

Visions towards 5th generation DH

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The project has received funding from the European Union's Horizon 2020 research and innovation programme under the grant agreement n° 767799 - COOL DH - H2020-EE-2016-2017/H2020-EE-2017-RIA-IA

NIBE GROUP MEMBER



Visions towards next generation DH

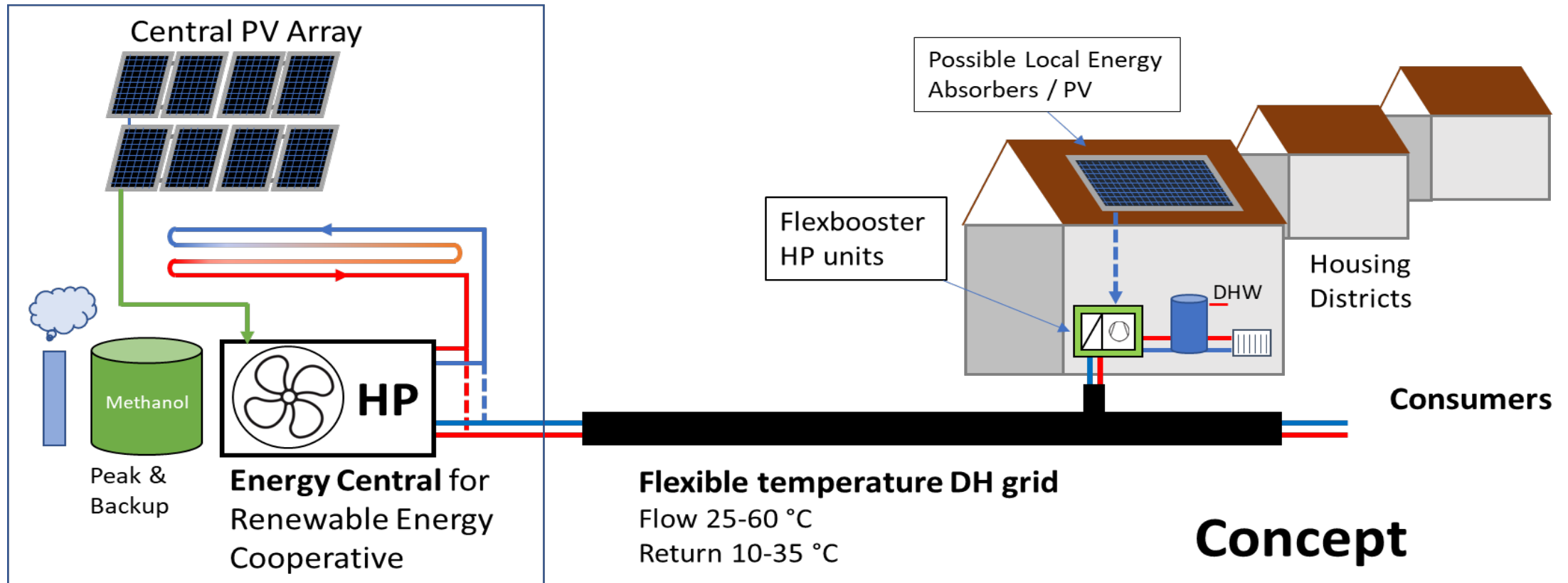
Flex-Booster concept

- ✓ Temperature in DH grid to be chosen freely (u-LTDH) 0-70°C
- ✓ Temperature boosting where there is a need
- ✓ All surplus heat collected on the DH route with i-Grid and heat-pump solutions
- ✓ Introduction of hot water sanitation (electro-chemical anti-legionella treatment) at buildings with > 10 dwellings => no longer need to heat to 55-60°C
- ✓ Local co-production allowed/accepted by utility e.g. for heating of domestic hot water
- ✓ LCA consideration on piping => plastic pipes
- ✓ Further development of plastic pipes (with electrofusion sleeve joints as for potable water)
- ✓ Flexible interaction with local PV assisted heat pumps



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The Flex-Booster hybrid concept



Flex-Booster EUDP project as part of Avedøre Green City

- ✓ Development and Full-Scale demo for 300 existing consumers in 2023
- ✓ PV Heat Pumps
- ✓ Liquid wind (electro-fuel) peak boiler
- ✓ **Partners:**
 - Metro Therm (project lead)
 - COWI (technical lead)
 - Rubrik
 - EBO-Consult
 - Hvidovre District Heating





