EUROPEAN HEAT PUMP SUMMIT

POWERED BY CHILLVENTA

SYMPOSIUM + EXPO
NUREMBERG, 20–21.10.2015

Industrial | Commercial | Residential
Heating & Cooling | Components & Equipment

hp-summit.de

NÜRNBERG MESSE

How to serve the Heat Pump technology at the very best

EUROPEAN HEAT PUMP SUMMIT

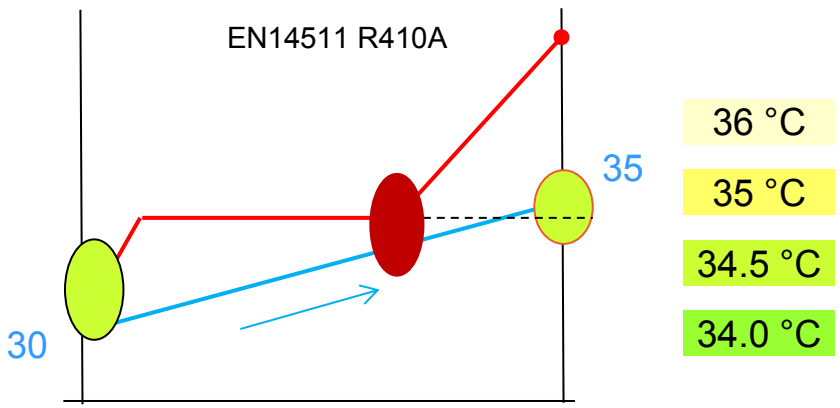
Matteo Munari – Application Development Mgr
Alfa Laval

SUMMARY

EUROPEAN HEAT PUMP SUMMIT

- Efficiency (again) !
- Reversible Heat Pumps
- Advantages linked to R32
- Large Heat Pumps with R1234ze

