Hospital energy storage zagreb

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The project kicked off in October 2018. "We started with the objective of determining the potential for load shifting in hospitals and the resulting economic benefits for hospitals," explains Dr. Anne Hagemeier from Fraunhofer UMSICHT. "Another focus was on forecasting the heat demand, which plays an important role in the predictive control of utility plants."

Over a period of more than a year, the heating and cooling loads in the Evangelisches Krankenhaus Hattingen were measured in an extensive monitoring process and supplemented by short-term measurements of individual electricity consumers and departments. The results were incorporated into various models created in the project and made it possible to understand the composition of energy consumption and uncover potential savings. At the same time, a simulation of energy consumption and supply made it possible to identify opportunities for energy savings and cost reductions.

"It was shown that - if the nominal load of the hospital"s combined heat and power plant (CHP) exceeds the base load and thermal storage units are available - flexibility can be provided and economic advantages can be achieved. Even if a constant electricity price is used," says UMSICHT scientist Sebastian Berg. "If we assume a dynamic electricity tariff based on the exchange electricity price, the electricity costs can be additionally reduced by up to 15 percent. Electricity generation with the CHP unit then preferably takes place at times when electricity prices are high."

Addressing a news conference at which the EIB presented its results in Croatia in 2021, Pascenco said that there was great potentialfor the construction of renewable energy storage facilities.

The EIB representative spoke about the importance of developing rail and maritime connectivity and about transport connections between islands and the mainland.

The EU’s lending arm will place emphasis on direct financing of local communities, that is cities, in a set of essential projects such as affordable housing, improvement of energy efficiency and the post-quake reconstruction, she added.

“This initial support package for the war-torn country benefits from the EU guarantee under the External Lending Mandate and complements other initiatives announced by EU institutions,” the EIB says on its website.

In addition, the Board agreed that the EIB should pursue further initiatives under the emergency Solidarity Package for Ukraine, worth four billion euros. It includes help to countries in Ukraine’s neighbourhood and within the EU that are welcoming refugees from Ukraine or are affected by the war in other ways.

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In almost 2000 German hospitals, supply systems are available - from CHP plants, chillers and in future also heat pumps to heat and cold storage tanks. Compared to other consumers (e.g. residential and office buildings), their size makes them ideally suitable to compensate gaps in the power grid with little effort or for making economical use of an excess supply of renewable energies.

For hospitals, additional sources of revenue can arise from the optimized and flexible system operation. Furthermore, by analyzing the hospital"s energy efficiency, it is possible to identify and quantify easy-to-implement saving measures that reduce energy consumption and energy costs. Another advantage of energy balancing concepts in hospitals is that old, inefficient and not ideally sized systems can be replaced in the course of a new design of the existing systems. In this way, energy efficiency and profitability can be increased further.

In a first step, the researchers are collecting the relevant inventory and consumption data of the hospital in Hattingen and are incorporating these into a physical model of the building. From this, they gain a better understanding of the composition of the energy consumption and can derive efficiency measures. In addition, they carry out extensive measurements of electrical power and thermal energy flows in order to generate input and comparative data for the modelling and also to be able to forecast the heat demand based on this data.

In particular, the Stadtwerke Bochum play an important role as a practical partner: they evaluate the results from the user"s point of view and thus ensure that the methods and concepts developed are meaningful and feasible in practical implementation.

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