



The Hermos energy center in Mistelgau, Germany is also used as a research facility and is currently being expanded with a battery storage system.

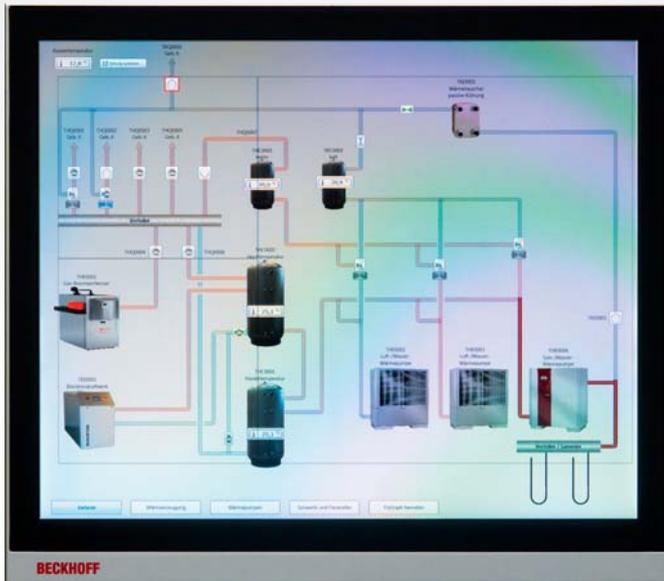
PC-based control for heat and energy supply

Innovative energy concept with high security built into the supply

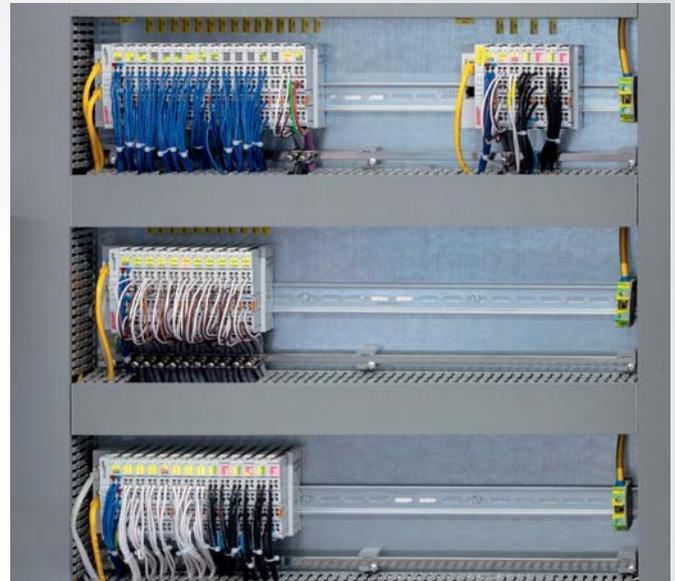
In conjunction with a new building for switchgear production, international company Hermos AG realized an advanced energy center at its Mistelgau, Germany site. PC-based control technology from Beckhoff offers a common platform for automation and building management.

Commissioned in 2013, a new energy center supplies heat and electricity for Hermos' Mistelgau site in Germany. In addition to supplying energy, it serves as an advanced research facility for technical and economic examination of system designs comprised of different energy converters, storage solutions, and distribution systems. Based on energy demand data and expected price trends on the energy market, Hermos aims to develop economically viable, environmentally sustainable heat and electricity supply modes.

The complexity of the energy concept results from the large number of different energy converters, including a CHP unit with 29.3 kW electrical and 63 kW thermal output, two reversible air/water heat pumps (60 kW), and a reversible brine/water heat pump (75 kW). Further energy conversion components include ground-source heat exchangers for passive cooling, an LPG condensing boiler (183 kW), two electrical heating elements (30 kW each) for covering peak loads in conjunction with the heat pumps, and a PV system (400 kWp). Electrical storage systems, and possibly an absorber, are scheduled to follow.



The 19-inch CP2919 Control Panel with advanced multi-touch functions such as zoom and swipe facilitates system operation and monitoring.



Beckhoff control technology not only offers flexibility and high processing power, it is also exceptionally compact.

This concept results in high overall security of heat and electricity supply. For example, short-term mains failures can be compensated by the PV system and the electricity storage systems.

High-performance and flexible control technology

A powerful CX2030 Embedded PC with Intel® Core™ i7 processor (dual-core) is used as the automation platform to control all system components. For data acquisition, a large number of EtherCAT Terminals for digital and analog I/O signals including EL34xx power measurement terminals are used. The consumption meters, e.g. for electricity and water, are seamlessly integrated via KL6781 M-Bus master terminals. Frank Springer, who works in Marketing and Sales at Hermos, explains the benefits of PC-based control technology from Beckhoff: "We have been using PC Control since 1996. The main reasons include the fact that it was quite easy to integrate into our IT system, and the high efficiency and tremendous flexibility the system offers, through its modularity and openness. This means that Beckhoff components can be used in virtually all applications – as well as in our customer projects. An additional advantage, particularly for the energy center, is the high computing power, which enables the building management server/client application and the automation functions to run on a single Embedded PC."

The parameters required for system operation are mapped on the higher-level FIS[#] management and operating system from Hermos, which is integrated into TwinCAT automation software from Beckhoff via an FIS[#]ads driver. The integration of weather forecasts enables forward-looking and balanced management and operation of the energy converters and storage systems. All electrical and thermal consumption data of the units within the system are monitored via meters which are connected via M-Bus to the FIS[#] for analysis.

An FIS[#]client, with a 19-inch multi-touch CP2919 Control Panel from Beckhoff, is available for local operation and monitoring of the system. According to Frank Springer, the operator benefits from advanced multi-touch functionality with zoom and swipe functions. Visual effects ensure that the currently active system configuration is clearly displayed to the operator. A partial technical data server (PTDS) handles local data acquisition and preprocessing. It is connected to the central management server of the FIS[#] system at the Mistelgau site via fiber optic cable.

Further information:

www.hermos.com

www.beckhoff.com/building