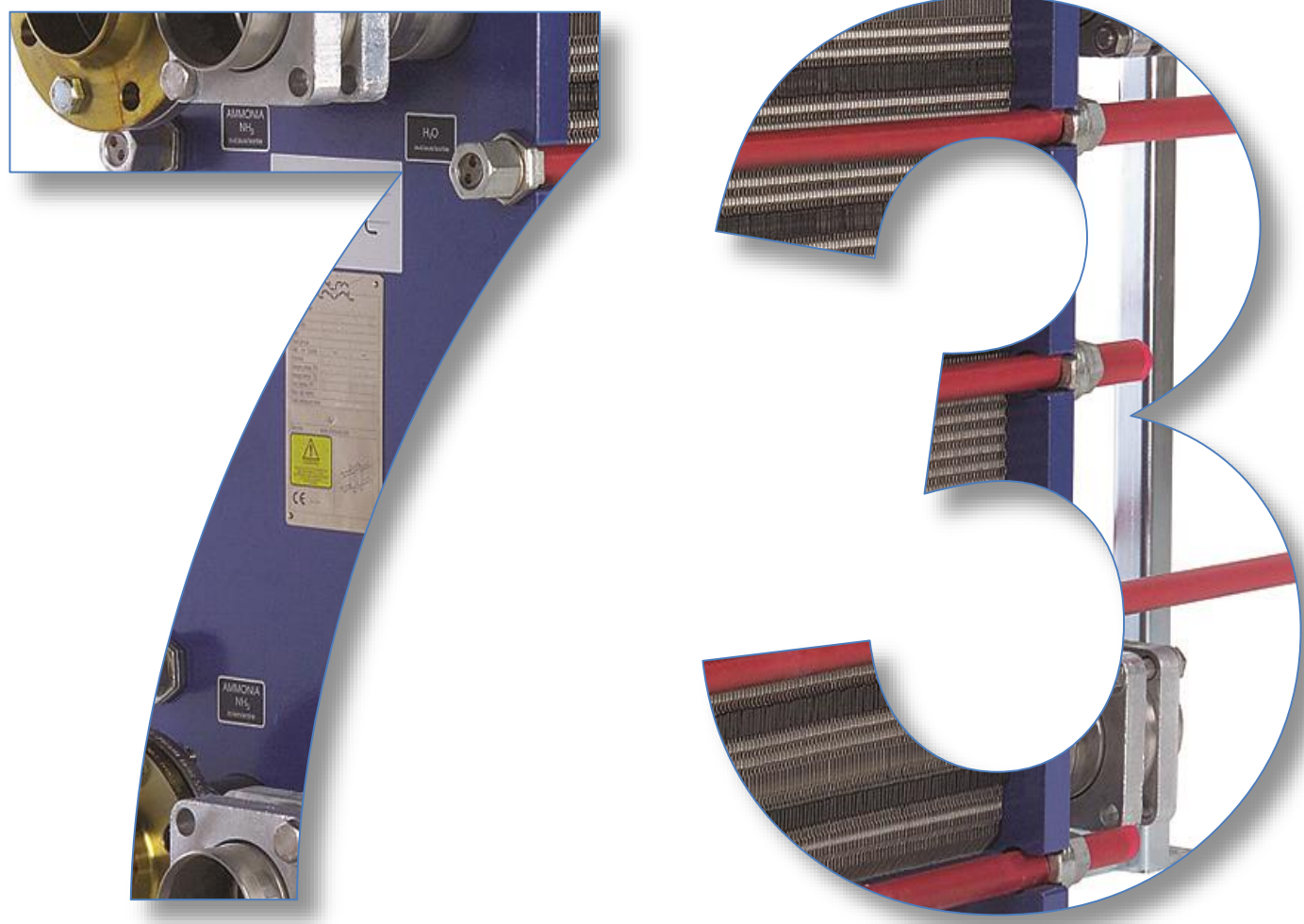




**Demand new standards
Semi-welded plate heat exchangers in high
pressure applications**

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Alfa Laval**

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Higher pressures demand a higher standard

Applications with great potential for going semi-welded

Low charge ammonia chillers

using CO₂ as secondary fluid

Ammonia heat pumps

to recover low temperature waste heat
delivering hot water

Higher pressures demand a higher standard

The next-generation Alfa Laval semi-welded heat exchangers

If your heating and cooling duties demand higher pressures, it's time for your business to demand a higher standard of technology.