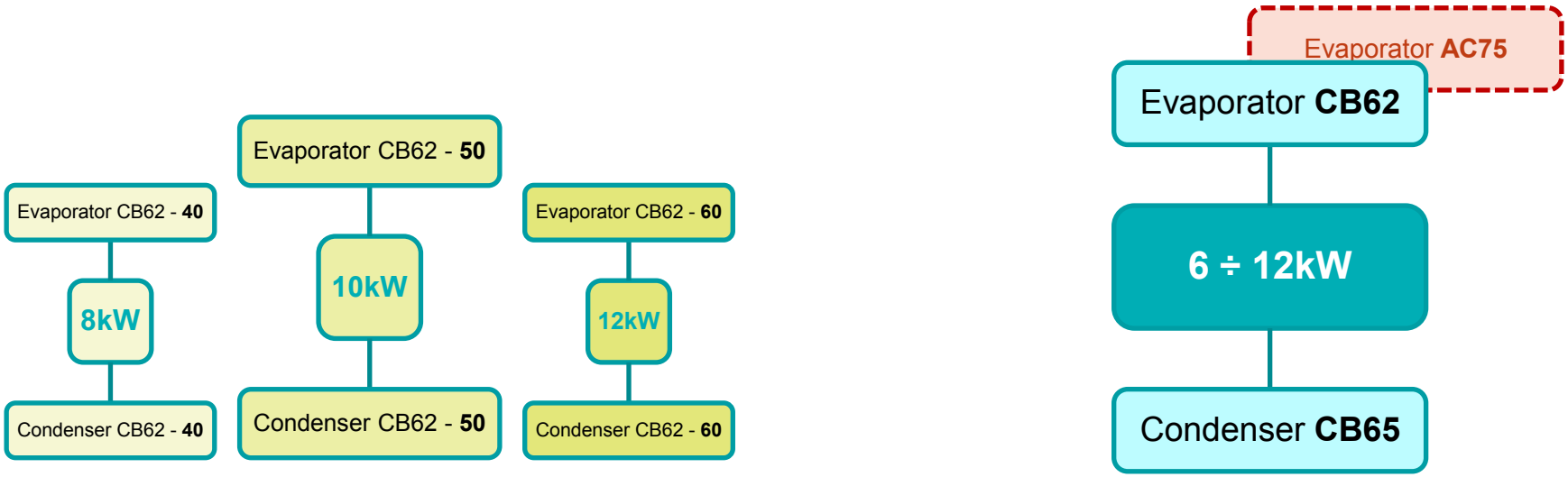
EFFICIENCY



- **Ground Source HP**
- Fix speed compressors
- Maximum COP
- Mild Asymmetry (**CB62**)
- Aggressive Asymmetry (**CB65**)

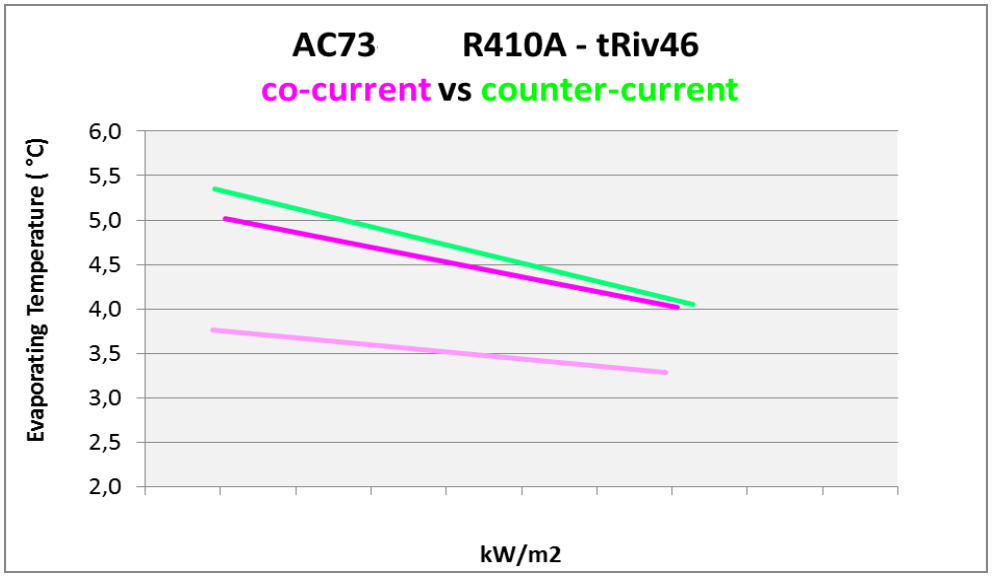
- The technology is close to the thermal limits thanks to the **asymmetric** channel plates. Further reduction of the pinch point will be a challenge !
- Now the focus is on the **system' s efficiency**, in particular when **inverter** driven motors are used (compressors & pumps)

EFFICIENCY



- Efficiency with **inverters** is a new challenge
- The channel plate design and the distribution system of the brazed plate heat exchangers have been renewed. The goal is to reach the **maximum efficiency within a wider heat flux range.**

