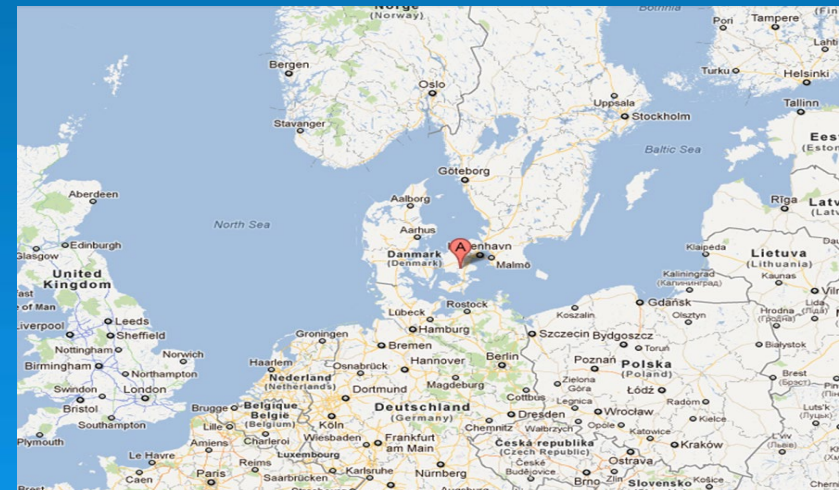


LS Control A/S

- *Electronics for the Future*

- One-stop shop for development and production of HW and SW.
- Danish company, which has been on the market since 1969.
- 55 employees in Denmark and subcontractors in Poland and Slovakia.
- In 2023, we supplied over 300.000 controller PCBs for different solutions.
- Mainly for use in products provided by European manufacturers.
- HVAC ventilation industry; Heat pumps, ventilation and air-conditioning.
- Own internet cloud
- EMC test
- 3rd part certification
- ISO9001:2015 and ISO14001:2015 certified.



Traditional control system / 10 Years ago

- Display on unit
- Not possible to update / or updates are made cabled on site
- Service must be performed on site by skilled service technician



Why IoT Heat Pump Controls?

The speed of the green transition and the complexity of new products have shown that specialized assistance is often required when systems need to be

- Installed – start up
- Set-up – calibrated
- And afterwards serviced
- Electrical Grid optimization require online products

The increasing complexity means that heat pump technicians require IoT tools to be able to quickly install systems.

If a problem occurs help must be there promptly and directly.

It can be somewhat compared to the automotive industry, where cars today are online and can be serviced and especially updated online.

In our opinion, this is an absolutely necessary part of modern products.



What Are We Offering in Products Today?

Read about our IOT Fleet Management System and other online options on our website lscontrol.dk/en

Discover the Future with LS SmartConnect: The Secure Connection of Your Products to the Internet.

It is an expectation that today's products are connected to the internet and can be controlled and monitored regardless of where you are. We have developed LS SmartConnect which is a secure web-solution for connecting your products to the internet, either directly or through our gateway. This opens the possibility for monitoring and controlling your product using a PC, smart phone or tablet, no matter where you are.

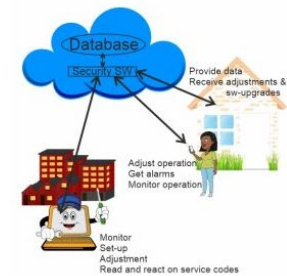
Security by LS SmartConnect

Many are worried about hacking and leaking personal data when using IoT. LS SmartConnect guarantees a secure peer-to-peer-connection where an advanced code ensures a secure problem free access without compromising security. Our user-friendly app provides a detailed overview of your products and gives you the option to start, stop and adjust them as needed.

LS SmartConnect Center

LS SmartConnect Center is an internet-based fleet management solution. Our fleet management solution is developed for PC, but is also available in a light version for smart phones and tablets. With the PC-program you can easily administer and monitor groups of products, get a performance log for a specific device, update software in devices, set-up and adjust devices. This makes LS SmartConnect Center fleet management perfect for dealers and service partners.

