

Aquaflair

Uniflair TRAC, TRAF and TRAH

Air-cooled chillers, free-cooling chillers and heat pumps with scroll compressors

120-350kW

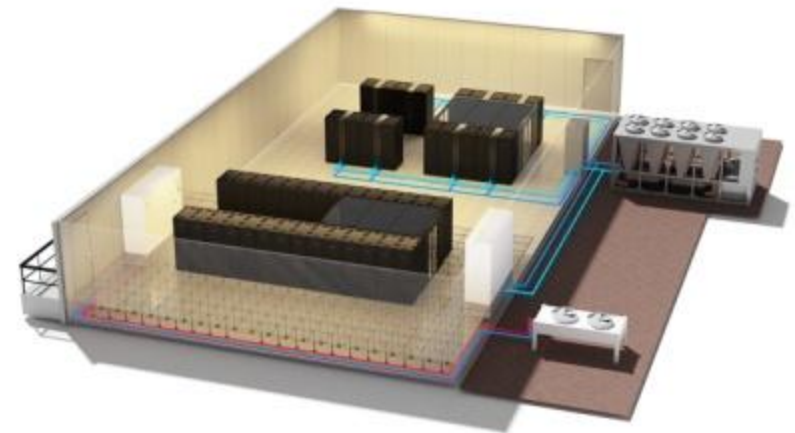
Uniflair TRA ranges

- 115-350kW Air-cooled Chillers
- Cooling, Free cooling and Heat Pumps
- 9 sizes, many configurable options



Applications

- Data centers
- Industrial applications
- High performance comfort applications



Product range

The TRAC/F/H range will **replace** the current chiller range, **extending** the concept and the technologies which are applied on mid chillers (50-100kW) range and it will **cover the gap** (260-350kW) in the current product portfolio

Current scenario



Next scenario



Main features

- R410A Refrigerant
- Scroll compressors
- Single / double circuit
- Single passage plate heat exchanger
- Basic / UltraQuiet version
- Electronic Expansion Valve
- Free-cooling: Standard, Intelligent and Glycol-free
- Acoustic-composite fans with EC or AC motor
- Onboard Variable Speed Driven (VSD) pumps group
- Single, double or separate power supply



How it's made



Frame

Two different layout are available according to the cooling capacity to guarantee

- **Accessibility**

- Lateral access on small sizes
- Rear access on large frame

- Easy **maintenance** and component replacement

- **Transportation**

- Two small frames can be combined to be delivered in a standard 20ft container
- Large frame is suitable for container transportation