Thanks to groundbreaking innovations, Alfa Laval's next-generation semi-welded heat exchangers provide long-term performance even in the most demanding applications. And unlike traditional fully welded designs, they can handle repeated pressure and temperature cycles – with no risk of cracking due to fatigue.

That's on top of advanced features that ensure the market's highest thermal performance. The end result is the safest, most reliable, and most energy-efficient ammonia heat pump and refrigeration applications.

Contact us to learn more.
www.alfalaval.com/demand-new-standards

ALFA LAVAL
www.alfalaval.com

Alfa Laval semi-welded plate heat exchangers

- Used successfully in NH₃ refrigeration installations since 40 years

The new generation delivers!

- ✓ Increased gasket lifetime at higher and at lower temperatures
- ✓ Increased high pressure resistance





10

10 years troublefree operation of NH3/CO2

Case

Coffee factory, Netherlands. Installer: ENGIE

- 10 years of trouble-free operation after installation
- First planned maintenance in May 2018

Finding:

Plates and gaskets looking fresh and functional

Result:

Heat exchanger in as-good-as-new state after cleaning and re-gasketing

Alfa Laval semi-welded heat exchanger duty

Side 1

Media	Ammonia NH ₃
Evap. temp.	-12°C
Design pressure	20 Bar

Side 2

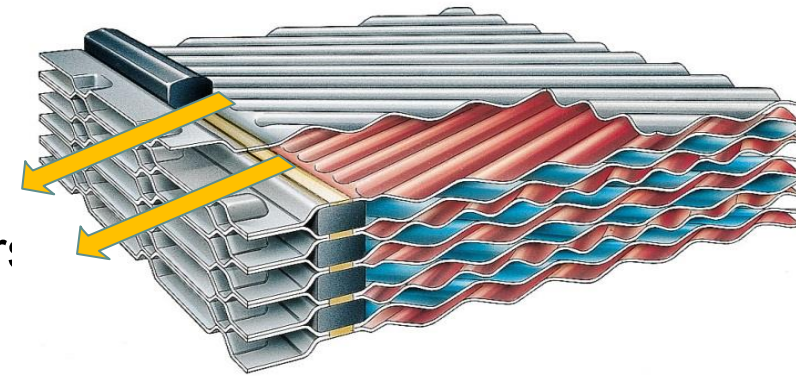
Media	Carbondioxide CO ₂
Temp in/cond. temp.	15°C / -8°C
Design pressure	40 Bar



Semi-welded plate heat exchangers

A safe technology for NH₃/CO₂ systems

- Gaskets act as safety absorbers of metal plate or frame movements. Eliminating risk of cracks due to fatigue.
→ Unlimited fatigue cycle lifetime of a semi-welded heat exchanger
- Important for applications with fluctuations in pressure and temperature.
- This feature is much appreciated in low charge ammonia NH₃ chillers with CO₂ as secondary media in cascade or as pumped fluid. More than 300 such plants are running with Alfa Laval SWPHE:s.
- If a sealing failure would occur – all the sealing's and welds are facing the external atmosphere eliminating risk of media intermixing. Such mixing we know would be devastating.