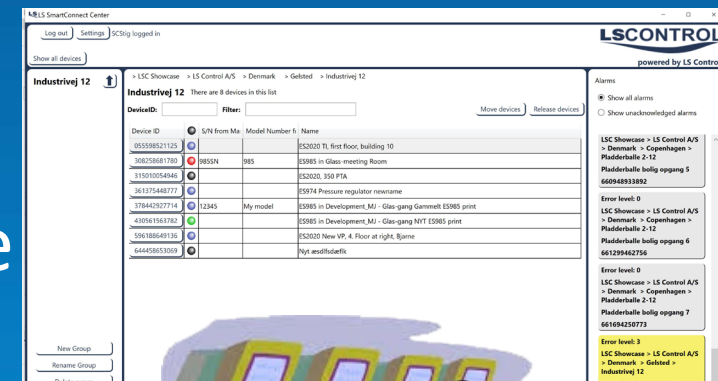
You obtain full control over and insight in all the connected products and it is possible to identify and react on any alarms, such as need for filter change, even adjustments and software updates can be made without leaving the office.



*What is a Service Tool,
a Monitoring Tool and
an End-User app?*

The Service Tool for PC includes

- Fleet management / administration of units
- Possibility to resell licenses to service partners and/or resellers for selection of Heat Pumps
- Starting up and adjusting units
- Assist system support and prepare necessary physical service visits
- Error overview and management



Service Tool for PC

LS SmartConnect Center

Log out Settings SCStig logged in

Show all devices

LSC Showcase

Manufacturer 2

Manufacturer 3

Manufacturer 4

Manufacturer 5

LS Control A/S

New Group

Rename Group

Delete group

Version: 1.4.2

Device ID:

Device ID: S/M

- 081350795544
- 160021848750
- 256104374478
- 286995319405
- 341471073302
- 472356430884
- 515427317912
- 521472961412
- 658498629016
- 687439709239
- 693523379904
- 768380266695
- 916105716807
- 959685547066
- 982051625720

Version: 1.4.2

Log out Settings SCStig logged in

Show all devices

Industrivej 12

> LSC Showcase > LS Control A/S > Denmark > Gelsted > Industrivej 12 > ES985 in DevelopmentMJ - Glas-gang NYT ES985 print

Device ID: **430561563782** Name: **ES985 in Development_MJ - Glas-gang NYT ES985 print** Last updated 20/10-2021 at 14:28:28

Data Graph Event log Set Points

Time: 12/10-21 10:35

Akt. Betriebsart: 0
T1 Inlet temperature: 23,70 °C
T3 Frischluft: 14,80 °C
T4 Exhaust temperature: 15,50 °C
T6 Verdampfer: 19,40 °C
T7 Suction temperature: 24,10 °C
T8 Nach Vorwärme: 22,80 °C
T10 Kondensator: 23,30 °C
T11 Sauggas nach Verdampfer: 22,25 °C
T12 Vor Kondensator: 22,70 °C
T13 Kompressor: 19,60 °C
T14 Sauggas nach Kondensator: 23,71 °C
T2.1 ZonenTemperatur1: 22,92 °C
T2.2 ZonenTemperatur2: 22,92 °C
SollZonenTemperatur1: 22,00 °C
Akt.Drehzahl: Kompressor: 0 rpm
FU_TemperatureCabinet: 0 °C
FU_Motor Strom: 0,00 A
PowerPCB: 5,0 W
PowerFU: 0,0 W
Power Total: 5,0 W
Akt. CO2-Wert von Sensor 1: 0 ppm
Akt. RF-Wert von Sensor 1: 0 %
Akt. CO2-Wert von Sensor 2: 0 ppm
Akt. RF-Wert von Sensor 2: 0 %