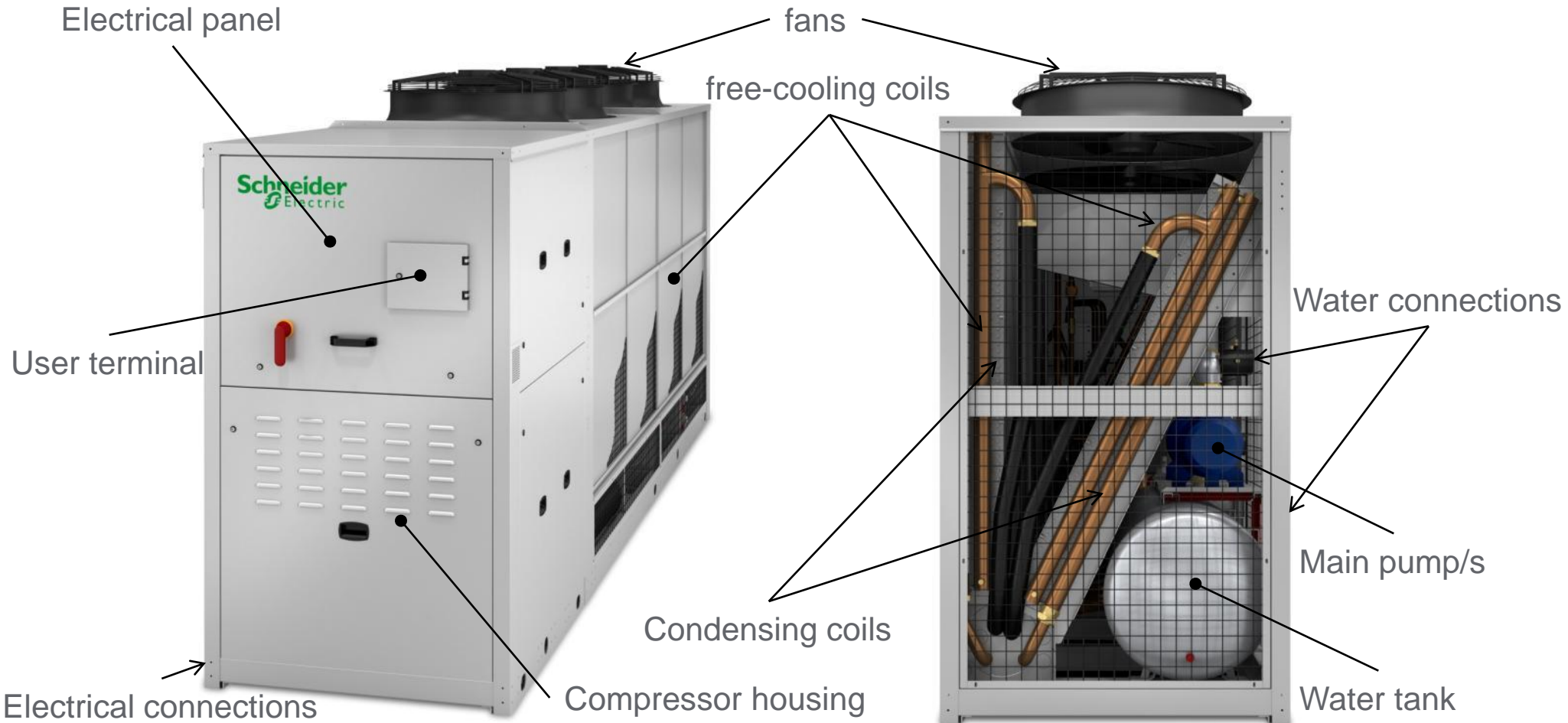


115-235kW

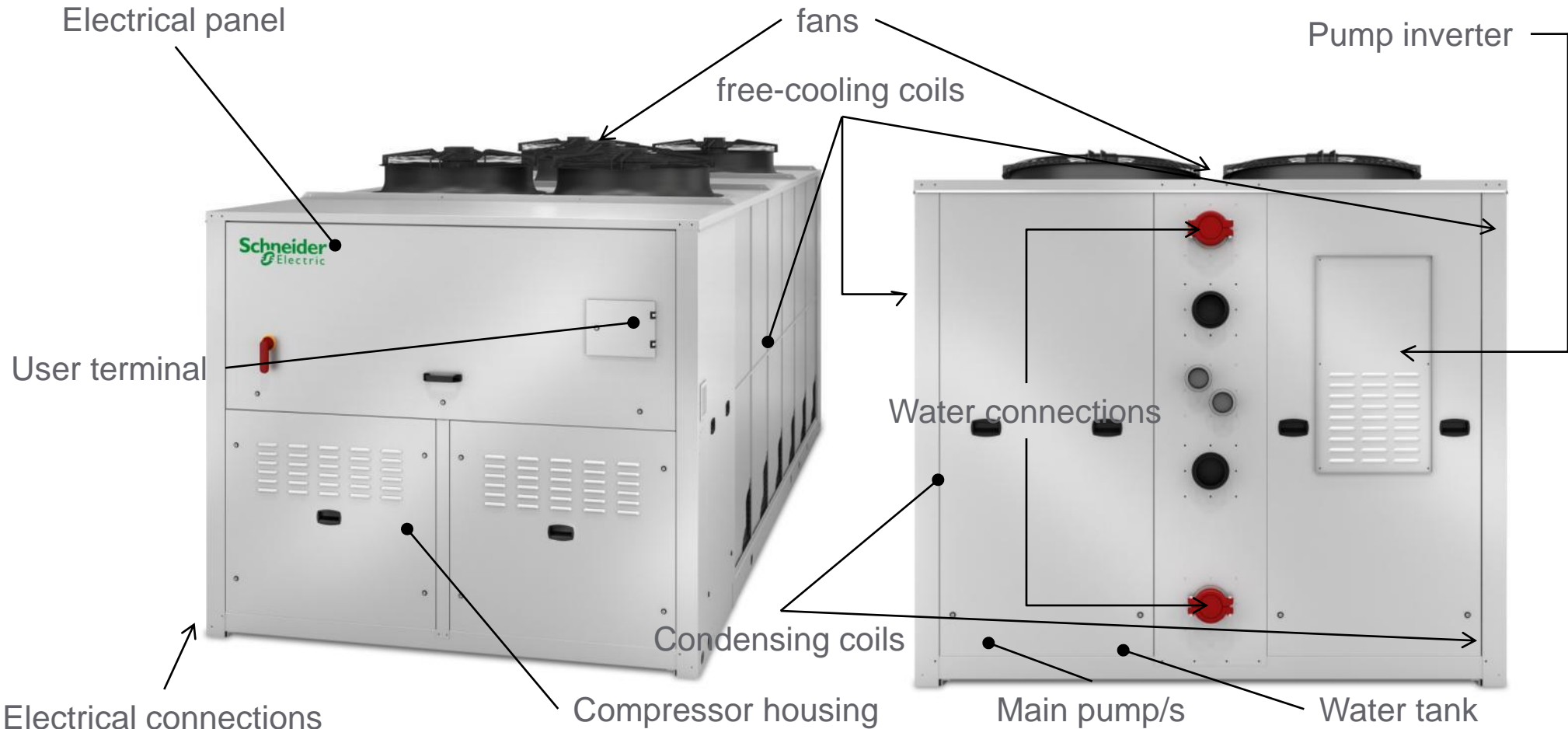


260-350kW

Main components / 115-235kW



Main components / 260-350kW



Refrigerant / Compressors

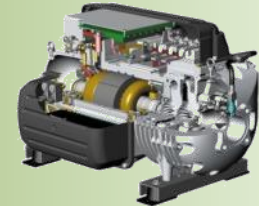
R410A



400-500 kW



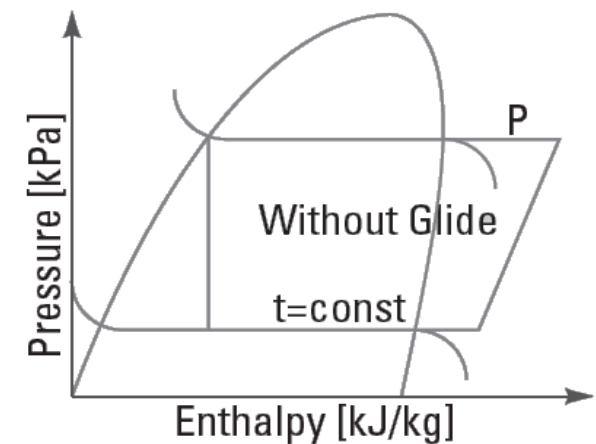
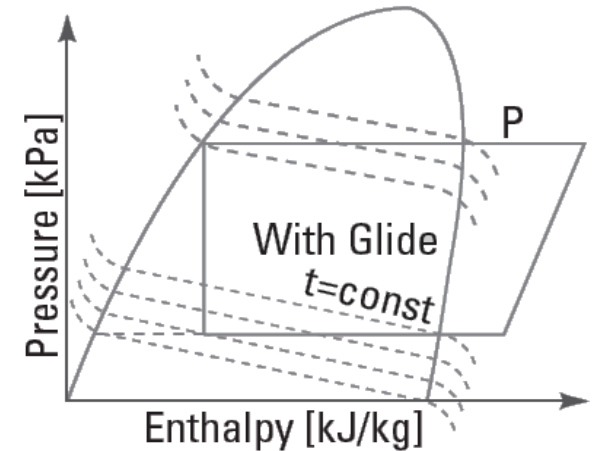
R134a



R410A refrigerant

Excellent performance

- High intrinsic efficiency
- Hardly any glide
- Constant performance: Constant mix
- Optimized components
- Limited direct (GWP) and indirect (TEWI) environmental impact

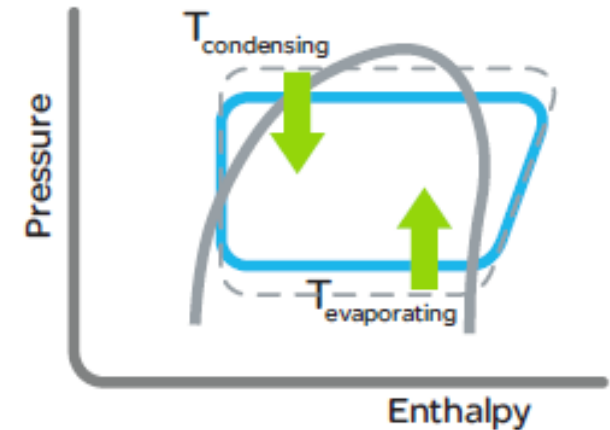
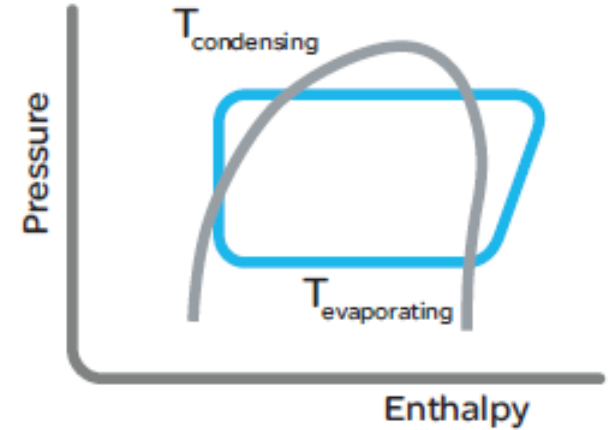


Cooling section

- All models of the TRA range are available with **tandem** technology
- Efficiencies at **part load** conditions are therefore optimized



Load reduction



Acoustic composite fans

- Axial fans in a **composite** material
 - Aluminium core for a better heat dissipation
 - Plastic blades to improve air flow
 - Less weight grants efficiency and reliability
- The optional **electronically commutated** motor improves:
 - Energy efficiency
 - Noise impact during regulation
 - Max external temperature



Microprocessor control board

- Operation: outlet chilled water temperature regulation by means of an exclusive **PID** algorithm and main data acquisition and limits management
- Complete set for **integrated cards**
 - clock card to register any alarms or set operation strategies
 - LAN card for connecting more than one unit to the local area network
 - USB connection for data downloading
 - RS485 serial card to BMS connections with several protocols
- **Field** integration
 - ability to interface with two separate BMSs
 - set-point variation based on external temperature or signal
 - external motorized isolating valve management

