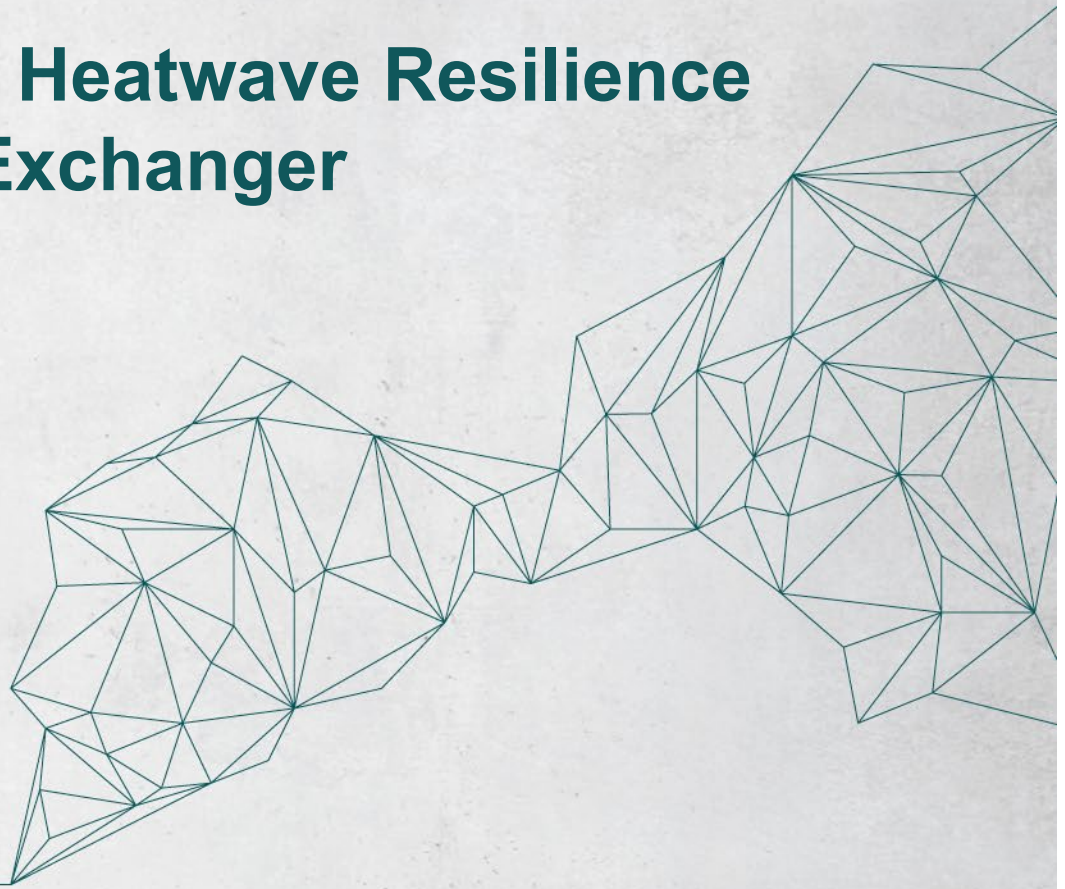
CHILLVENTA

Retrofitting R-744 Systems for Heatwave Resilience with the PX G1300® Pressure Exchanger

CONNECTING EXPERTS.



History of Pressure Exchanger Technology

1992

Energy Recovery founded

1997

First PX desalination installation in Canary Islands

2019

Energy Recovery ships 20,000th PX for desalination

2021

PXs installed in desalination facility that sets industry record for lowest reported energy consumption

