EM-Power Europe
Munich, May 11–13, 2022

EM-Power Europe Trend Paper: Smart Energy in Commercial Enterprises – Saving Costs with Intelligent Energy Management

Munich/Pforzheim, September 6, 2021: Commercial enterprises, particularly those with a high energy consumption (manufacturing), are facing more and more pressure to adapt to a changing energy system and in turn must and also want to find ways to optimize their energy consumption. For many such companies, energy costs make up one of the largest shares of their overall expenses, and these have been continually increasing in recent years - not without mentioning the current increase due to the Ukraine conflict. With economic viability and competitiveness in mind, companies are urged to optimize their power generation and energy consumption.

Simply put, the lower the energy costs, the more competitive the company will be. Successful, intelligent energy management not only pays off in terms of direct cost savings; companies also benefit from competitive advantages. By reducing CO2 emissions and contributing to a better supply security and the stability of the power grids, companies make a positive impression on consumers and stakeholders.

The first step of creating an intelligent energy system is generally the optimization of existing resources. This means looking at how the energy supply or existing power generation installations can best be adapted to production and consumption processes, as well as how consumption processes can best be aligned with current power capacities. Only after this initial step does it make sense to ask to what extent additional power generation installations, such as PV plants, CHP plants or battery storage systems could be used as a cost-saving measure.

In both cases, digital systems need to be implemented, making it possible to gather information (e.g., amount of consumption, generation or energy flow) in one place, which can then be analyzed and aligned with individual areas. It is absolutely necessary that there are sufficient automatic remote meter reading systems to measure energy consumption and better understand consumption patterns overall. This then provides an analytical foundation that can be used to identify areas in which savings might be achieved. In general, there are different approaches for commercial enterprises when it comes to saving costs by using an intelligent energy system.

Load management as a central element of cost savings
One key opportunity for optimization lies in active load management, by which energy consumption can be adjusted to the load profile by shifting upstream or downstream at different times of day. This means that consumption processes can be ramped up at times when the costs of procuring the energy are low. For example, this happens when electricity is purchased on the market at times when prices are low, which corresponds to times when there is either high supply or low demand. Alternately, company-owned power generation installations can be integrated to temporarily generate additional power, e.g., PV installations when it is particularly sunny. In this context, various types of appliances lend themselves to upstream or downstream load shifting without any production losses. For example, when it comes to the electrification of vehicle fleets and integrated fleet management, it is possible to adapt charging times accordingly. By making allowances for more flexible power demands, local excess renewable power can be used efficiently.

At the same time, active load management also helps achieve consistent energy consumption, and in turn avoid load peaks, also known as peak shaving. High load peaks occur, for example, when more than one appliance, such as machines or cooling units, are in operation simultaneously. For commercial enterprises with a high energy consumption, this can lead to higher grid charges, which already make up a large portion of overall energy expenses. Grid charges are calculated based on

the peak power output for each billing cycle, that means the higher the load peaks the higher grid charges are paid to grid operators.

The be-all and end-all: Intelligent energy management of companies' internal energy systems

Aside from smoothing load peaks, there are still other ways to reduce energy costs. In the future, it will be important to consume energy when the energy supply is high and costs are low, and/or when system capacity is underused. This can be achieved, for example, through an intensified pre-cooling process for cooling units outside of peak times, so that the cooling units no longer have to switch on when multiple appliances are in need of power. There will be many price signals coming together in the future, which will need to be met by intelligent energy management. In this way, it is possible to avoid cost traps and also generate additional revenue through flexibility management. Commercial enterprises must decide for themselves how to balance production and energy costs while keeping expenses in mind.

When production processes still need to be continued, it is possible to integrate controllable company generation units in order to avoid peak loads. This can also be achieved by temporarily making use of electricity storage systems, allowing the volume of electricity to be taken from the grid to be perfectly adapted to price signals.

Intelligent energy management of internal energy systems has been shown to support companies in finding ways to create savings in connection with a number of processes while also increasing revenue. As has become very clear by now, expanding digitalization and implementing intelligent energy management systems also benefits the economy and society at large. Adapting the energy supply and load profile of commercial enterprises to meet the demands of the energy transition not only reduces burden on power grids, but also ensures that more and more renewable energy can be absorbed at the same time, which cuts down on CO2.

Integrated energy solutions at EM-Power Europe 2022, the accompanying conference and the exhibition forum

EM-Power Europe will be held this from May 11–13 as part of The smarter E Europe at Messe München. The exhibition focuses on the dynamic field of energy management and integrated energy solutions and will take place in hall B5.

Exhibitors at EM-Power Europe 2022:

- AKTIF Technology GmbH, B5.210
- Dafi GmbH / Smartfox, B5.430
- Discovergy, B5.210
- Dwelt, B5.341
- energielenker Unternehmensgruppe, B5.236
- Energy Team S.p.A., B5.130
- Inaccess, B5.340
- inavitas, B5.457
- Mondas, B5.160C
- Plexlog GmbH, B5.437
- QOS ENERGY, B5.519
- Regalgrid Europe srl, B5.220
- Siemens AG, B5.550A
- Smart-Red GmbH, B5.160E
- Smilics Technologies, S.L., B5.333
- Solar-Log GmbH, B5.520
- Xemex, B5.435
- and many more!

EM-Power Forum:

- Increasing Flexibility - Engaging the costumers for grid balancing, May 12, 2022
- Smart Metering as Cornerstone for Grid Integration of Renewable Energies, May 12, 2022
- Exit Strategies - How Companies Can Become Climate-Neutral, daily, May 12, 2022, in English

You will find an overview of the program for the EM-Power Forum by clicking here https://www.em-power.eu/exhibition-program

EM-Power Conference:

- Active Consumers for System Efficiency, May 11, 2022
- Digital Evolution of the Grid, May 11, 2022
- Flexibility Markets & Balancing, May 11, 2022

You will find an overview of the program for the EM-Power Forum by clicking here: https://www.em-power.eu/conference-program

For more information, please visit:
www.em-power.eu
https://www.thesmartere.de/home?lang=en