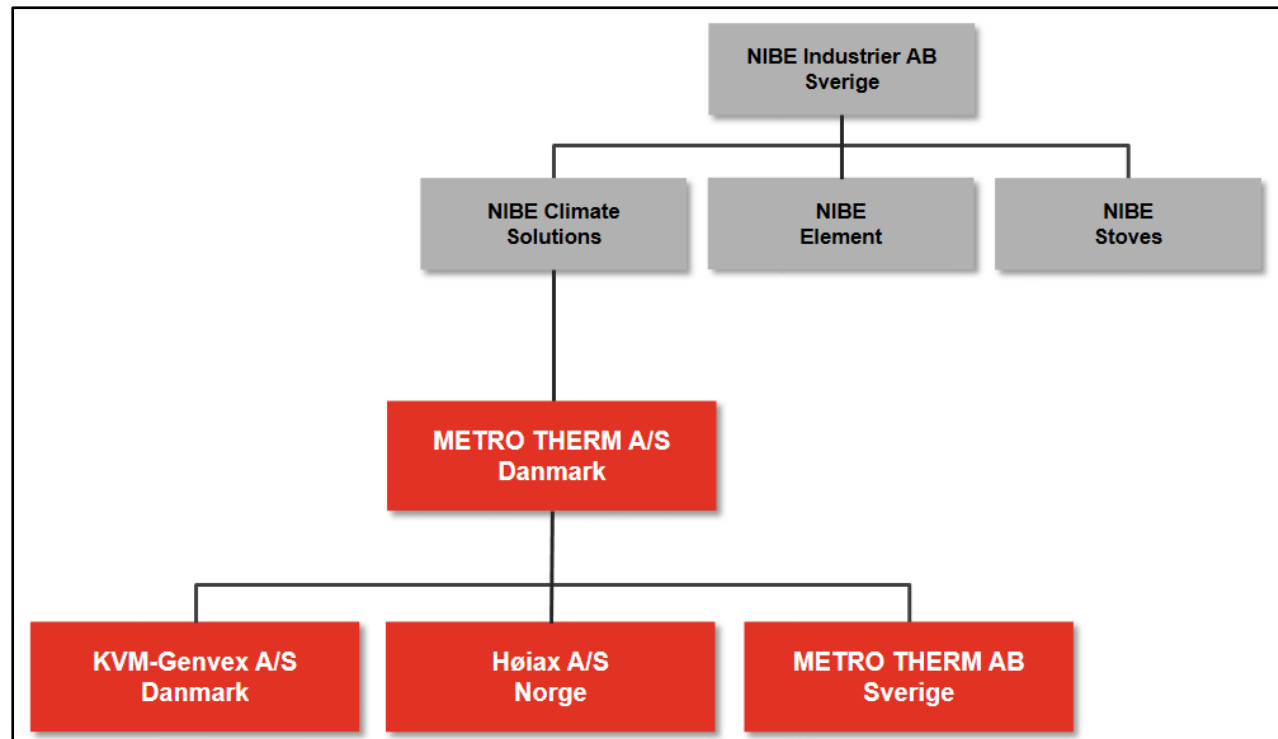
VISIONS TOWARDS 5TH GENERATION DISTRICT HEATING