2022

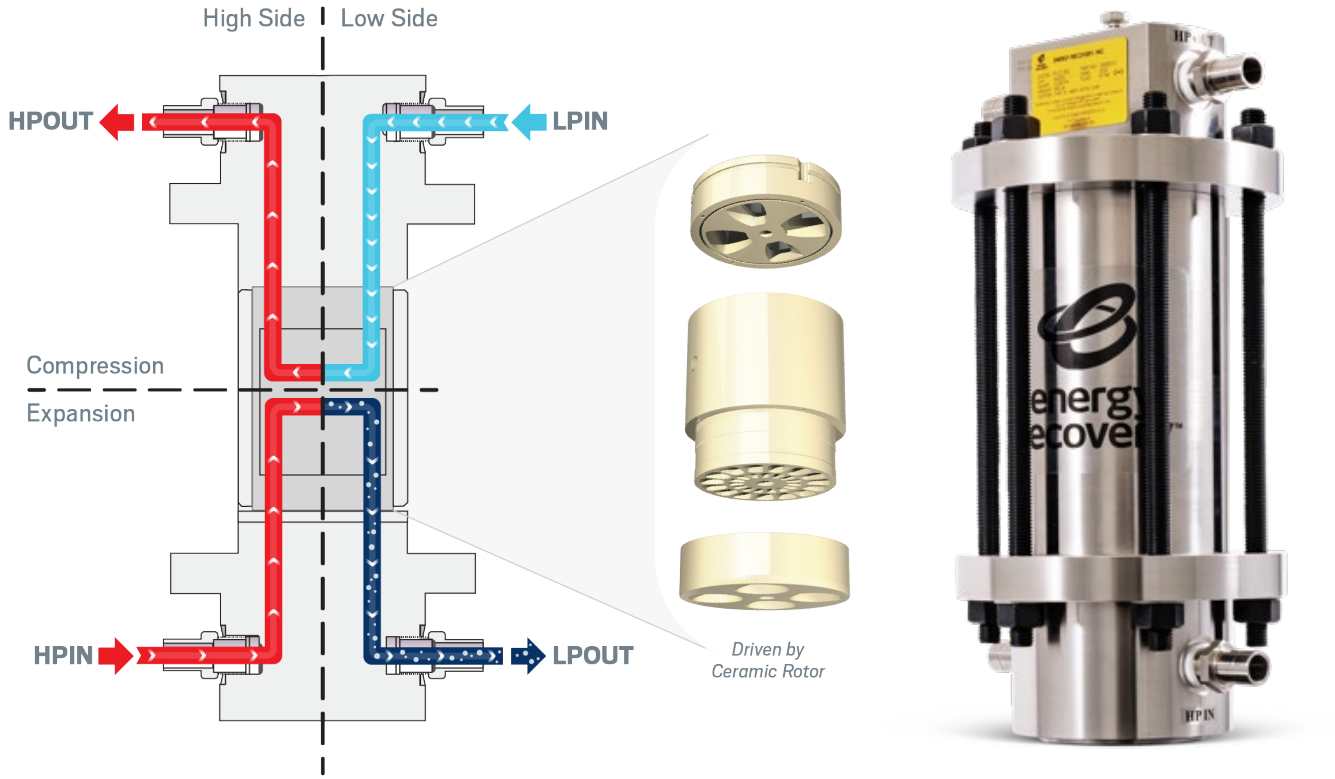
PX CO_2 application verified by NTNU and SINTEF

2023-2024

50+ PX G1300 installations in progress worldwide

What is the PX G1300 Pressure Exchanger?

- Mechanical device that helps to recover energy from the system with a minimum power input.
- Operates with two different flow streams at different pressures.
- Expansion and compression simultaneously in same device.
- Fluid flow travels within internal channels – small fluid mix.



The PX G1300 transfers energy between high-pressure and low-pressure liquid and gas through continuously rotating ducts.

PX G1300 Benefits for CO_2 Refrigeration

Save Energy

- **Up to 30 %** Peak COP Lift
- Projected **annual energy savings of up to 15 %** or more
- Reduce carbon footprint

Improve System Stability

- Reduce flash gas to increase capacity by up to **15 % at 35 °C**
- Safeguard against heatwaves by increasing design temperature by up to **6 °C**
- Protect against high-pressure discharge failure and system downtime