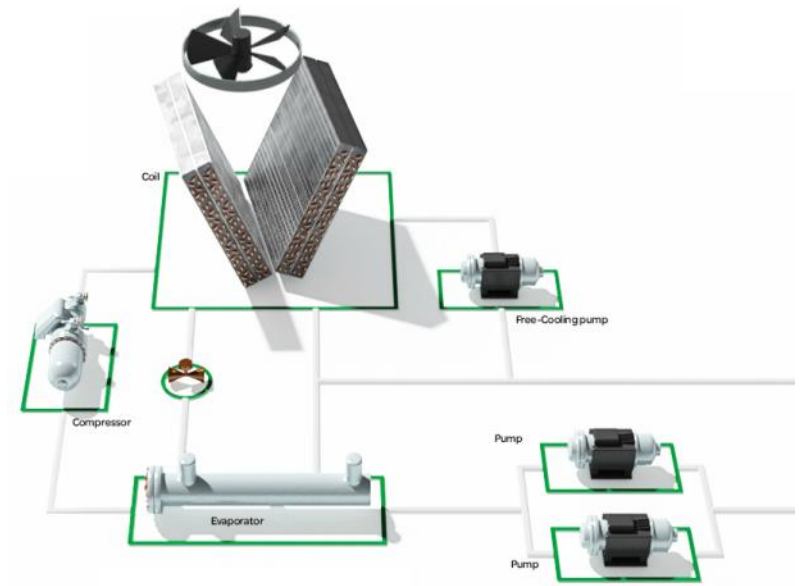
Free-cooling

TRAF units are fitted with integrated economizer.

This solution, thanks to the particular unit features, **maximizes efficiency**

According to the site conditions the unit can be configured with specific free-cooling systems

- Exclusive Aquaflair free-cooling
- Intelligent free-cooling
- Glycol-free



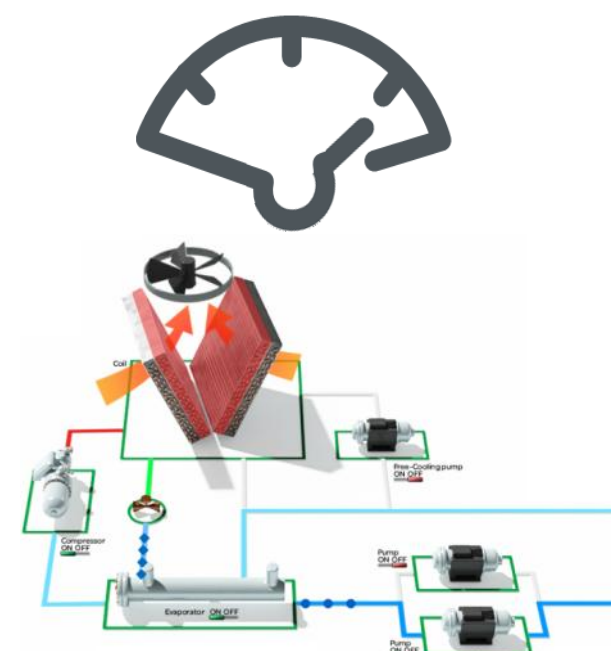
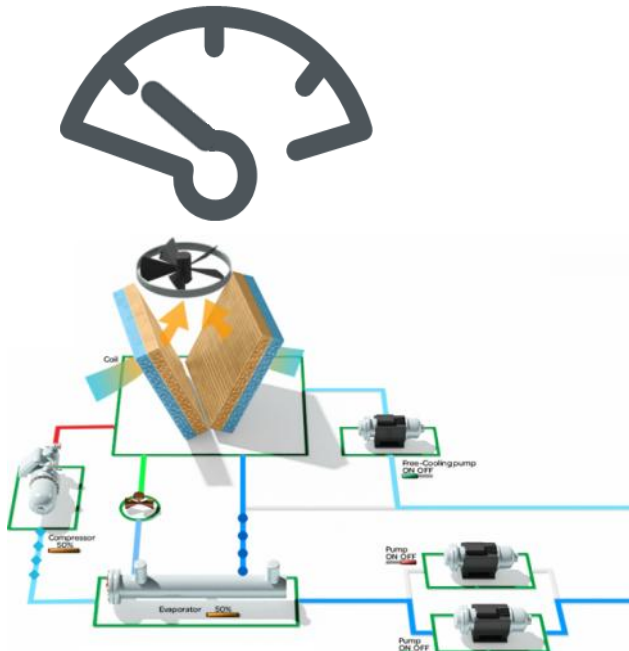
Aquaflair Free-cooling

Winter	Mid-season	Summer
External air	External Air Compressors (partially)	Compressors