A COMPONENT SUPPLIER'S TAKE

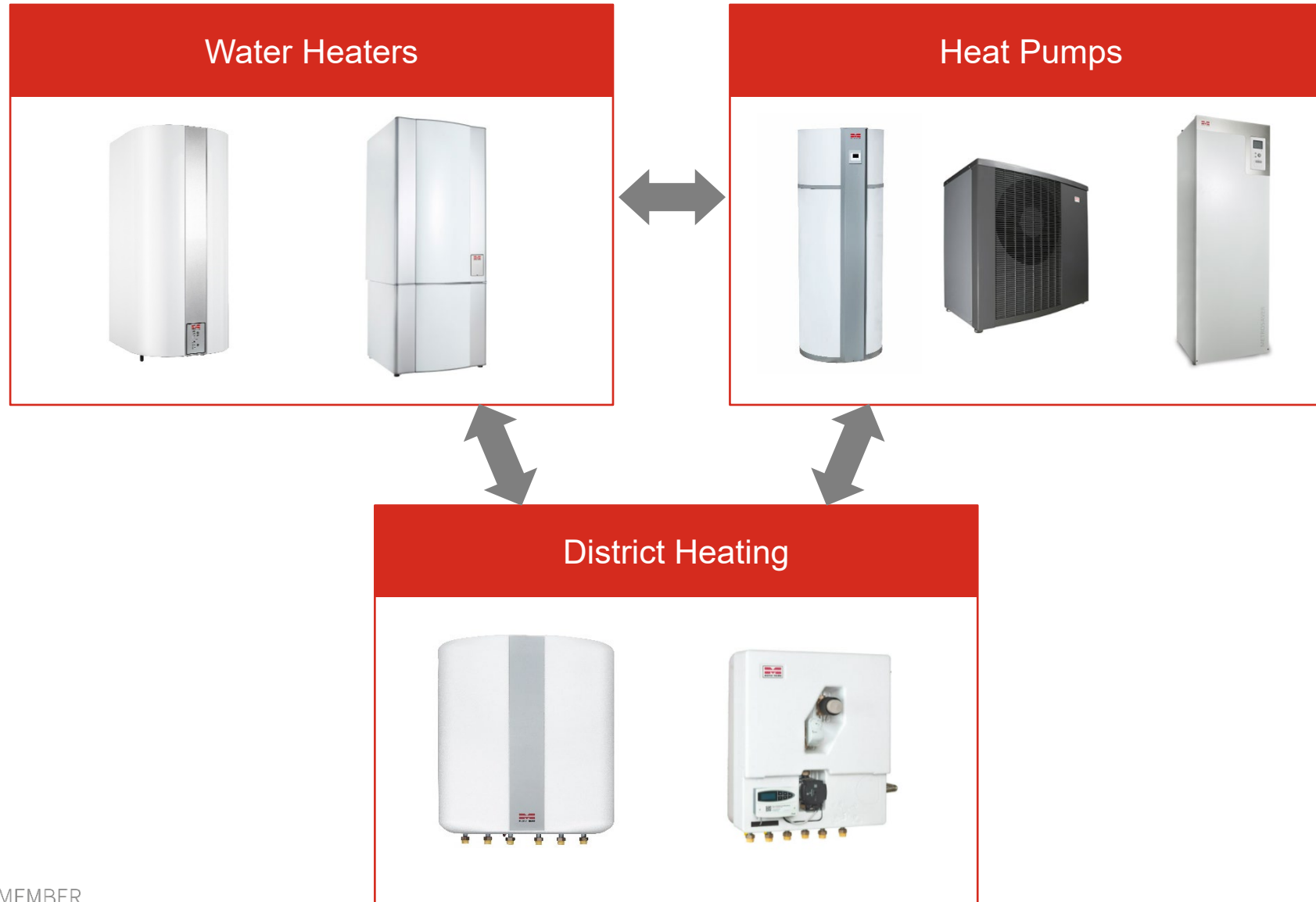
COOL DH 19.05.2022 - KASPER KORSHOLM ØSTERGAARD



- ✓ 100 years old
- ✓ First electrical water heaters in 1947
- ✓ Heat pumps since 1970's
- ✓ District heating units since 1998
- ✓ Part of NIBE Industrier AB since 2003