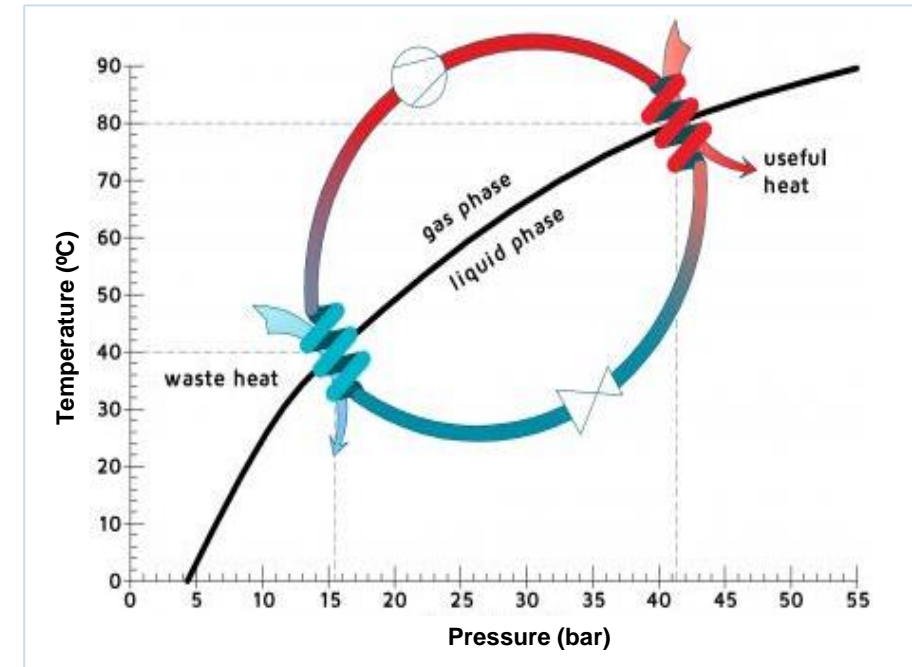


63

Alfa Laval semi-welded heat exchanger

63 bar resistance with an efficient close temperature approach

- Can be designed with an efficient **0 K** or even negative approach
- Advantageous in heat pump applications where all is about **energy efficiency** and **COP**.
- The new generation Alfa Laval semi-welded heat exchangers are available as ammonia condensers with up to **63 bar** design pressure supplying up to **90°C** outlet water temperature.



Heat recovery from factory

Highly efficient installation of ammonia heat pump

Alfa Laval factory heating the facility when cooling the hydraulic plate presses

Case

Installer: KlimatKyl, In operation since 2013

- Designed with 2 K approach each side for high efficiency
- Absorbed electrical power 100 kW
- Low Charge Ammonia of totally 40 kg
- Pay back less then 2 years



Evaporator 700kW, COP=7

Side 1

Media	Ammonia NH ₃
Evap. temp.	28°C
Design pressure	30 Bar

Side 2

Media	Water
Temp in/out	35°C / 30°C

Condensor 800 kW, COP=8

Side 1

Media	Ammonia NH ₃
Condensing temp.	67°C
Design pressure	40 Bar

Side 2

Media	Water
Temp in/out	55°C / 65°C

A large, jagged iceberg floats in the middle of a calm, blue ocean. The sky is a clear, bright blue. The iceberg's surface is highly textured with sharp peaks and deep shadows. The water is a deep blue with gentle ripples. The overall scene is serene and cold.

Future safe

Always looking towards the future

Alfa Laval semi-welded plate heat exchangers

Well proven technology for efficient chiller and heat pump applications

- Reducing ammonia charge
- Eliminating severe fatigue failures
- Reducing life time cost or pay back time by increasing COP
- And with Alfa Laval's constant development of sealing function limiting the maintenance cost



RefTight™
Ensures long life-time sealing
of semi-welded channel



Overview of gasket life time

Recommended gasket replacement interval*

10
years

- Heat pump ammonia condenser, with full Reftight™ applied, up to a design pressure of 63 Bar