Minimized absorbed energy

Low absorbed energy

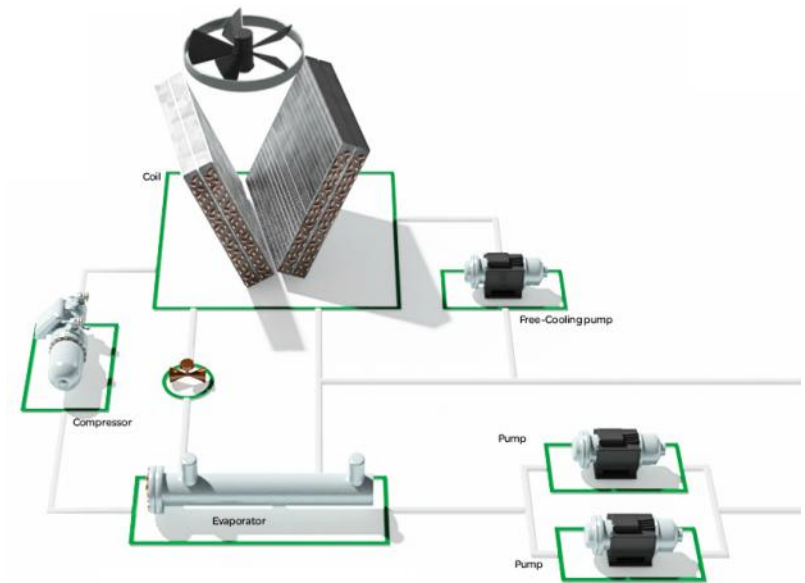
Max absorbed energy



Intelligent free-cooling

Mission critical systems require uncompromised **reliability**, along with energy saving strategies

Exploiting the free-cooling sections of the stand-by units it is possible to increase the free-cooling capacity and to **amplify the energy saving**

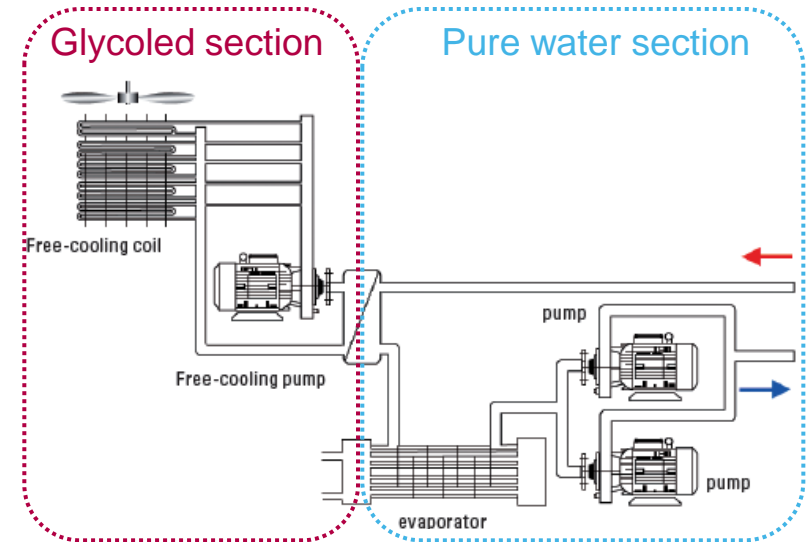


Glycol free

How to perform free-cooling **without** glycoled water?

Integrated system to **separate** main water system to free-cooling circuit

- Glycol presence remain on free-cooling circuit only
- Mid-season mode efficiency reduction
- Additional cost for the configuration
- Propylene glycol is anyway ecological



