

Chillventa Specialist Forums 2024
Chillventa Fachforen 2024

**CONNECTING
EXPERTS.**





ADVANSOR

PLUG & PLAY CO₂ HEAT PUMPS

Casper Christiansen, Manager Business Development, October 2024

ADVANSOR

Welcome

Thanks for participating today

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Agenda

1. Trends and challenges within heating
2. CO₂ Plug-and-Play heat pumps with chiller function
3. Questions and next steps

TRENDS & CHALLENGES

Trends & Challenges within Heating

Knowledge gap

- Heating without fossil fuels
- Lack of skilled people onsite

Sustainability agenda changing

- EU Regulations on refrigerants in heat pumps
- EU Regulations on ESG reporting

Design conditions changing

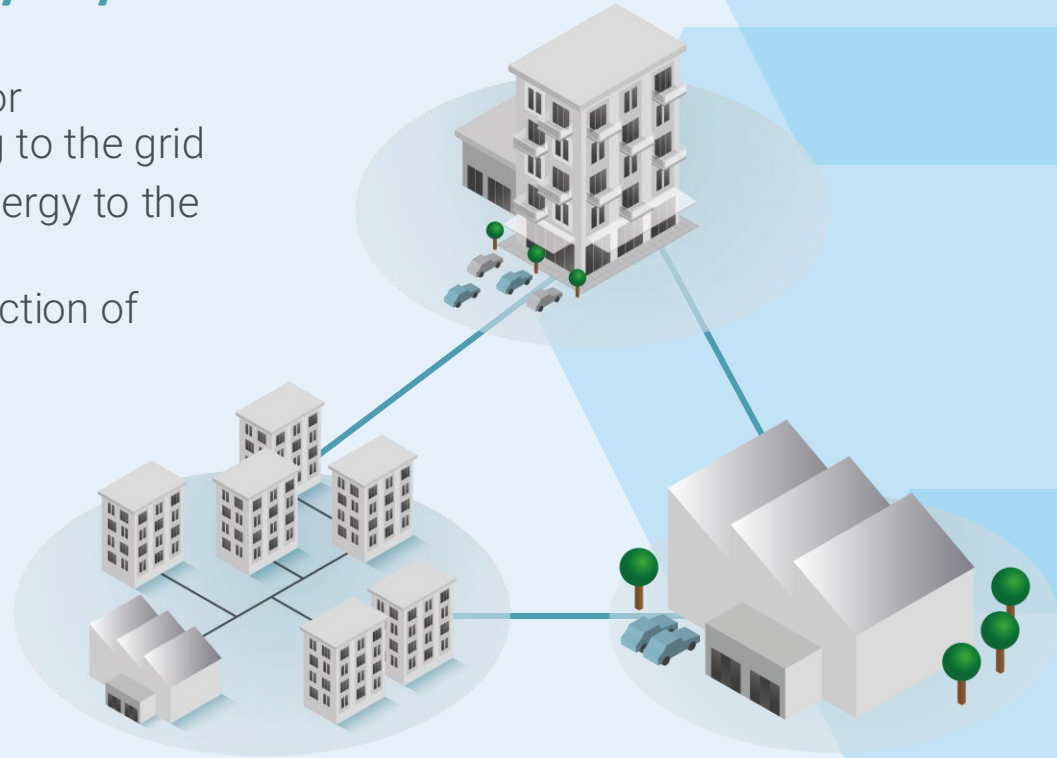
- Buildings and energy grids becoming one common energy system
- Retrofit of existing building mass with high temperature requirements
- Focus on energy efficient operation



DESIGN CONDITIONS CHANGING

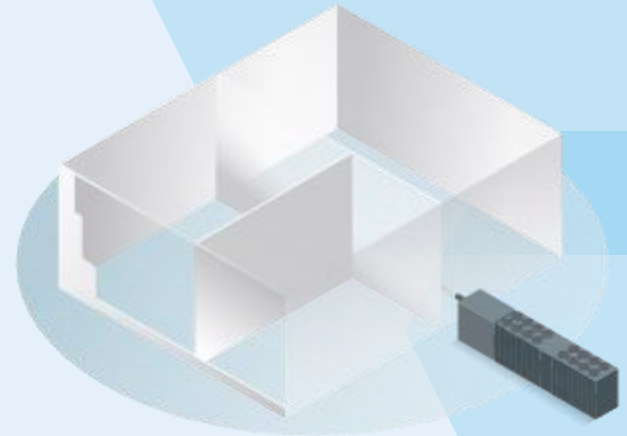
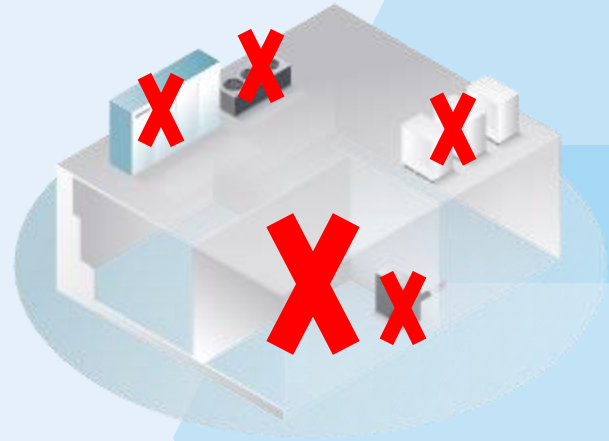
One Common Energy System