PRODUCT GROUPS AND SECTOR COUPLING



THE NEW METRO DELTA - BACKGROUND



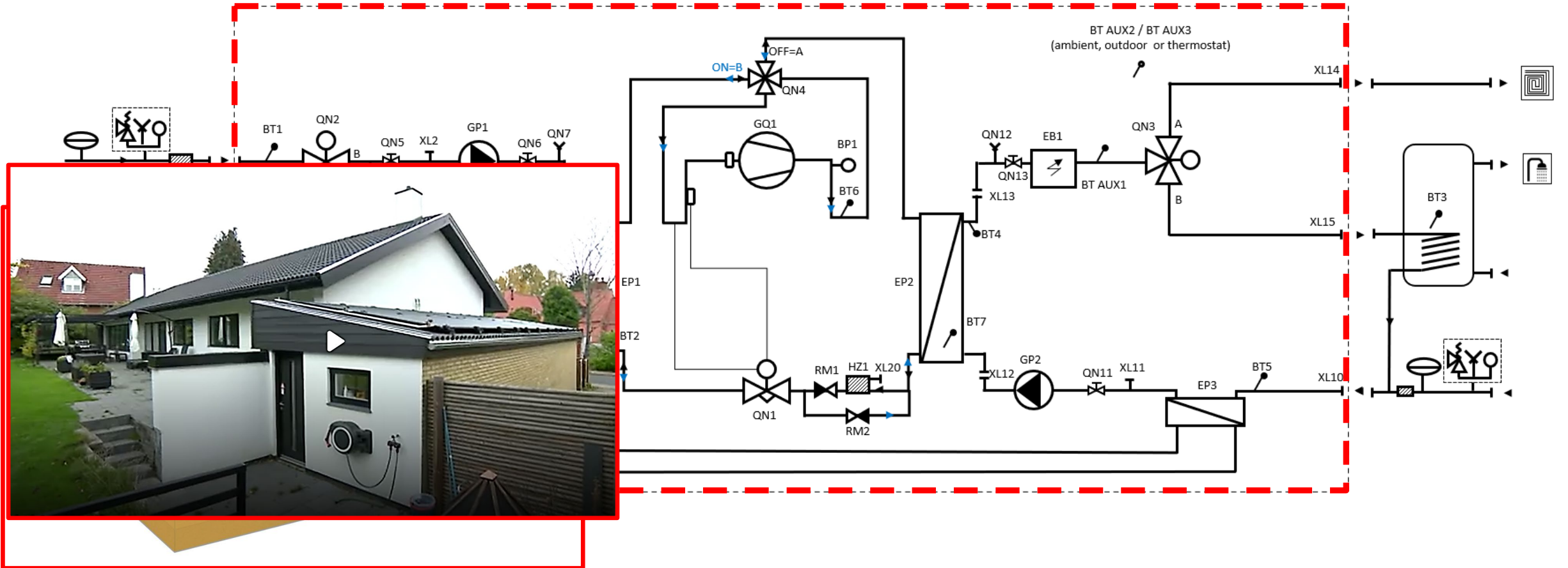
- ✓ Phasing out of gas for domestic heating and hot water production
- ✓ A liquid-to-water heat pump for
 - **Ultra Low Temperature District Heating** (u-LTDH) applications
 - Micro grids and cold network applications
 - Applications in combination with PVT panels
- ✓ Wall hanged, 3 kW nominal @ source 0°C (4-5 kW @ source 20°C)
- ✓ The unit is foreseen to become an important contribution to the merging of the district heating and the heat pump sectors (sector coupling) and to the transition towards a sustainable future of heating and hot water production

DESIGN SPECIFICATION

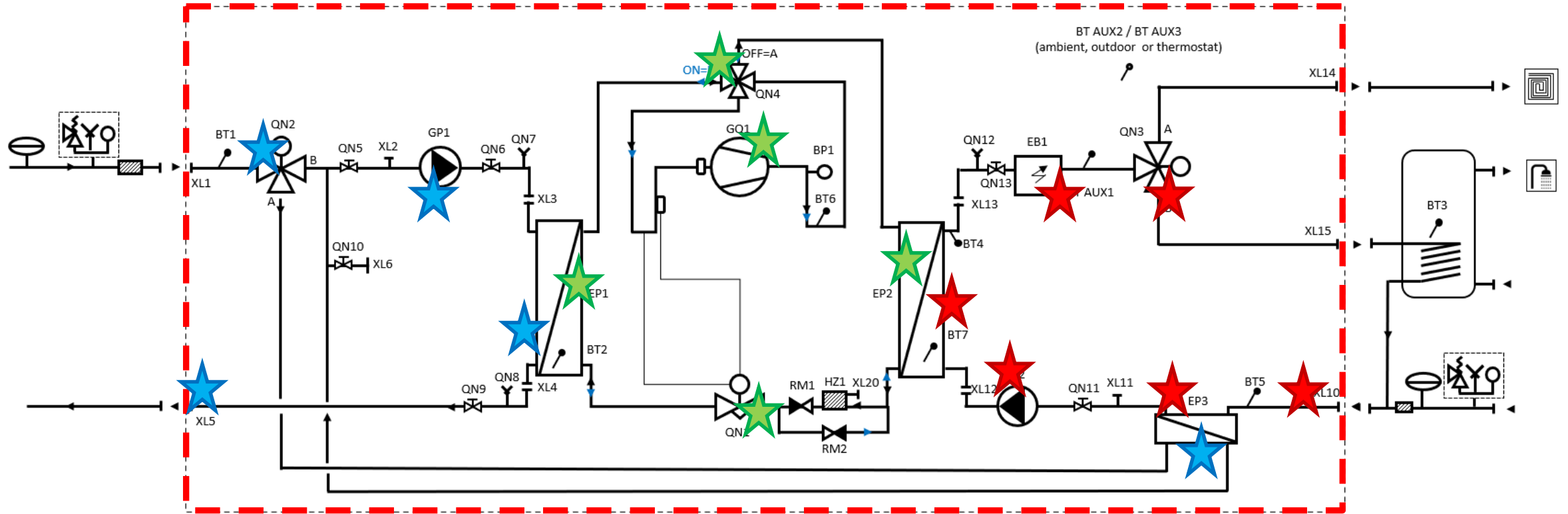
- ✓ Natural refrigerant, propane, max 150 g
- ✓ Wall hanged, size as for a typical gas boiler
- ✓ COP better than competing units with non-natural refrigerant
- ✓ Options for space heating and hot water production
- ✓ Options for passive- and active cooling
- ✓ Without display as standard but with app (display as accessory)
- ✓ Operational status via LED