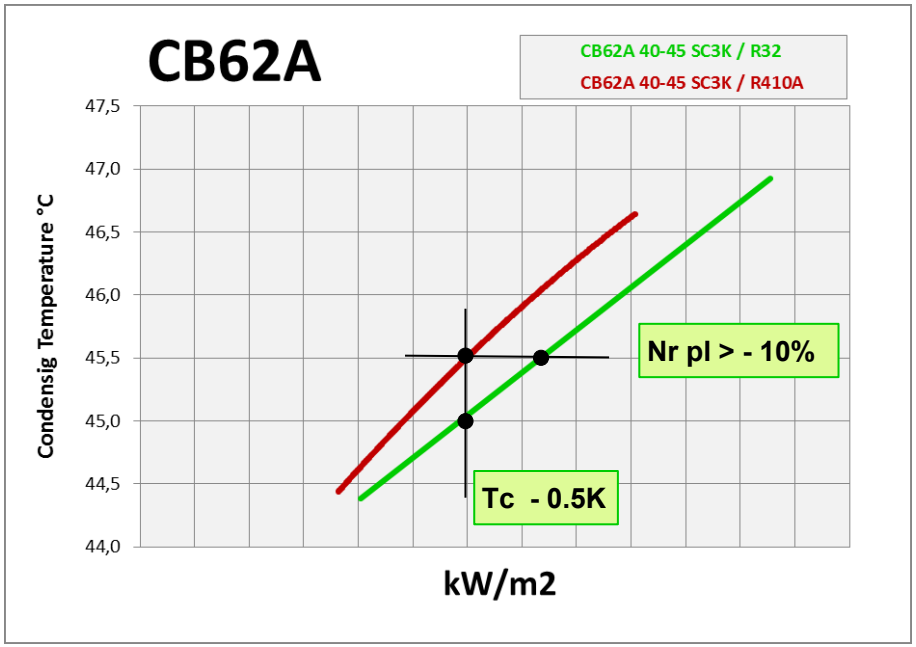
REVERSIBLE HP



- **AC73**
- Mild Asymmetry
- New Distribution System
- Stable Superheating

- For reversible Heat Pump is possible to reach very high evaporating temperature in **co-current**.
- The new distribution system (**DynaStatic**) allows to keep stable superheating in a wide range of heat flux (kW/m^2). The performances are at the same level of the counter current if the system is able to keep 1K of superheating at the evaporator outlet.

