

Thomas-Krenn-Casestudy



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IFOX Systems GmbH

IFOX Systems GmbH from Landshut (Lower Bavaria) specializes in identifying and leveraging unused potential in companies. With their integrated information system, they provide targeted support for optimizing processes and maintaining competitiveness.

Location:

Landshut

ENERGY DEMAND ANALYSIS IN REAL TIME

Smart metering in practice

The energy crisis is affecting private households and industrial companies alike. Never before have energy availability and supply been such present topics. Before entering into a new utility contract, Thomas-Krenn.AG needed a reliable forecast of its energy needs. This meant a new solution was needed to track the company's consumption data. The answer was smart metering – an intelligent system for tracking energy consumption and costs. Together with its technology partner IFOX, Thomas-Krenn.AG developed a new sensor system based on LoRaWAN, which it now uses to monitor the company's energy consumption at all times.

About our partner

Based in Landshut, IFOX Systems GmbH offers industrial companies solutions for process optimization. As experts in value creation potential, they equipped the new monitoring system with a clear and feature-rich dashboard. For instance, this sophisticated visualization tool can show the existing potential for optimization at the push of a button – and directly translates these values into potential euros saved! A key component of this is the "Energy Analysis" section, in which the company's energy costs are tracked and presented in an understandable way.

The journey to an optimal analysis tool

The market for electricity meters is very large. A digital meter is a key prerequisite for reading out meter information. The interpretation of the data must be accordingly adapted for each meter. This requires a manual adjustment of the sensor protocol. Moreover, the corresponding sensor should be matched to the existing IT infrastructure. LoRaWAN, for example, is recommended for longer distances and very small data packets. Another advantage of this solution: Independence from the existing IT infrastructure.

Identifying and leveraging potential

In extreme cases, rising electricity prices can threaten the profitability of productive enterprises. The first step is to analyze the current situation and identify potential savings for the company. But where does one get the current or historical consumption data from? Thomas-Krenn.AG already had a digital meter from its utilities provider. In some cases, the meter could be read manually and in

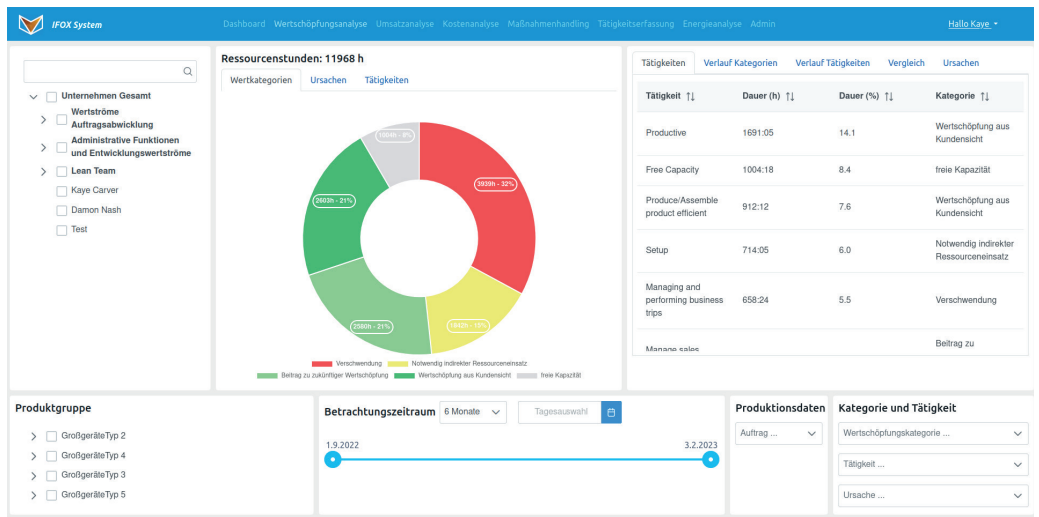
other cases, one had to query to the energy supplier. The monthly utilities bill lists the respective consumption values, EEG apportionments and load peaks in kW. It is these load peaks that can really drive up the bill amount. That means we want to avoid them whenever possible.

The problem: Meter values would have to be read out every second to know when, where and how these occur. No company can afford to hire full time meter readers. As a result, one only notices during billing if these peak values have been exceeded. The goal is therefore to track these values in order to obtain the final invoice amount but – even more importantly – to derive concrete measures for improvement.

Smart Metering with LoRaWAN

To achieve this, the existing digital meter was used in combination with a smart sensor based on LoRaWAN technology. The meter's optical interface displays the current measured values in real time. The sensor reads the data and sends it via LoRaWAN – or alternatively via the existing WLAN infrastructure – to a receiver (PC). The received data are so-called time series values, which are stored in corresponding databases (e.g. InfluxDB). These time values can be visualized with open source tools like Grafana. For users with an affinity for technology, this approach represents a simple and cost-effective solution that is easily adapted to individual needs.

In order to see the energy requirements per department or area at a glance, a complete turnkey solution consisting of sensor technology, PC or server hardware and a corresponding visualization tool is recommended – ideally from a single source.



IFOX information system

Summary

At Thomas-Krenn.AG, the digital meter was equipped with a LoRaWAN sensor. This was attached directly to the meter without tools. After just a few measurement cycles, an average daily consumption of approx. 1,000 kWh was determined. These daily averages could, of course, be determined manually, but it would not have been possible to determine peak loads in this way. These peak loads are major drivers of electricity costs and should be kept as low as possible. The current load value is 73 kW. This value is calculated by the energy supplier with a factor of approx. €100/kW.

This means:

$73\text{kW} \times \sim\text{€}100 = \sim\text{€}7,300$ p.a. plus consumption + taxes. However, the typical load value should be around 60 kW according to the measurements to date.

The analysis also showed that the increase in load was caused by the simultaneous start-up of all systems. Therefore, a cascade connection was installed to reduce the simultaneous load. According to the above calculation, the savings from this measure alone amount to approx. 10 kW – and therefore approx. €1,000 of savings on electricity costs annually.

Can you easily answer the following questions?

- How high is your energy consumption (electricity) in kWh/day?
- How is this energy distributed among your departments? (Production, Administration, etc.)
- What is your peak load in kW?
- Which machines have the highest power requirements?
- At what times of the day and night do you need the most energy?

If you CAN'T ANSWER these questions, you've come to the right place!

We are happy to take your questions and support you and your project to achieve the desired results. Contact me today:

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Thomas-Krenn.AG

Openness is a core value at Thomas-Krenn.AG.

This openness is also evident in our solution finding process.

By using open source, we can leverage the collective knowledge of a large community. This is precisely what our customers and partners benefit from – by receiving fast, uncomplicated solutions at competitive prices.

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About Thomas-Krenn:

Thomas-Krenn.AG is a leading manufacturer of custom server and storage systems as well as a solutions provider for the industrial sector.

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