Mission critical environments



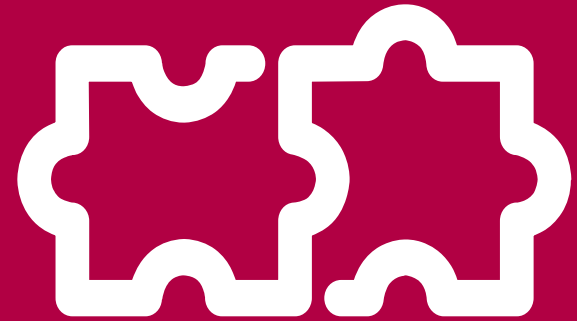
Efficiency

+



Availability

+



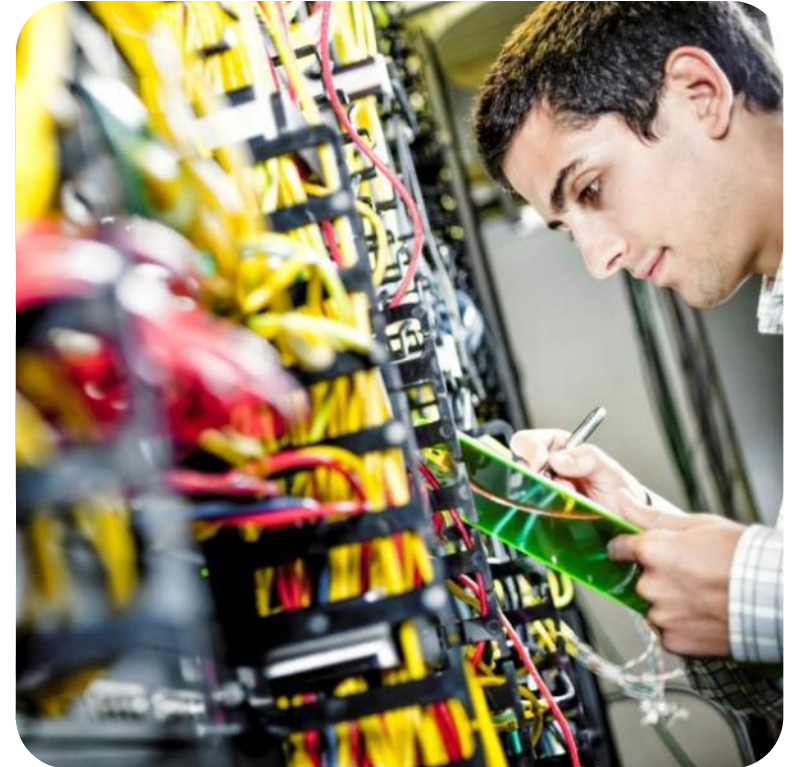
Configurability & flexibility

Energy Efficiency



Leading Technology for efficiency

- **R410A** refrigerant
- **Tandem** for efficiency on all the units
- Integrated **Free-cooling** systems for TRAF units
- **EC** fans as an option
- optional **E**lectronic **E**xpansion **V**alve

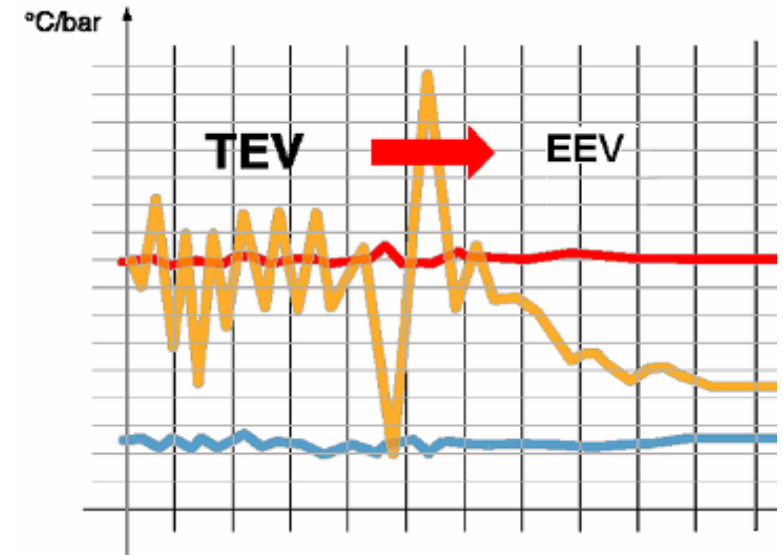


Electronic Expansion Valve

Optional Electronic expansion valve

managed by the Schneider-Electric control board

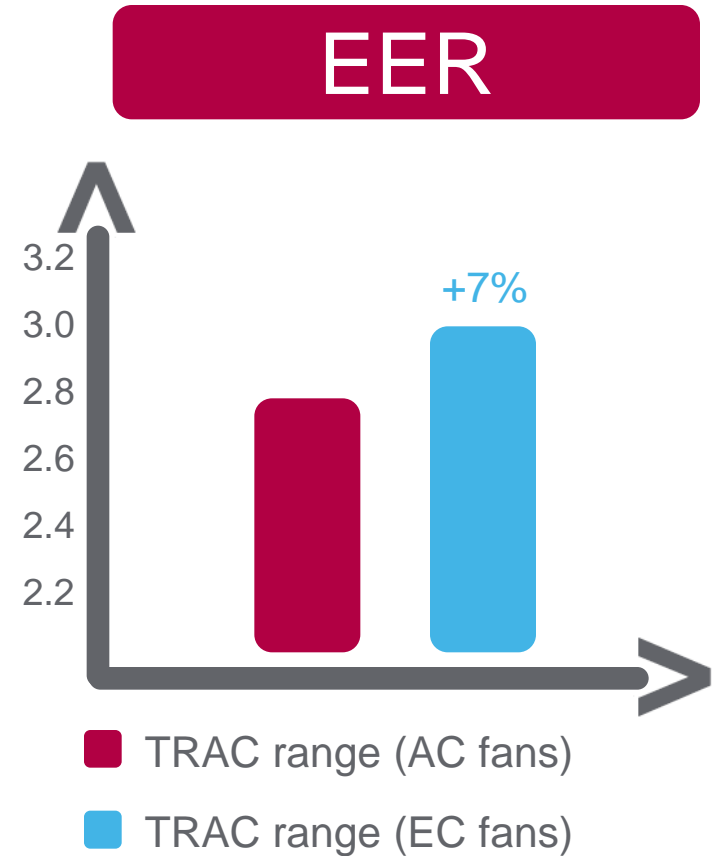
- Reliability
 - operating limits respected
 - Indirect monitoring of the refrigerant load
- Efficiency:
 - Superheating management
 - Improved ΔT at evaporator
- Precision:
 - Close ΔT at evaporator



