

LS SmartConnect Center



LS Control A/S



Figure 1: LS SmartConnect Universe.

Summary of IoT case

The LS SmartConnect Center is a software program with a user interface which enable fleet management of typically residential heat pumps or other ventilation products.

The software has a user interface for PC or app. To function fully it must be used with an LS Control control-platform. But it may be used as a viewing tool with other control platforms if the transmission protocol for data is Modbus and a LS Control gateway is connected.

To ensure the internet security both our controller and the gateways have a security-software integrated. This security-software provides a secure connection between the users' PC, phone, or tablet and the SmartConnect product by use of industry standard cryptography. Each product is given a unique device-id which is used by the client to reach it regardless of dynamic IP-addresses. The security-software provides seamless, direct remote access without firewall or router configurations. The direct connection ensures the best possible performance with minimal overhead and latency. Also important is that all data are kept within the product, the security-software simply performs a PIR-to-PIR bridge enabling the data to be displayed and updated remotely.

LS SmartConnect Center is a fleet management system which provides a swift overview of the performance of all heat pumps or ventilation products licensed by the manufacturer. The overview can be broken down into segments and sold from manufacturers to resellers to janitors to provide a fleet management system for a certain group of products.

Also, the system comes with an end-user app for the consumer to manage their own product. Such as turn on/off and adjust e.g., temperature.

Each product in the overview can be accessed for further investigation and update of software. When reselling licenses, the manufacturer can determine to which level the group of products can be accessed and manipulated.

Benefits

With easy access to each product, errors get detected and corrected very quickly which gives better performance of the product with using fewer hours on service and a better service plan for the product throughout its lifespan.

Often error correction and service can be done from the office which saves a lot of time and milage on the road to the beneficial of everyone, also the environment. The end-user do not have to stay home waiting for a technician,

technicians who do not need to spend hours in the service van are more effective for less cost, and finally not driving so many milage saves a lot of CO₂. Also, when service visits are necessary the technician already have a good knowledge of the problem and can bring the right spare parts at the first visit.

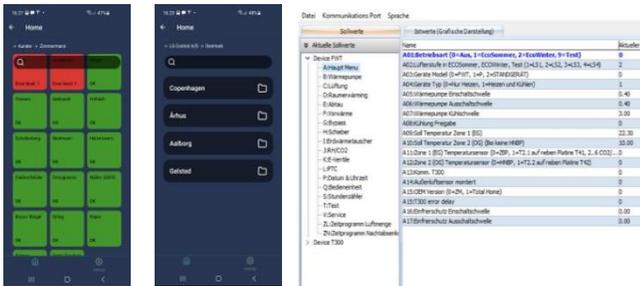


Figure 2: Swift overview of products, product groups and data view.

The security in the LS SmartConnect Center even opens for the possibility to connect to other cloud systems such as Google Home and Apple Home through interfaces like MQTT.

LS SmartConnect Center is not a static tool. It is continuously updated with new features to comply to the newest standards and regulations. E.g., in the upcoming updates to ECO-Design directive 2009/125/EC a new set of monitoring rules for heat pumps are expected to be implemented. The LS SmartConnect Center will then implement the same monitoring standards within the system and end-user apps. These updates are pushed to all users of the LS SmartConnect Center ensuring that when you once have invested in the LS SmartConnect Center you will always stay updated to the newest standards.

Case example

A heat pump manufacturer from Germany is delivering heat pumps with control system from LS Control including integrated internet and LS SmartConnect Center to a new residential neighborhood in England. One of the heat pumps malfunctions and the installation technicians are sure it must be the controller which isn't working correctly, so they replace it. However, the heat pump still malfunctions. The technicians contact the manufacturer in Germany, and they investigate the data

transmitted from the heat pump. It turns out that it is a small pressure transducer inside the heat pump which doesn't work. It gets replaced and the heat pump works perfectly.

If this heat pump had not been hooked up to LS SmartConnect Center most likely the technicians had taken down the heat pump and returned it to Germany which would have been very costly and unnecessary.

FACTS ABOUT THE IOT CASE

IoT category: Optimize HP operation, predictive maintenance, performance benchmark and Installation error analysis

Heat supply capacity: Up to 32 kW

Heat source: Air and water

Analysis method Control engineering and fault detections

Modelling requirements: Data-driven

Data required: Operation data, sensor data

Data interface: LAN, Wi-Fi and Local Wireless sensors

Transmission protocol for data: Modbus

Quality-of-Service: Real-time

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

Link to webpage:

lscontrol.dk/en

Contact information

Stig Petersen, LS Control A/S

✉ sp@lscontrol.dk

☎ +45 5550 5555