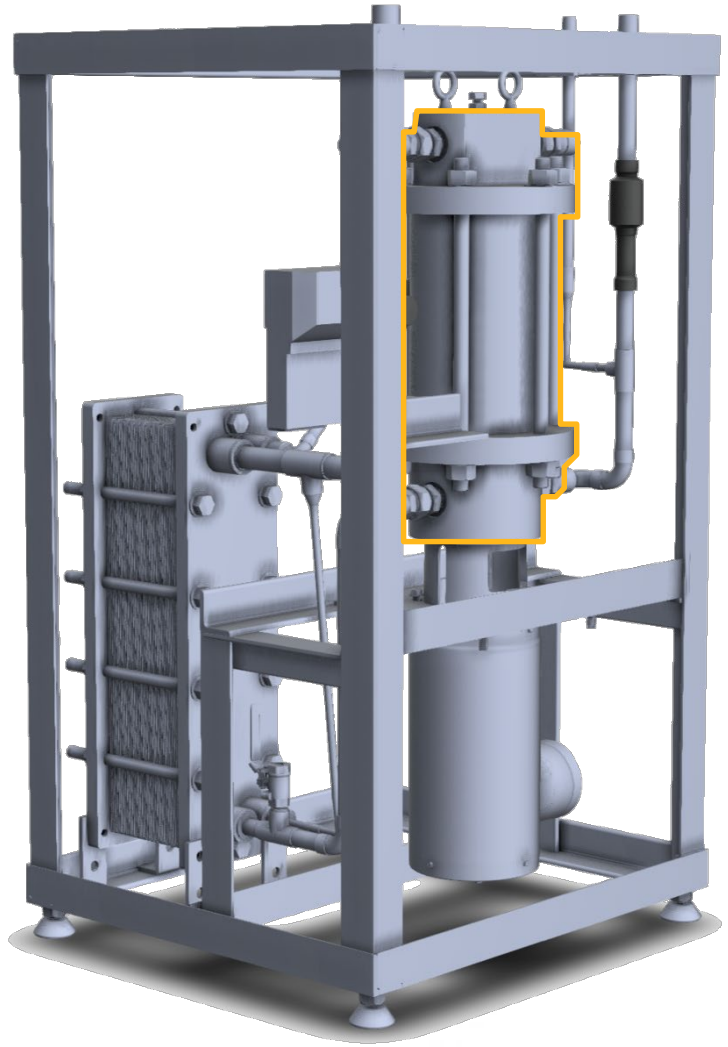
Reduce OPEX and Complexity

- Reduce power consumption
- Minimize or eliminate water usage from adiabatic gas coolers
- Minimal maintenance

Disclaimer: Results may vary based on climate and system architecture.

