ENGINEERING
TOMORROW

Case Story | Pfaffenhofen

Controller **upgrade** to **new** infrastructure

ECL Comfort 296 improves Pfaffenhofen district heating supply

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The Project:

In 2001, the year of commissioning, the biomass CHP in Pfaffenhofen was introduced as an exemplary project during the World Climate Conference in Bonn: an efficient plant, which excelled with a high level of primary energy exploitation, it was said. The German Federal Environment Agency was also full of praise, since thanks to its high level of carbon dioxide savings, the plant was one of the most efficient projects with the greatest environmental benefit in Germany.

Then as now, the plant is unique because of its all-year round utilisation through combined power, heat and cold generation. In addition to electricity (40 GWh), process steam, district heating and cooling (a total of 120 GWh) is generated. The plant operator - since January 2014, Danpower Biomasse Pfaffenhofen GmbH - feeds the electricity into the public grid and receives in turn remuneration in accordance with the Renewable Energies Act (EEG).

The challenge:

In addition to the control-related technical components of the district heating station, Danfoss supplied the entire network system including services and support several years ago. In this connection the SCADA (Supervisory Control And Data Acquisition) system developed by Danfoss plays an important role: it permits the transfer of data over long distances. With a short lead time, the operator can respond to any disruptions on the customer's side.

But even the best technology wears down over the years (and spare parts can run out) or it is impossible to satisfy current requirements due to a lack of connectivity. The installed controllers of the Pfaffenhofen biomass CHP plant were therefore to be replaced by devices with extended communication capabilities.

The solution:

Since the operator is keen to retain the existing control cabinets for cost reasons, the ECL Comfort 296 controller was the perfect choice - this newly designed controller by Danfoss is equipped with a built-in Ethernet port. Furthermore, Modbus communication with SCADA systems and M-bus communication with up to five heat meters is possible. The controller is designed for installation in a panel, against the wall or on a DIN rail. Thanks to its compact standard DIN dimensions, the controller fits without any adaptation into the existing control cabinet.

The ECL Comfort 296 controller (rear) and the ECA remote control unit 30/31; on the right, an application key.

The benefits:

"The fact that the ECL Comfort 296 has such a compact size despite the integrated communication interfaces and could be swapped over 1:1 is what appealed to us the most," was the starting point according to Marcel Gibbert M.Sc. He is the site manager of the Ismaning site and is responsible for the heating utilities of Danpower Energie Service GmbH. He also looks after the district heating grid of Danpower Biomasse Pfaffenhofen GmbH.

What really convinced Mr. Gibbert in the pilot project was that thanks to the replacement of the old controllers with the new ECL Comfort 296 controller, new, additional functions could be activated that further enhanced the convenience and energy-efficient operation of heating and district heating plants. In the future, more than 50 additional controllers will be replaced. As Mr. Gibbert says, "Then we can monitor all individual district heating substations by means of a Modbus system."
The associated benefits:

- continuous monitoring of the plant status as a basis for system optimisation
- remote reading of meter data for the settlement of heating costs
- access to all data allows for trend analyses
- alarm management with freely configurable forwarding targets (e.g. by email or text messaging)
- based on all available system data in the network, need-based operation of the heat generation plant is possible.

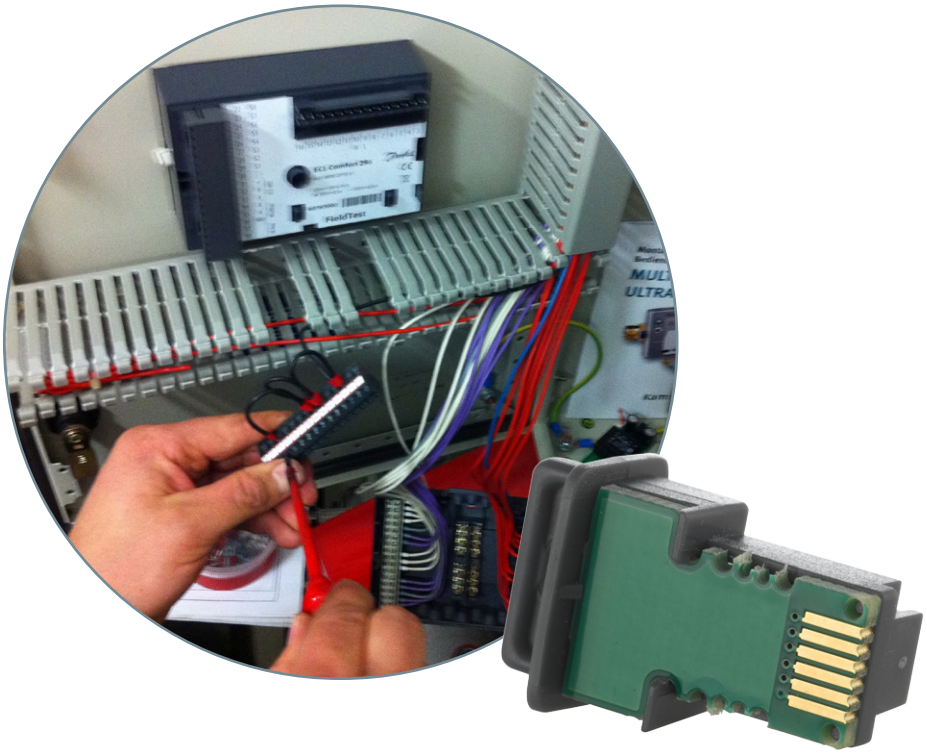
ECL Comfort 296:

The built-in communication in a single unit - this is the perfect solution for the people responsible at the biomass CHP plant in Pfaffenhofen.

Thanks to its compact DIN dimensions, the state-of-the-art ECL Comfort 296 controller fits easily into existing control cabinets - no adjustment work is required. This allows for fast and cost-effective controller upgrading for older district and local heating infrastructures. This is an interesting market for Danfoss, as the ECL Comfort 296 can easily replace not only a large number of old Danfoss controllers, but also products of other makes.

Pfaffenhofen biomass CHP plant

View of the Pfaffenhofen biomass CHP plant - it supplies steam for the baby food manufacturer Hipp and the local hospital. In addition, district heating is supplied to other industrial and commercial enterprises, municipal facilities and more than 100 private consumers.



> We were impressed by the compact size of the ECL Comfort 296 and by the fact that 1:1 replacement was possible.
>
> *(Marcel Gibbert, M.Sc., Site Manager, Danpower).*

Conclusion:

In appreciation of the successful ecological balance and humane urban planning, the jury of the German Sustainability Award conferred the distinction of being "Germany's Most Sustainable Small Town" on Pfaffenhofen in 2013. Thus the jury acknowledged, among other things, the use of "green technologies" and sustainable processes in the biomass CHP plant. With the upgrade of the controller system in the district heating network, the operator of the CHP underscores their philosophy of ensuring long-term sustainability and operational economy through efficient technology.

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