

MyUpway™ – Online heat pump control

METRO THERM A/S

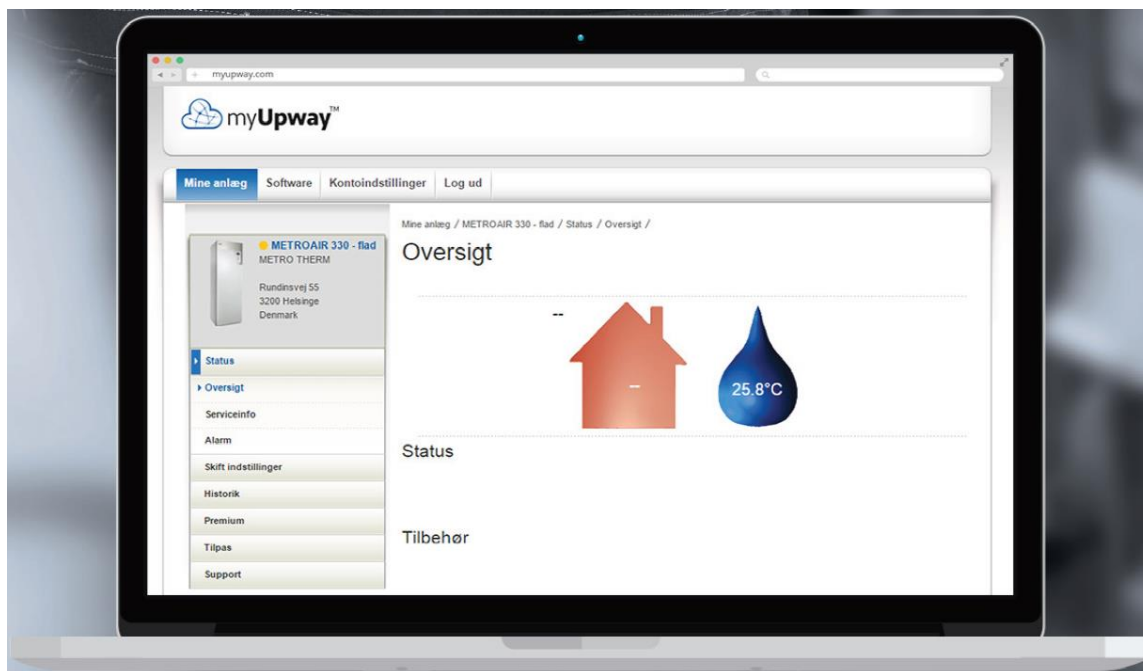


Figure 1: Homepage of the online-service myUpway™ where overall heat pump information is displayed.

Summary of IoT case

The platform myUpway™ provides online monitoring and control services, including surveillance of heat pumps energy consumption and fault alarms as well as remote control possibilities. This platform is exclusive to METRO THERM products with suitable connectivity specifications, which includes air source and ground source heat pumps.

Moreover, heat pumps integrated with myUpway™ are smart grid ready. This could be used to optimize remotely the operation of heat pumps based on information from electricity grids and users' consumption patterns to minimize operational costs of heat pumps. The current version of myUpway™ includes a feature called Smart Price Adaption, which enables the automatic adjustment of heat pump operational periods to minimize electricity consumption costs.

MyUpway™ is available in two different functional levels, namely a basic level and an advanced level. The basic level includes services such as operation monitoring, fault alarms and access to one month of historical data with a limited number of parameters. The advanced level includes the same functionalities as the basic level and the option of changing the configuration of the heat pump. Moreover, with the advanced level, users can access to historical data from more variables compared to the basic level and over the entire operational life of the heat pump. Heat pump users are able to retrieve such historical data and apply their own advanced data analysis methods (e.g. by means of machine learning), which are not included in the platform.

MyUpway™ represents METRO THERM's version of the online service platform from its parent company NIBE named NIBE Uplink™. This service has been commercially available for several years, which has enabled NIBE users

to monitor and control their heat pumps to maximize thermal comfort and minimize heating-related costs.

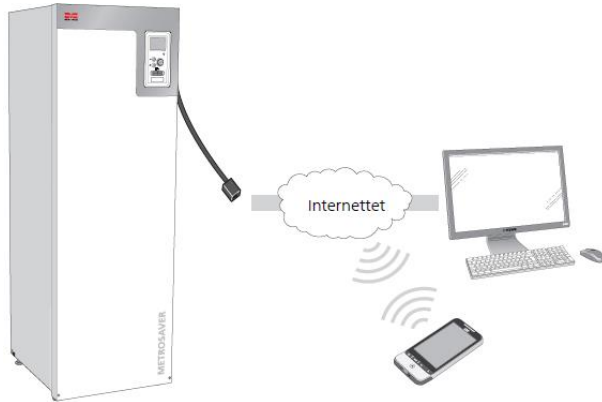


Figure 2: Representation of the interconnection between METRO THERM heat pumps and desktop through myUpway™.

Results

- Users of myUpway™ are able to receive insights about heat pump status and indoor climate, control temperatures related to space heating and domestic hot water supply, and get suitable support from service providers.
- Users can reduce their electricity bills as a result of the Smart Price Adaption feature. Here, the operation of heat pumps is automatically reduced during hours with high electricity prices, without sacrificing comfort requirements.
- Service providers connected to myUpway™ can avoid unnecessary physical assistance to heat pump users and get remote assessment of multiple units.
- The possibility of third-party remote control of heat pumps through myUpway™ may in the future increase their performance and provide ancillary services to electricity grids. However, this feature has not been applied in commercially available units yet.

- As a future possibility, the data retrieved through myUpway™ could be used for performance forecasting and advanced fault diagnosis methods.

FACTS ABOUT THE IOT CASE

IoT category: optimize HP operation and predictive maintenance

Heat supply capacity: up to 20 kW

Heat source: air and ground

Analysis method big data analysis

Modelling requirements: Data-driven

Data required: operation data

Data interface: LAN and Wireless

Transmission protocol for data: Modbus

Quality-of-Service: Real-time (online control)

Technology Readiness Level: TRL 9 (system works and proven in operation)

Link to webpage:

<https://www.metrotherm.dk/support/varmepumper/online-styring-af-varmepumpen>

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