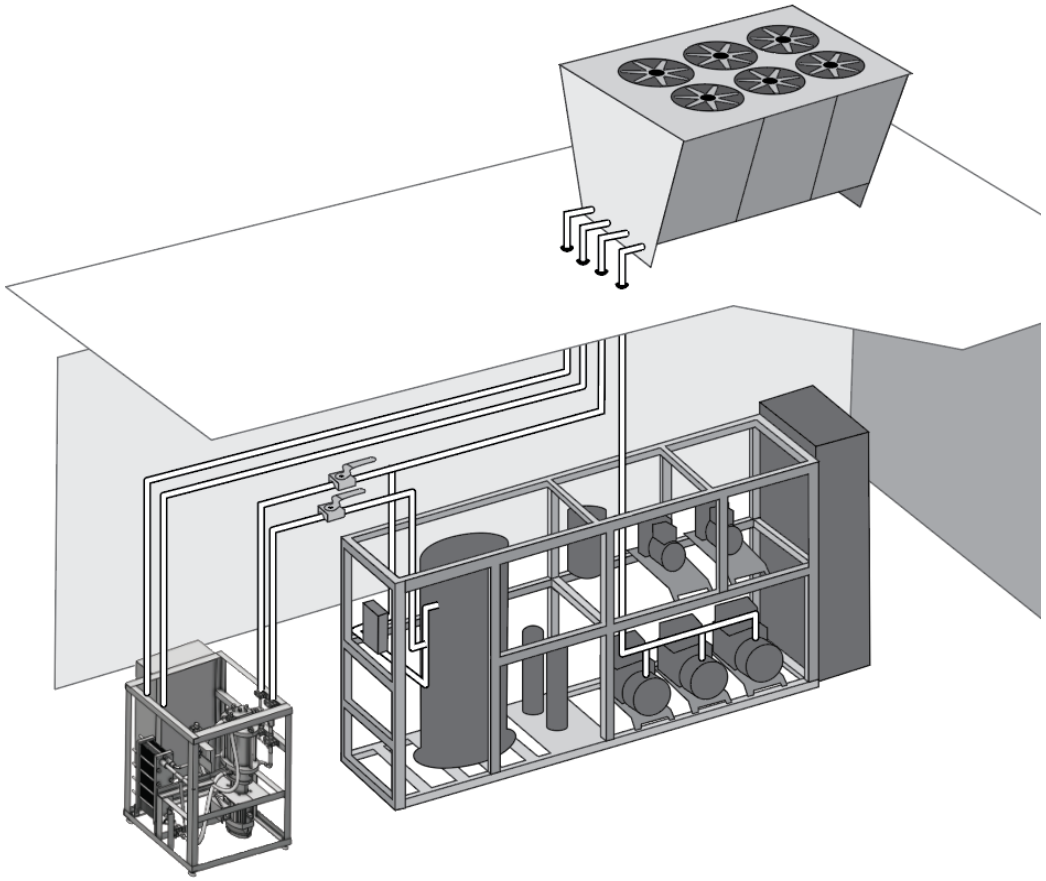
PX G1300 Energy Optimizer Module

- ✓ **Easy integration into new or existing systems**
- ✓ Install with as few as four mechanical connections
- ✓ Compact footprint, only 60 x 60 x 120 cm
- ✓ Compatible with commercial refrigeration controllers



Disclaimer: Approximate sizing

PX G1300 Energy Optimizer Physical Integration



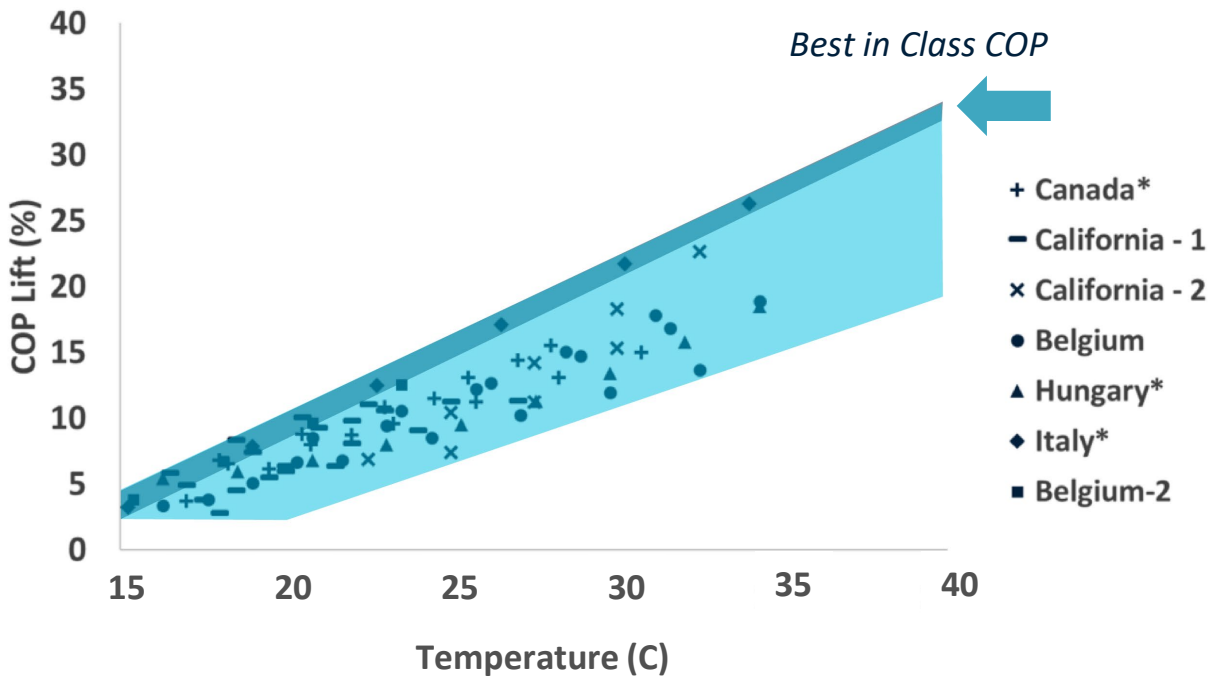
Quick Specifications

- Dimensions: 60 x 60 x 120 cm
- Weight: 260 kg
- System Capacity: Up to ~150kW
  - @ -7C MT SST & 40°C ambient
- Connections:
  - From Gas Cooler: 28mm k65
  - To/from Aux. Gas Cooler: 16mm k65
- Electrical: 400/3/50
- Electrical Connection: 13.2mm^2 recommended