P&ID



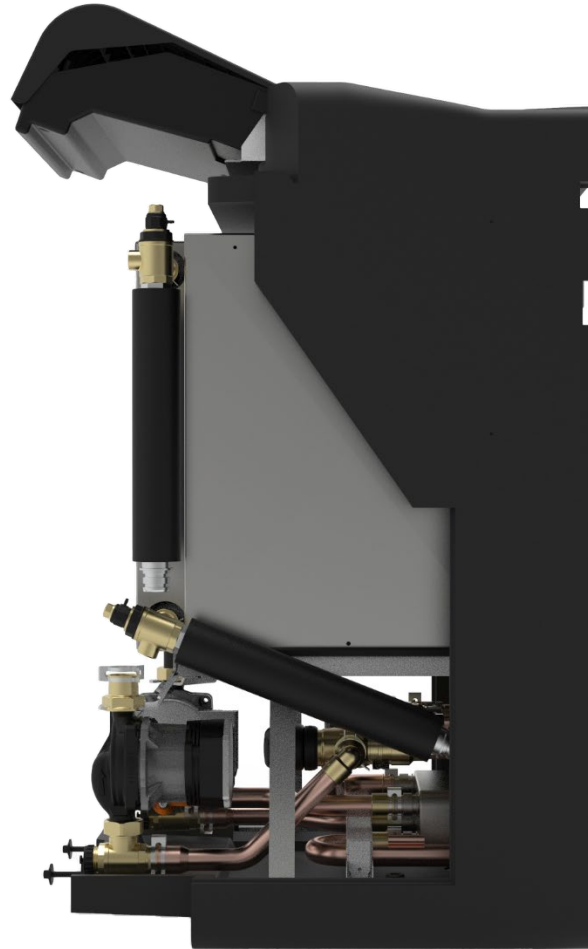
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LAYOUT