Is 1:1 Zoom

Export Reload

Legend

- Akt. Betriebsart
- T1 Inlet temperature (°C)
- T3 Frischluft (°C)
- T4 Exhaust temperature (°C)
- T5 Vorverdampfer (°C)
- T6 Verdampfer (°C)
- T7 Suction temperature (°C)
- T8 Nach Vorwärme (°C)
- T10 Kondensator (°C)

Version: 1.4.2

Skriv her for at søge

14:38 20-10-2021

Service Tool for PC

File Communications Port Language

Sollwerte Istwerte (Grafische Darstellung)

Aktuelle Sollwerte

- Device
 - A:Haupt Menu
 - B:Wärmepumpe
 - C:Lüftung
 - D:Raumerwärmung
 - E:Abtau
 - F:Vorwärme
 - G:Bypass
 - H:Schieber
 - I:Erdwärmetauscher
 - J:RH/CO2
 - K:E-Ventile
 - L:PTC
 - P:Datum & Uhrzeit
 - Q:Bedieneinheit
 - S:Stundenzähler
 - T:Test
 - V:Service
 - ZL:Zeitprogramm
 - ZN:Zeitprogramm

Name

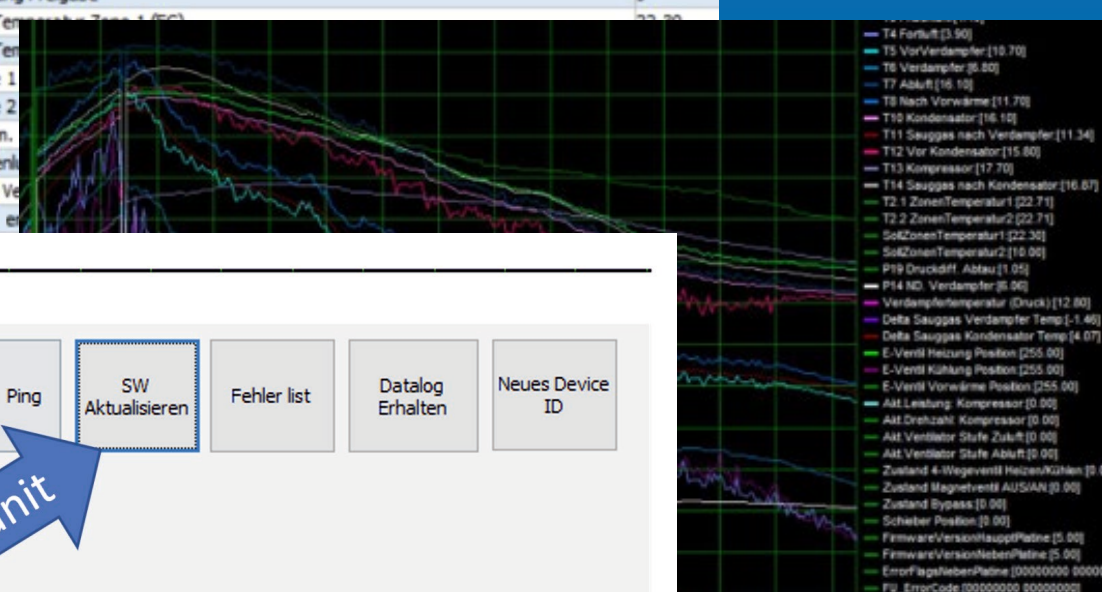
A01:Betriebsart (0=Aus, 1=EcoSommer, 2=Ec
 A02:Lüfterstufe in ECOSommer, ECOWinter, Test (1+
 A03:Geräte Modell (0=FWT, 1=P, 2=STANDGERÄT)
 A04:Geräte Typ (0=Nur Heizen, 1=Heizen und Kühler
 A05:Wärmepumpe Einschaltsschwelle 0.40
 A06:Wärmepumpe Ausschaltsschwelle 0.40
 A07:Wärmepumpe Kühlschwelle 3.00
 A08:Kühlung Freigabe 0
 A09:Soll Temp...
 A10:Soll Temp...
 A11:Zone 1
 A12:Zone 2
 A13:Komm...
 A14:Außen...
 A15:OEM Ve...