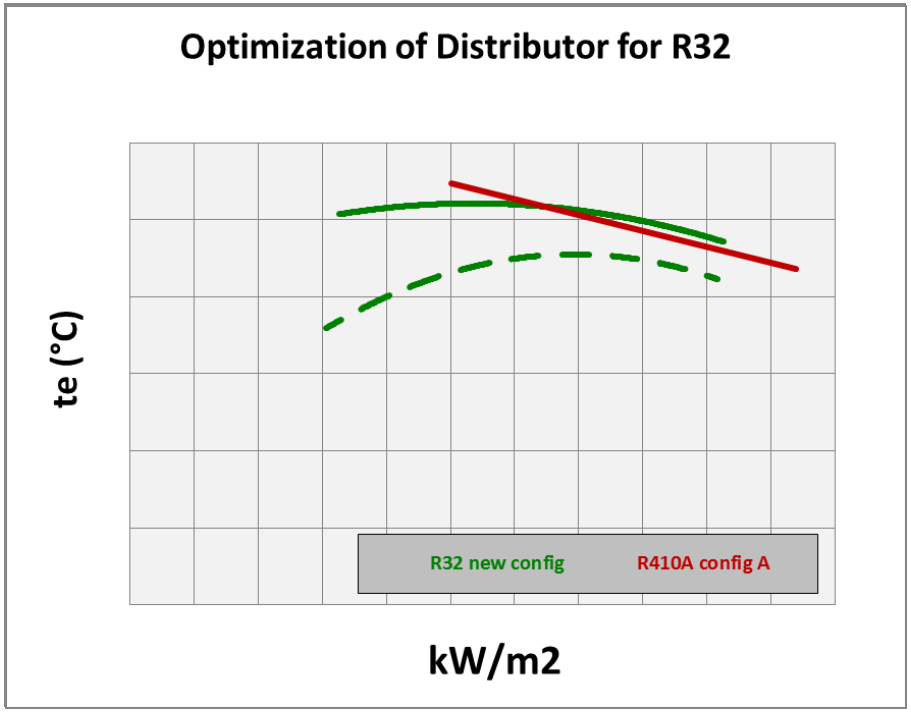
R32

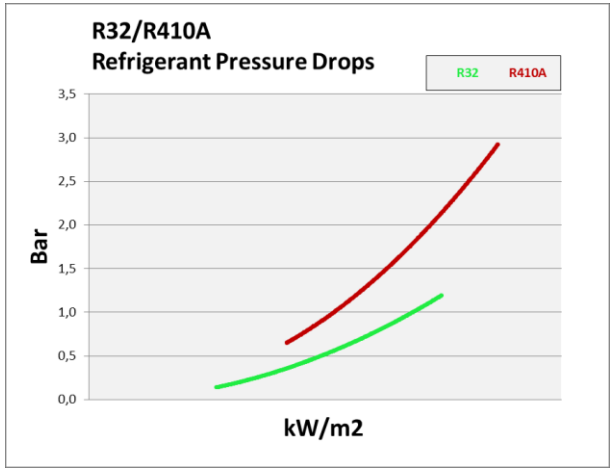


- **CB62A**
- Mild Asymmetry

- R32 vs R410A gives a **better efficiency** as condenser. We can use the extra efficiency as cost down of the component (less number of plates).

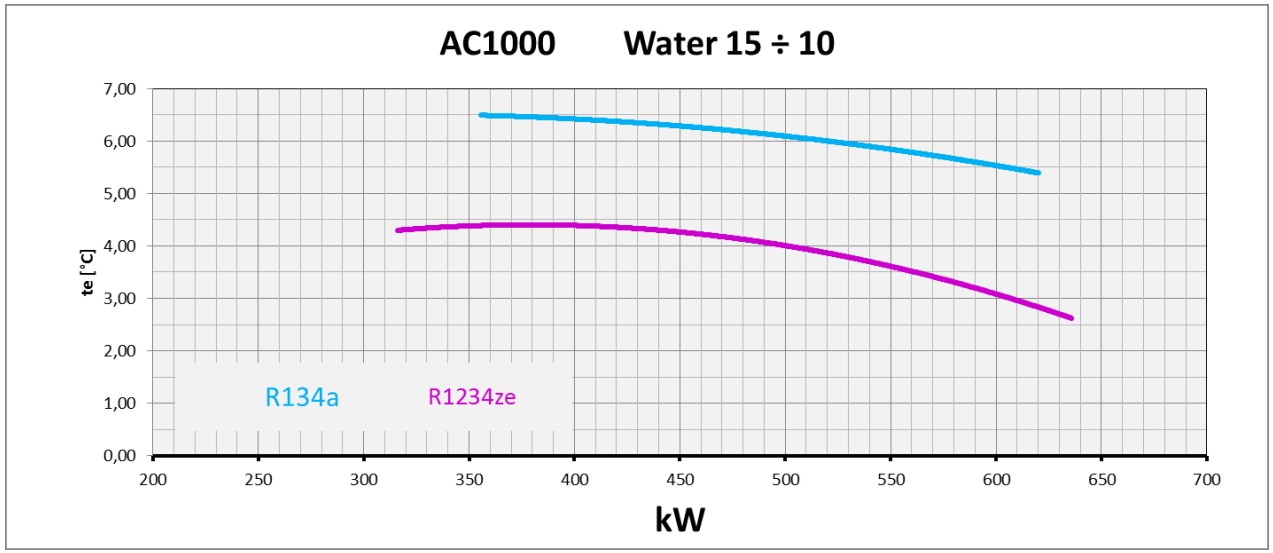
R32





- R32 as evaporator requires an optimization of the **distribution** system.