Electronic Commutated Technology fans

Axial fans produced in composite material with EC motor

- Higher Airflow than AC fans
 - High **efficiency** on fans and on the unit
 - Higher **external temperature** operation
- High **reliability**
 - Starting current lower than the nominal
- Low **noise** level at part load speed



Nom. Cond. 7/12°C, 35°C – 0% glycol, average values

Energy recovery

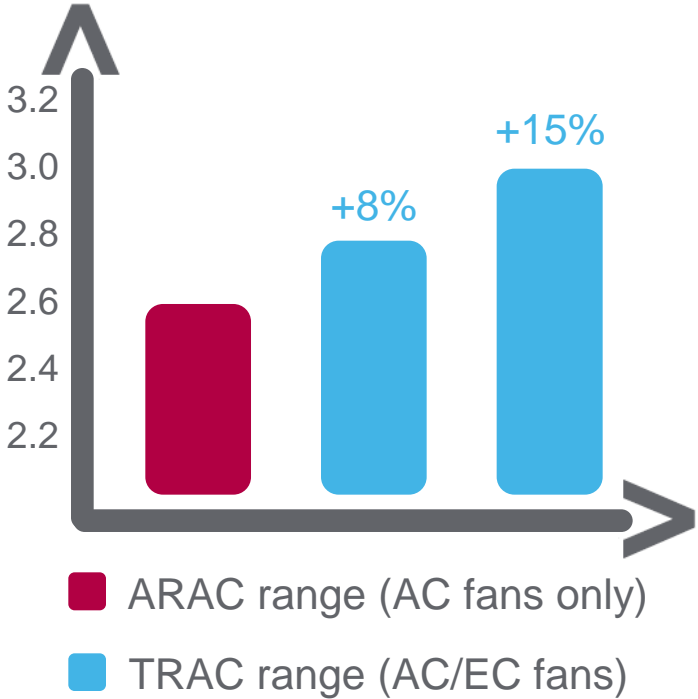
The best solution to improve energy efficiency is to **optimize** available **resources**

TRA* units offer specific options for energy recovery

- Integrated **free-cooling** recover external air energy
- **Partial** heat **recovery** options optimizes compressors absorbed power
- **Total** heat **recovery** options optimizes cooling load and compressors absorbed power