- Re-use excess heating and cooling for other production processes or selling to the grid
- Energy systems linking end-users' energy to the power grid
- Optimise the synergy between production of energy and use of energy



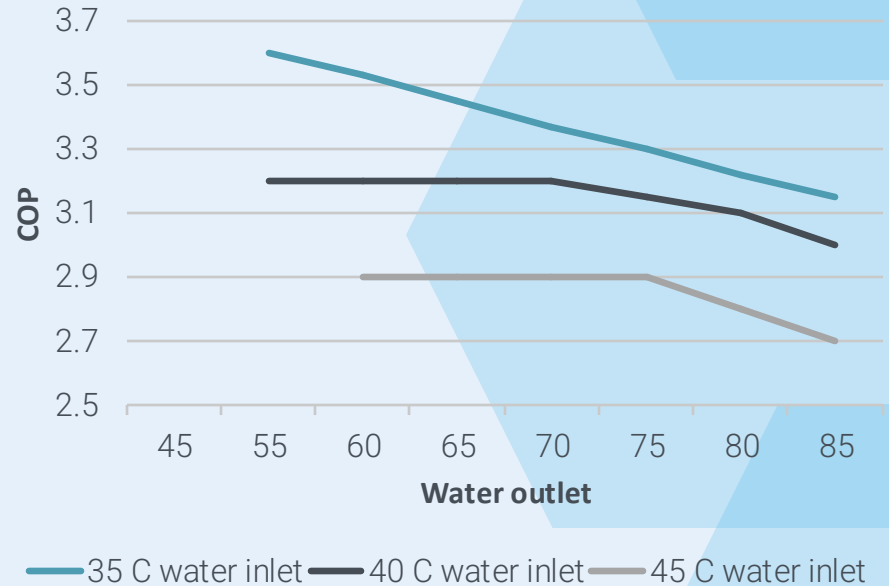
Plug & Play replacement of cooling and heating

- Less units to install and maintain
 - No boiler
 - No chiller units
 - No air-con units
- No need for machine room
- Use of existing installation with same pipe sizing
- Easy to integrate into overall energy system
- Ideal temperature profile for old building mass (+40°C to +95°C)



High COP with ideal temperature profile

- The lower the water inlet temperature, the less flash gas, the higher COP
- Despite having a low water inlet temperature, you can get high water outlet temperatures
- Higher water outlet temperatures have little influence on COP



Smart operation with CO2 Heat Pumps

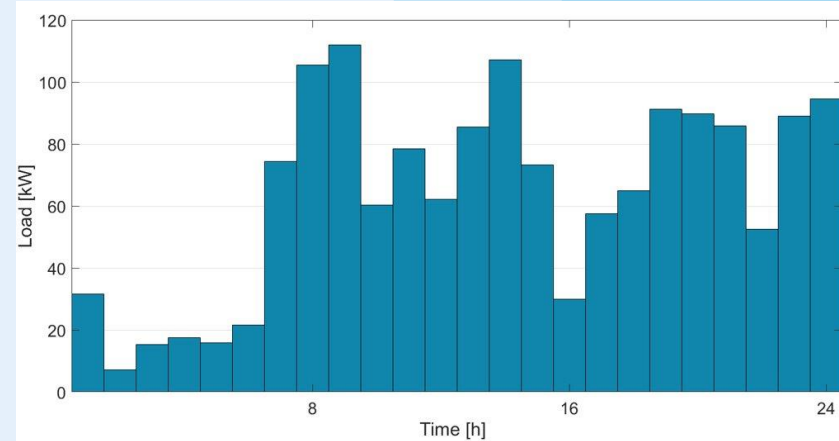
Quick Start/Stop

- Adjusts fast to capacity requirements

Store heat in buffer tanks

- Highest load when grid is available and cost effective
- Cover excess demand during peak times
- Avoid peaks of grid strain