Front view

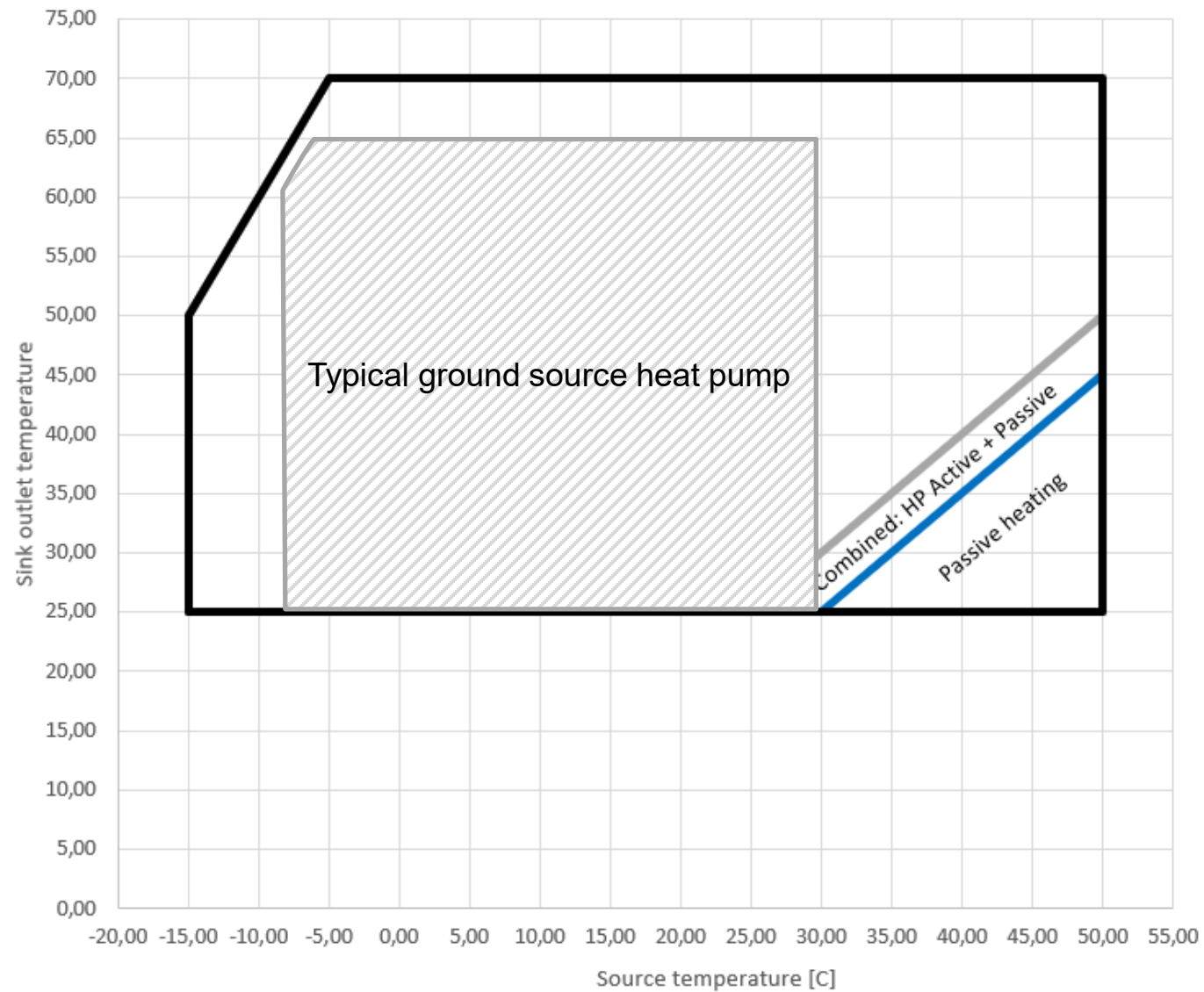


Side view



Back view

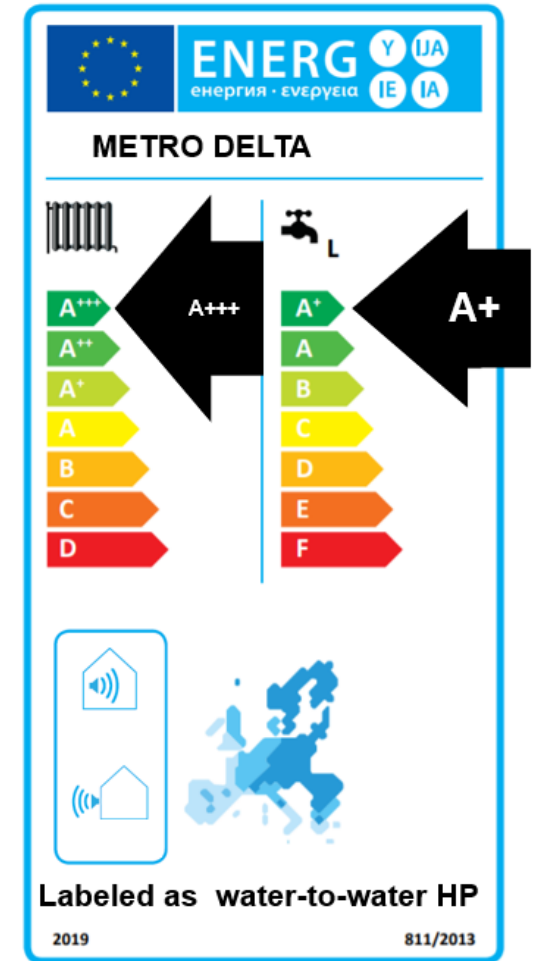
OPERATIONAL ENVELOPE (HIGH TEMPERATURE FLEXIBILITY)