Logon

User

Password

Ok Cancel



LSC

Ping SW Aktualisieren Fehler list Datalog Erhalten Neues Device ID

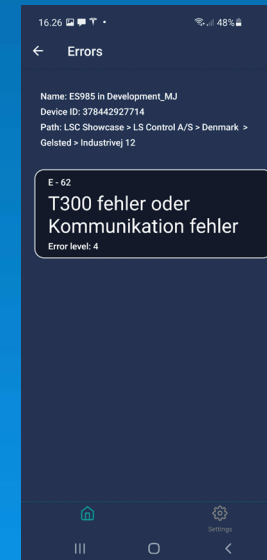
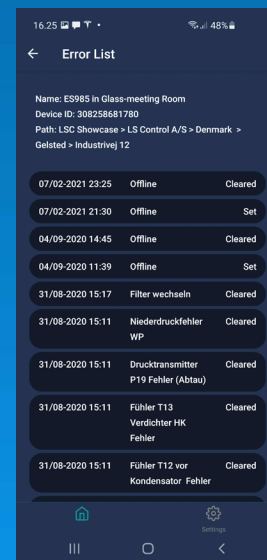
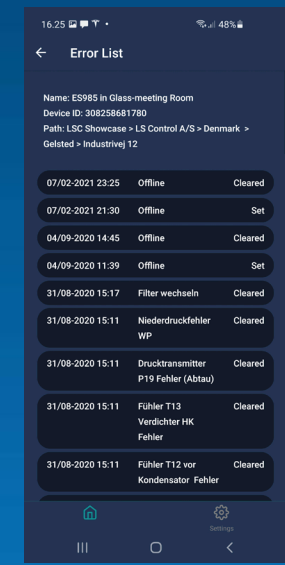
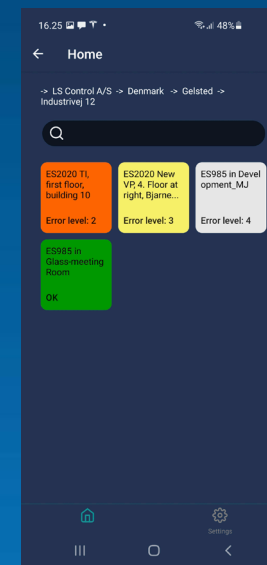
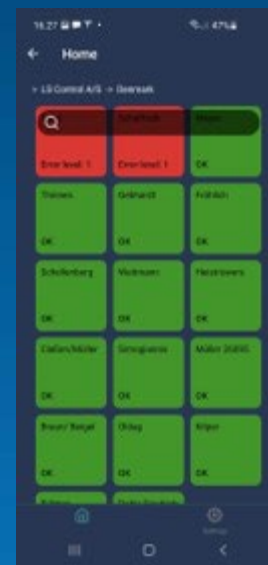
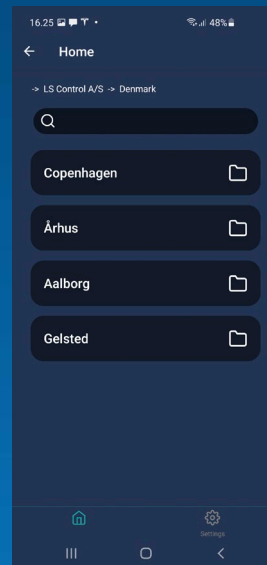
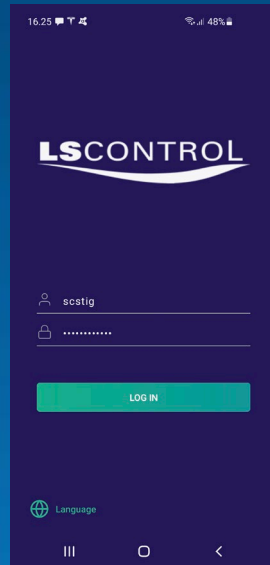
Update unit