Disclaimer: Approximate sizing

PX G1300 Field Results Show Up to 30 % Peak COP Lift

COP Lift vs Temperature



Global Installations

>30 Projects

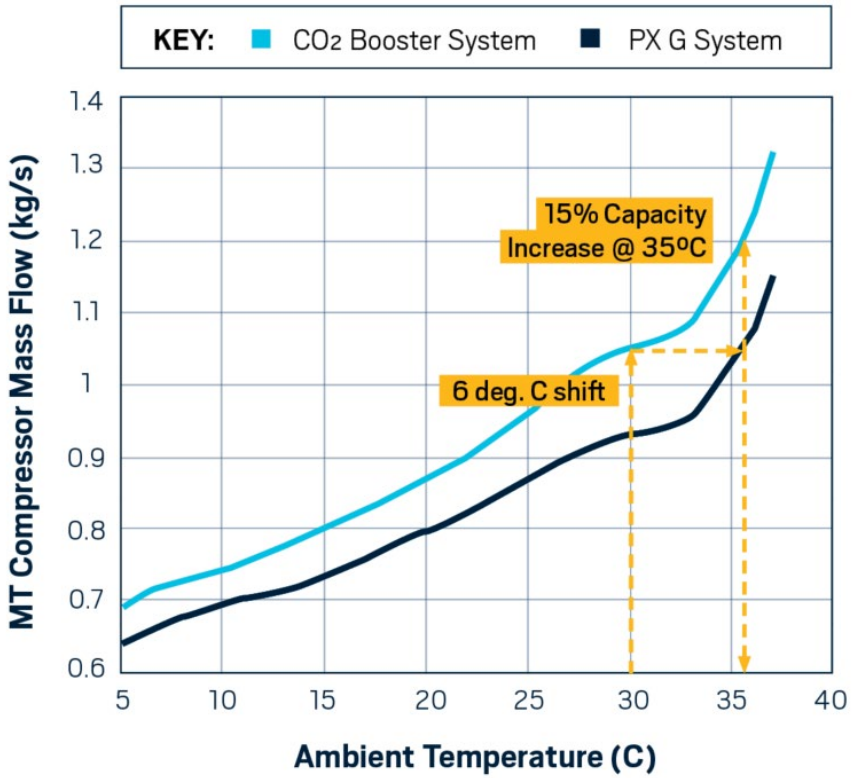
>25,000 Operating Hours

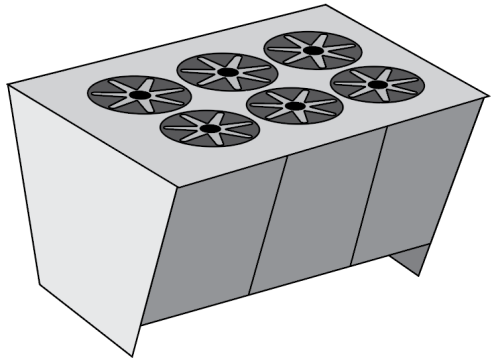
Disclaimer: Energy savings may vary based on climate and system architecture. Includes data collected and analyzed by OEM.
PX G1300 installed across 72-240 kW size systems.

Increased Capacity with the PX G1300

Up to 15 % more capacity at 35 °C

for the same installed compressor capacity





Reduce risk of high-pressure discharge

- Simultaneously reduce pressure in the gas cooler and improve COP
- Secure operations during extreme climate conditions
- Eliminate water vaporization to lower OPEX

Disclaimer: Projection based on field performance of 150 kW system

Thank You! Visit Us At Booth 7A-270

Wednesday, Oct 9

PX G1300 System Integration
13:00 – 13:30 // Booth 7A-270

EPTA Presentation on the XTE
15:00 – 15:30 // Booth 7A-270

Happy Hour
15:00 – 18:00 // Booth 7A-270

Thursday, Oct 10

PX G1300 Physics
10:30 – 11:00 // Booth 7A-270

PX G1300 System Integration
13:00 – 13:30 // Booth 7A-270

PX G1300 Controls Integration
15:00 – 15:30 // Booth 7A-270

Hall 7A

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