Peaks in hotel's hot water consumption



PLUG & PLAY CO2 HEAT PUMPS

Unique Selling Points

- Plug & Play
- Heating and cooling at the same time
- Energy Efficient – even up to 95 C water outlet
- High Capacity – even in low ambient
- Climate and Environmentally Friendly
- Reliable in Operation



Plug & Play – just connect power and water

Water pump and control
for cooling and heating

Integrated Chiller
function

Multiple evaporators for
high heating output

Air-cooled
gas cooler

Fits on a truck

One frame

Fins protected by mesh

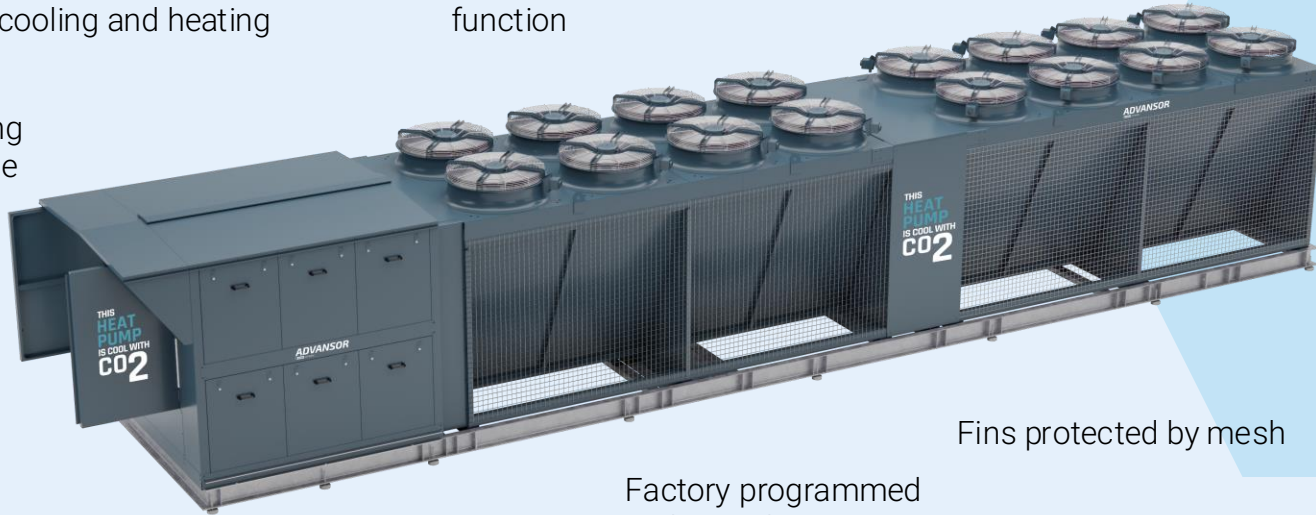
Factory programmed
and tested

Integrated defrost
control

Delivery of cooling
and heating at the
same time

Easy to use
touch screen

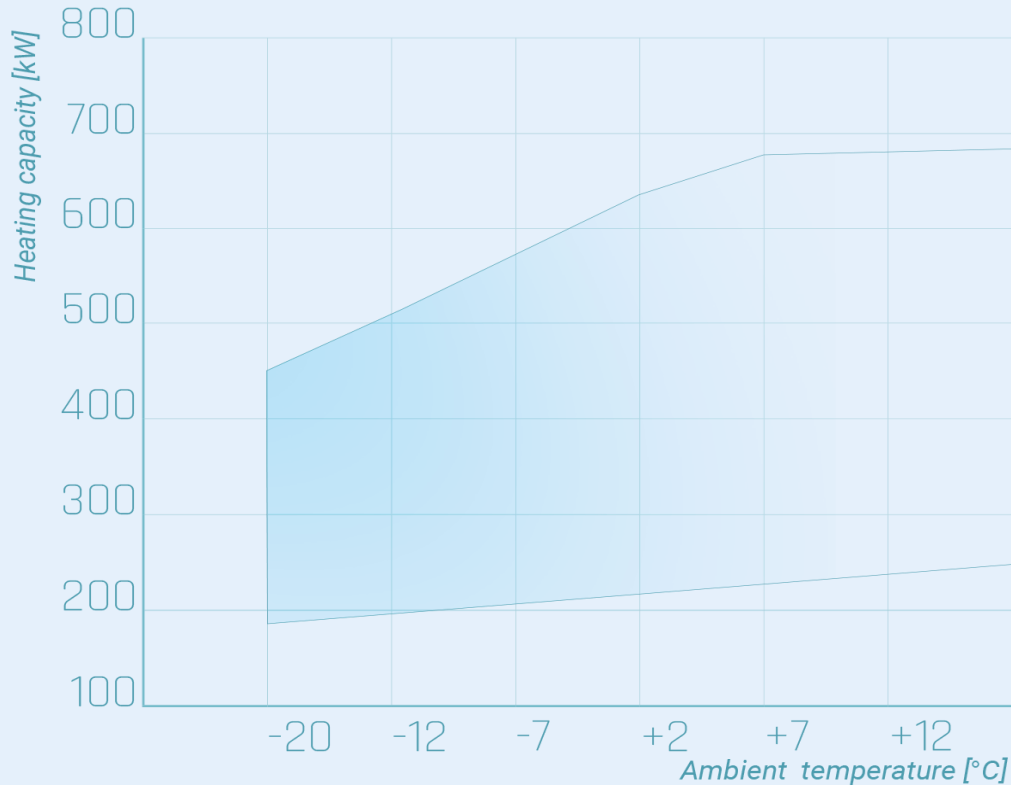
Pre-charged
CO₂ and oil



Energy efficient

- One unit designed for optimal energy efficiency
- Fast and efficient defrosting with hot gas and multiple evaporators
- Advanced evaporator design for better superheat control and less defrost
- Advanced control for optimal energy efficiency
- Energy efficient permanent magnet motors in compressors and pump
- Fast adaptive capacity control

High Capacity even in low ambient



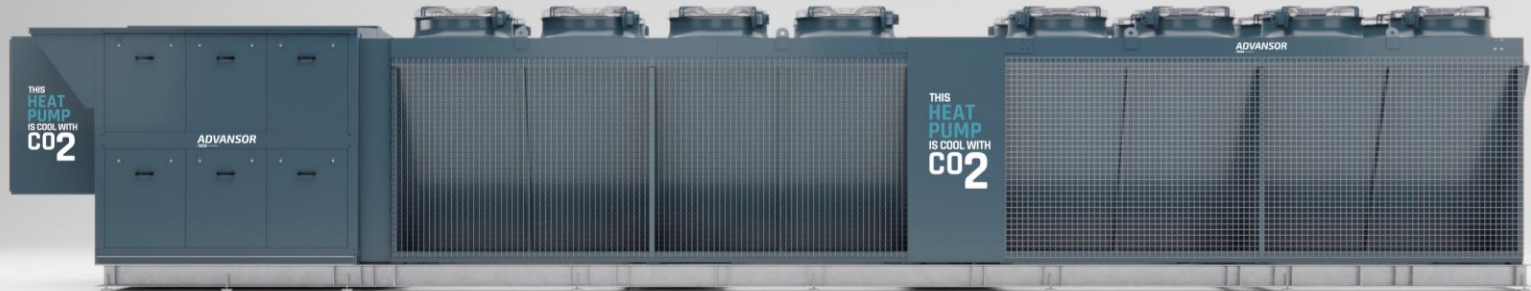