The Monitoring App

- Provide a full overview of group of Heat Pumps
- Color Coded for easy monitoring if any Heat Pumps are failing and the severity of the fault
- Ability to investigate the fault on a certain Heat Pump to establish if it is an easy fix or expert advice is needed



Monitoring App



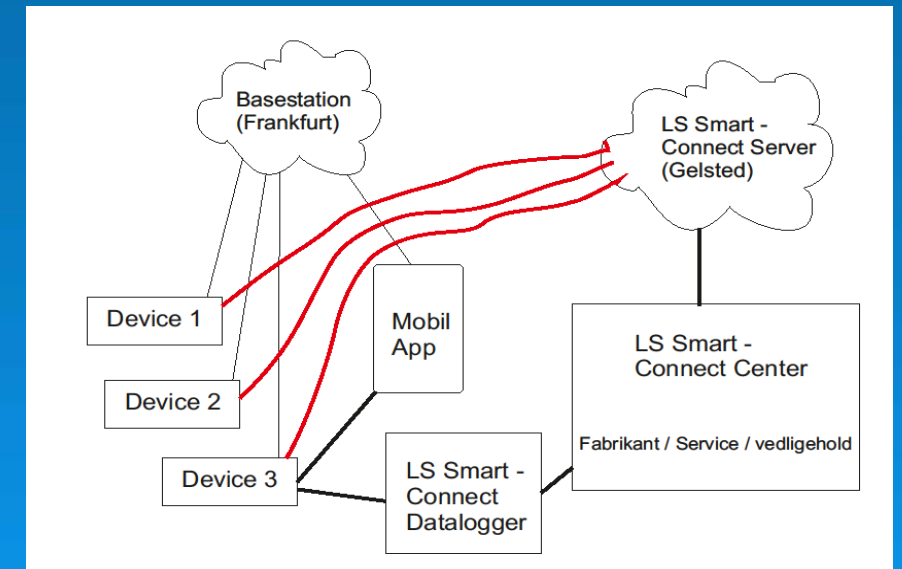
The End-User App

- Today all end-users expect to be able to monitor their home equipment – and especially Heat Pumps and Ventilation Systems
- Ability to turn the Heat Pump on/off
- Ability to adjust temperature



Security

- We ensure correct Data Controller and Data Processor Agreements to comply to the GDPR rules.
- We ensure secure cloud connection without making it troublesome for the users.
- We comply to EN 303645
- We provide a thoroughly tested system with more than 100.000 active users.



Config App



- Easy configuration and set up of a system / controller
- System / controller do not need to be connected to the internet
- Just scan the QR-code on system/ controller



- The LS Config App recognize your product from the QR-code and inserts your logo, special configuration, menu choices and colors
- Configuration is then done in the app and transferred to the system / controller via USB or Bluetooth
- Config app is operational even on offline devices

Conclusion

External factors such as lack of service personnel makes it necessary to find new ways to startup - service – and maintenance Heat Pumps – ventilation – district heating systems in buildings.

With online help / services you get better performance for units – easy and cost effective at start-up, troubleshooting and service.

Choosing a secure online system give the possibility to connect to other cloud systems through interfaces like MQTT. Products will need to be connected – and communicate to systems as EE-BUS to help with stabilize the grid, and give users the best energy price.

Our experience with more than 70.000 units online over the past 7 years tell us that our customers save a lot of service time.

All in all – it is very hard to imagine a future without having units online.

Turn your Heat Pump into a *Smart Pump*



LSCONTROL

SmartConnect UNIVERS