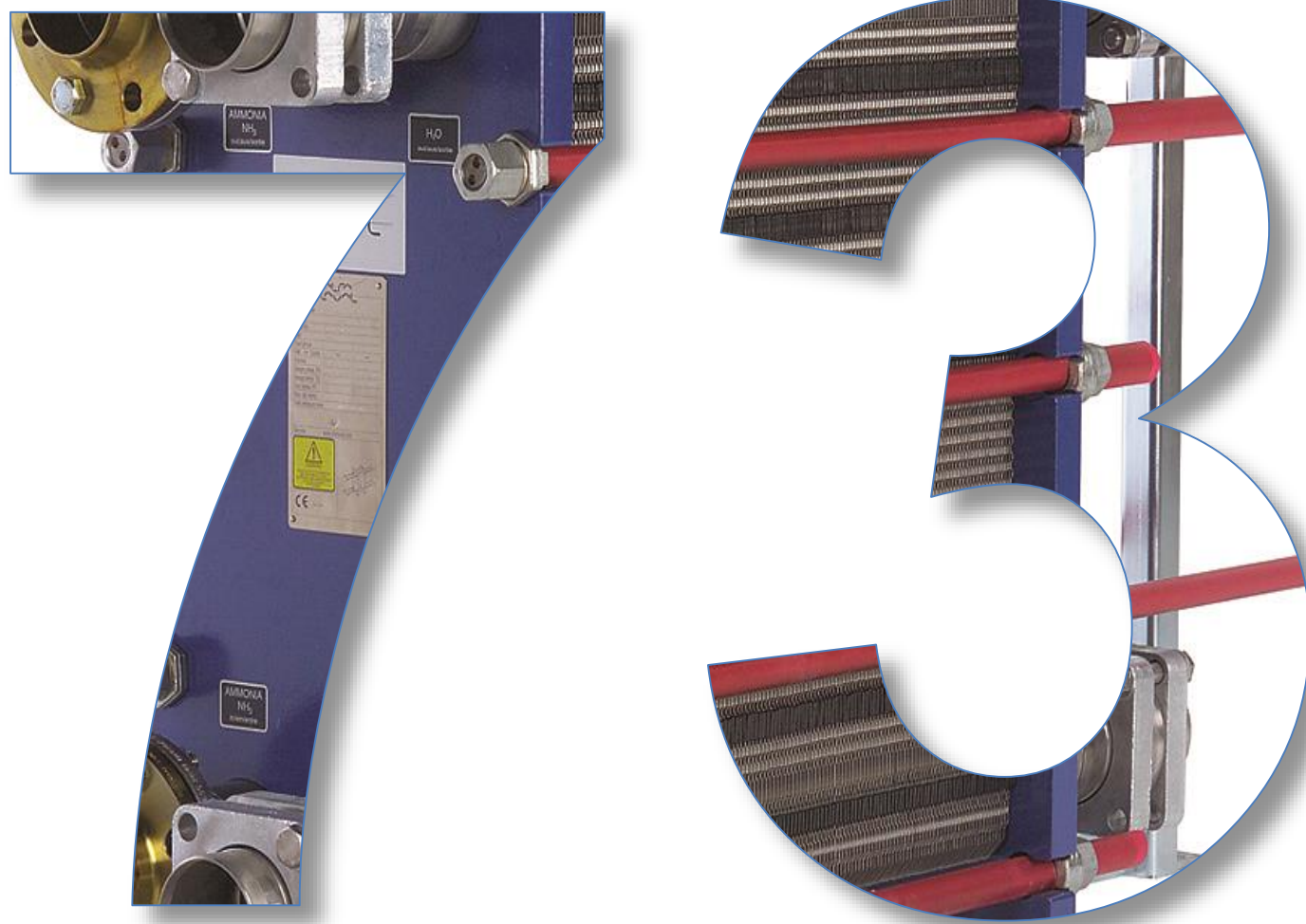
18
years

- Flooded ammonia evaporator
- Standard condenser
- NH₃/CO₂ cascade heat exchanger




RefTight™
Ensures long life-time sealing
of semi-welded channel

*Refers to an operation where opening for other reason (ie.cleaning) not is required



A scenic view of a snowy mountain range under a clear blue sky. The mountains are covered in white snow and have sharp peaks. The sky is a deep, clear blue. The text "Thank you!" is overlaid in the center of the image in a light blue, sans-serif font with a subtle drop shadow.

Thank you!



eurammon is always available as a sparring partner for questions on refrigeration with natural refrigerants.

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