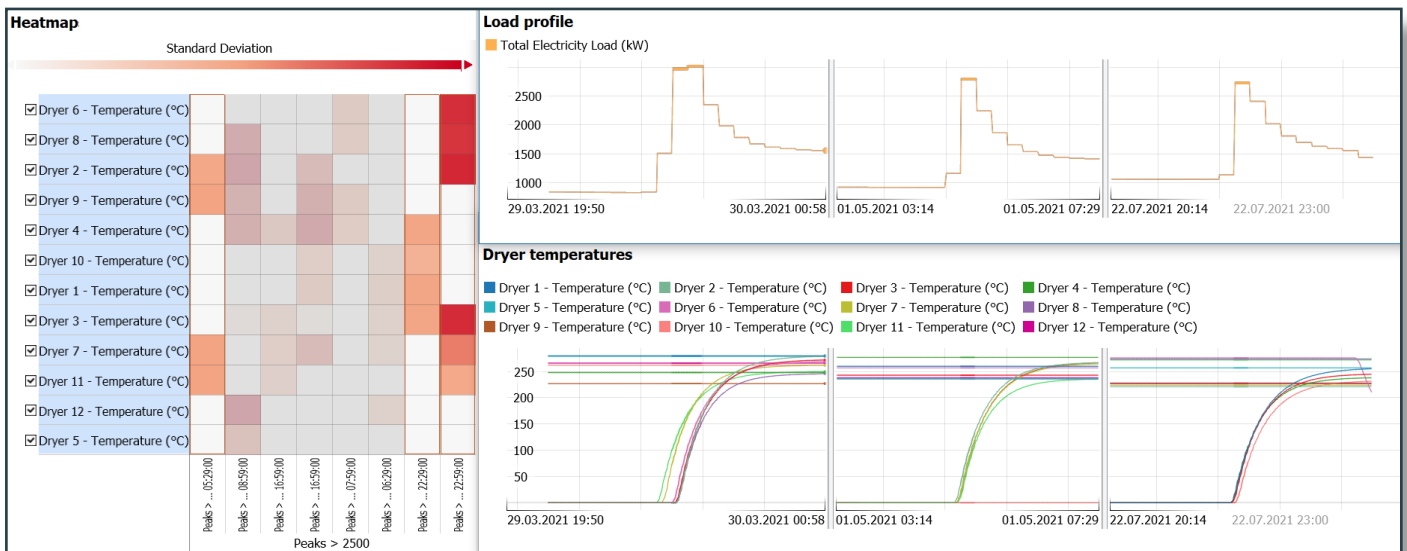
Three significant peaks and the simultaneous ramp-ups of multiple dryers. The heatmap (left) shows per peak load event (columns) which dryers are just performing a ramp-up. The user may select peak load events for inspection (plots on right side).