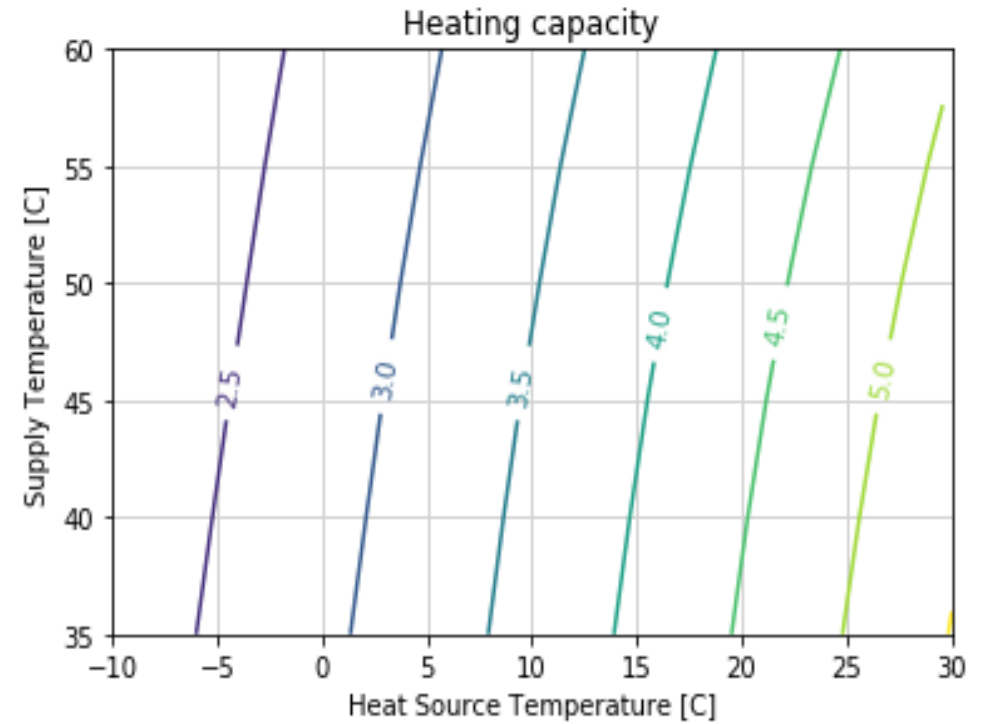
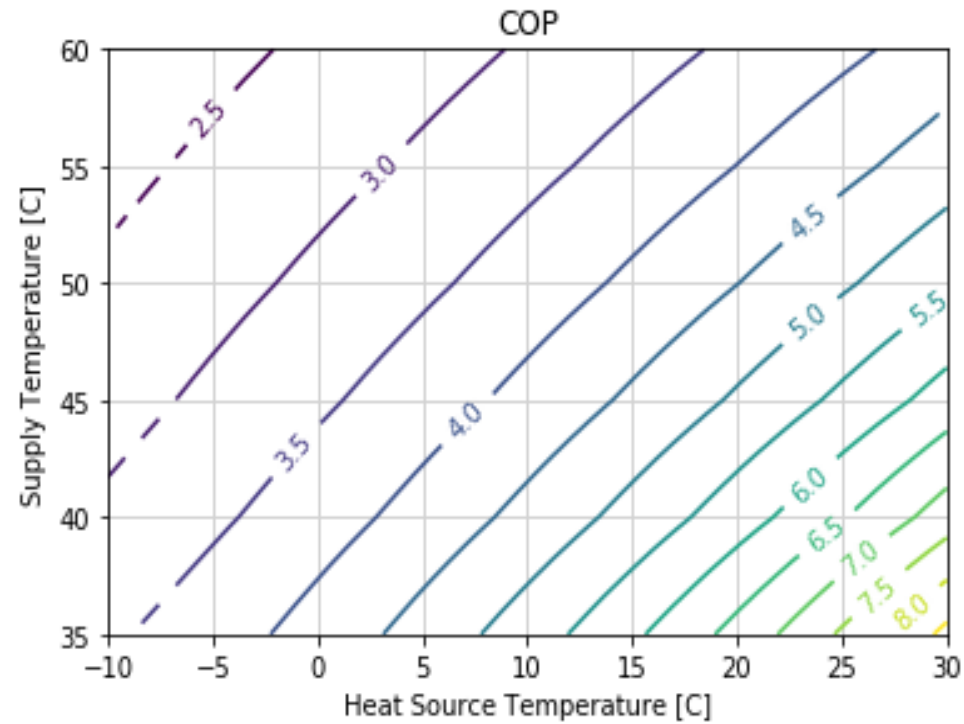
PERFORMANCE AND LABELING