R1234ze



- **AC1000**
- R134a
- R1234ze

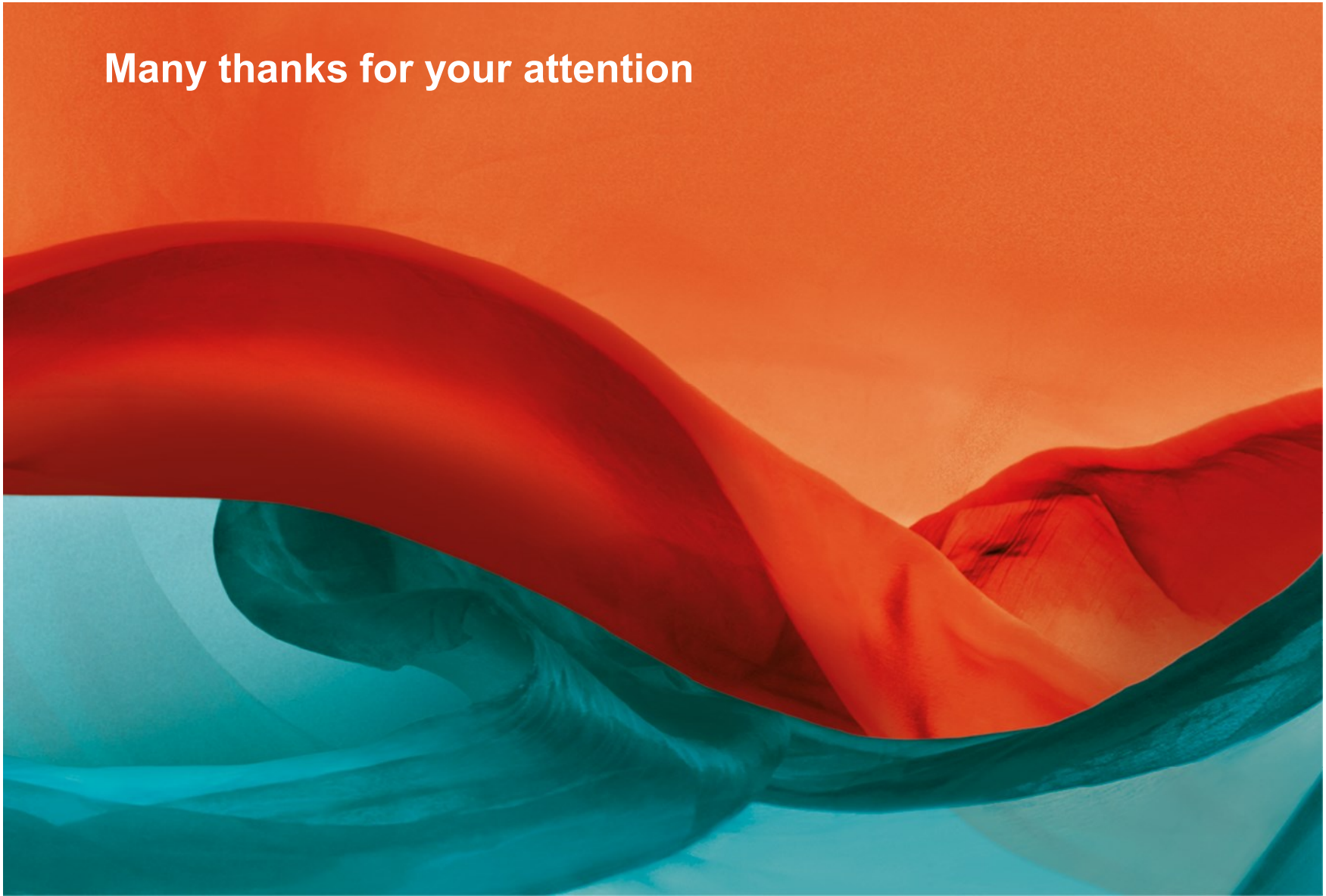
- Industrial application (> 300 kW) can be covered with **AC1000** !

Conclusions

EUROPEAN HEAT PUMP SUMMIT

- Efficiency with inverters
- Optimization of the cooling performance for reversible Heat Pumps
- Ready for future R32
- Opportunities for large Heat Pumps with R1234ze

Many thanks for your attention



EUROPEAN HEAT PUMP SUMMIT

POWERED BY CHILLVENTA

SYMPOSIUM + EXPO
NUREMBERG, 20–21.10.2015

Industrial | Commercial | Residential
Heating & Cooling | Components & Equipment

hp-summit.de

NÜRNBERG MESSE