Environmental and Climate Friendly

	CO ₂	Ammonia	Propane
Non-toxic	✓	✗	✓
Non-flammable	✓	✗	✗
Water Outlet Temperature	Up to 95°C	>90°C	<70°C
Low Maintenance	✓	✗	✓
High COP*	✓	✓	✓
Low CAPEX	✓	✗	✓
Future Proof (No ban in F-gas directive)	✓	✓	✓












*Low water inlet temperature = CO₂ best fit

Reliable in Operation

- Fully factory built
- Redundant components in parallel to ensure high up-time
- High quality coated fins on evaporators for long lifetime
- Water pump ensures stable water outlet temperature
- Fast start-up ensures delivery of heating when needed



Product Portfolio ValueBox

	2 x 4 fans	2 x 6 fans	2 x 8 fans
ValueBox 250			
ValueBox 400			
ValueBox 500			
ValueBox 600			

CASES

Advansor ValueBox

Facts

- Transition to independent source of sustainable heating

Requirements

- Comfort heating and hot tap water
- Transitioning to an independent source of heating
- Reliable heating supplied
- Energy efficient
- Remote control
- A sustainable solution



Solution

- ValueBox 600
- 600 kW of heating
- Air-Water
- Reliable heating supply while defrosting
- MODBUS communication
- Natural refrigerant with GWP of 1
- 8 hours installation time



QUESTIONS & NEXT STEPS

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