Heating performance – EN14511							DHW EN16147	
Heat source Heat sink	B-10 W35	B0 W35	B5 W35	W10 W35	B0 W55	W10 W55	W10 W54	W40 W54
Heating capacity [kW]	1.8	3.0	3.4	4.1	2.6	3.6	3.5	4.6
COP [-]	2.8	4.2	4.7	5.7	2.9	3.7	3.3	5.9

Cooling performance – EN14511		
Heat source Heat sink	W35 W18	W25 W15
Cooling capacity [kW]	2.8	3.2
COP (EER) [-]	3.6	5.0



PERFORMANCE MAP - HEATING



FIRST LARGE PROJECT – PVT ROTTERDAM



NIBE GROUP MEMBER



METRO THERM

FIRST LARGE PROJECT – PVT ROTTERDAM

LS SmartConnect Center

Log out

Settings

MetroTherm.kko logged in

METRO THERM

powered by LS Control

Show all devices

Block F

> Metro Therm > 06 Holland > Nathan > Triple Solar > Van Hoften Project > Block F

Block F

There are 30 devices in this list

DeviceID:

Filter:

Move devices

Device ID		S/N from Ma	Model Number fi	Name
318786404970		625662100152	6256621001	PVT heatpump - Van Hoften Project - BNR63
338424750268		625662100103	6256621001	PVT heatpump - Van Hoften Project - BNR90
351190653455		625662100150	6256621001	PVT heatpump - Van Hoften Project - BNR78
360392662890		625662100104	6256621001	PVT heatpump - Van Hoften Project - BNR73
414668849895		625662100152	6256621001	PVT heatpump - Van Hoften Project - BNR74
424788538812		625662100150	6256621001	PVT heatpump - Van Hoften Project - BNR89
568665074055		625662100103	6256621001	PVT heatpump - Van Hoften Project - BNR84
587117196905		625662100103	6256621001	PVT heatpump - Van Hoften Project - BNR85
638152190324		625662100150	6256621001	PVT heatpump - Van Hoften Project - BNR68
657695177537		625662100152	6256621001	PVT heatpump - Van Hoften Project - BNR71
694089134597		625662100150	6256621001	PVT heatpump - Van Hoften Project - BNR86
703875419225		625662100150	6256621001	PVT heatpump - Van Hoften Project - BNR88
716479743741		625662100103	6256621001	PVT heatpump - Van Hoften Project - BNR72
717345600069		625662100103	6256621001	PVT heatpump - Van Hoften Project - BNR70
722910338978		625662100152	6256621001	PVT heatpump - Van Hoften Project - BNR67
827213273479		625662100150	6256621001	PVT heatpump - Van Hoften Project - BNR87
833064092336		625662100103	6256621001	PVT heatpump - Van Hoften Project - BNR83
863716350115		625662100152	6256621001	PVT heatpump - Van Hoften Project - BNR91
866472864786		625662100103	6256621001	PVT heatpump - Van Hoften project - BNR82
881352917449		625662100152	6256621001	PVT heatpump - Van Hoften Project - BNR93

New Group
Rename Group
Delete group

Version: 1.5.3

Alarms

Show all alarms

Show unacknowledged alarms

Error level: 1
Metro Therm > 06 Holland >
Nathan > Triple Solar
Triple Solar Prototype
902072188123