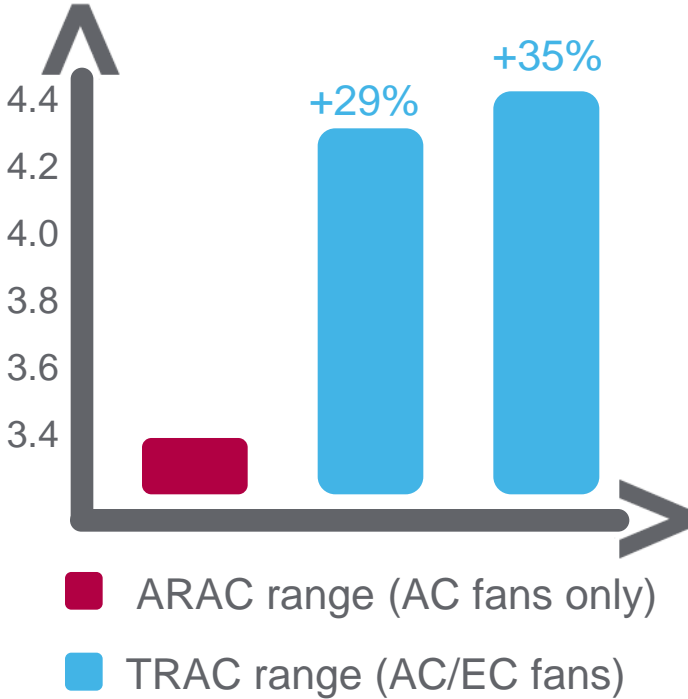
Energy efficiency data

EER



Nom. Cond. 7/12°C, 35°C – 0% glycol, average values

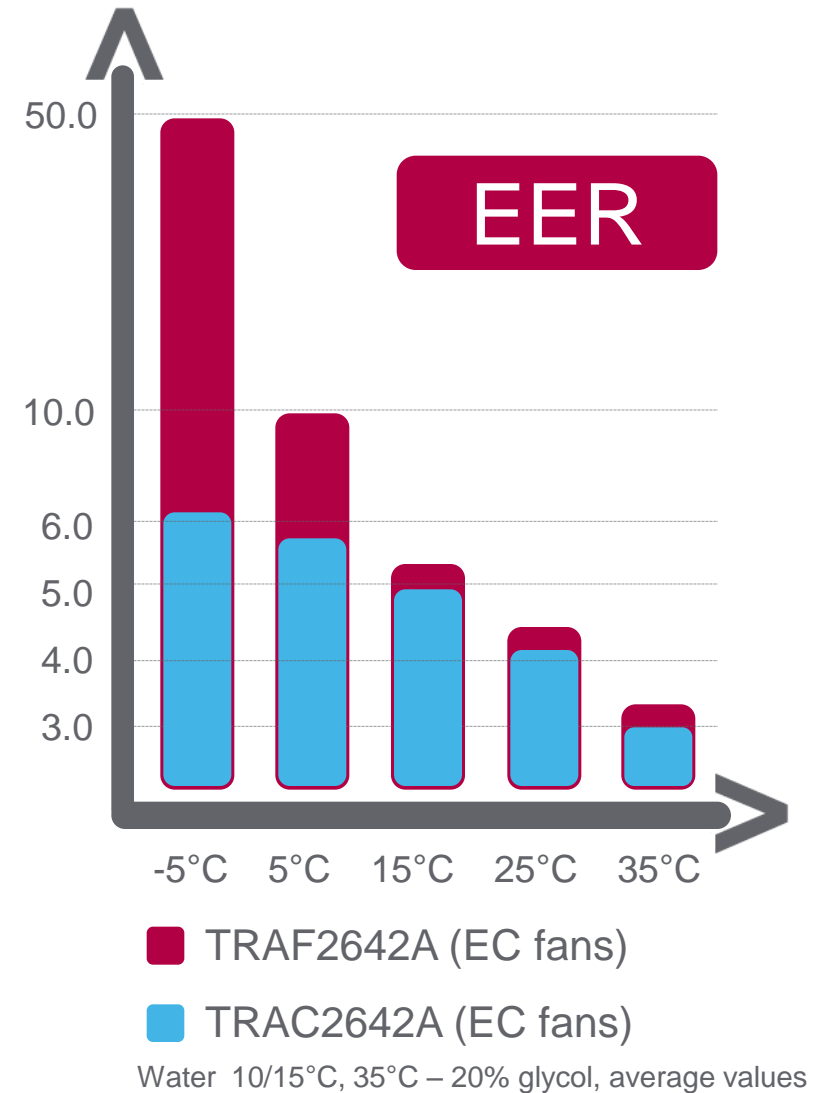
ESEER



European Energy Efficiency Ratio

Energy efficiency data – free-cooling

- Mixed free-cooling mode improvement thanks to **dedicated valves** on condensing coils
- Inlet water temperature maximization: up to **25°C**
- Integrated **Energy monitoring** system linked to the control board (optional)



Availability



Design for continuous availability

Continuous availability needs specific choices

- Unit design
 - Exchange **surfaces**
 - **Redundant** components and power supply
 - **Emergency** strategies
- Component selections
- **Control** Strategies
 - Sensors and measurement
 - **LAN** and **BMS** connections

Wide temperature range up to 80°C

- Chillers up to **+50°C*** or higher with unloading procedure
- Chillers down to **-20°C**

- Free-cooling up to **+48°C** or higher with unloading procedure
- Free-cooling down to **-25/-40°C***

*specific option may be required

High inlet water temperatures may limit the max ambient temperature operation



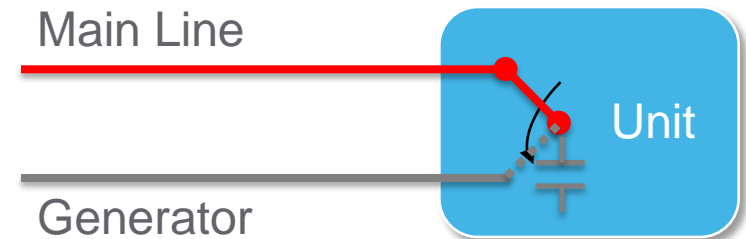
High speed restart

- Standard chiller: **7-10 minutes**
- Uniflair TRA* units: full load condition in **2 minutes** with double or separate power supply and **3 minutes** with standard arrangement



Power supply

- **Double** power supply with automatic commutation (ATS) for complete redundancy without single point of failure as per TIER recommendations
- **Separate** power supply from UPS for Unit and compressor/s control for 2 minutes quick start and emergency operation
- Automatic **double and separate** power supply from UPS for redundancy



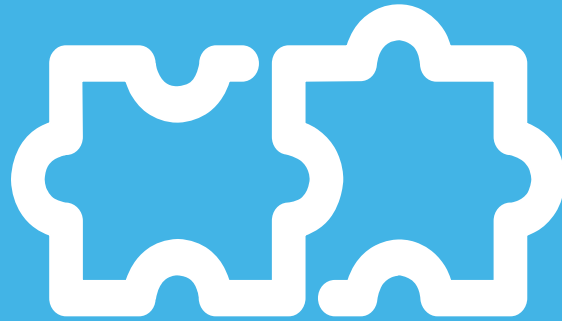
Monitoring and control system

All the units are fitted with a complete set of sensors and devices to guarantee

Protection and reliability





- Phase sequence control
- Magneto-thermal protection switches with trip alarm signal on compressors
- Minimum and maximum **power supply control**
- Optional absorbed **power / amperage** acquisition
- Refrigerant **leak** detection
- Integrated **LAN**

Configurability



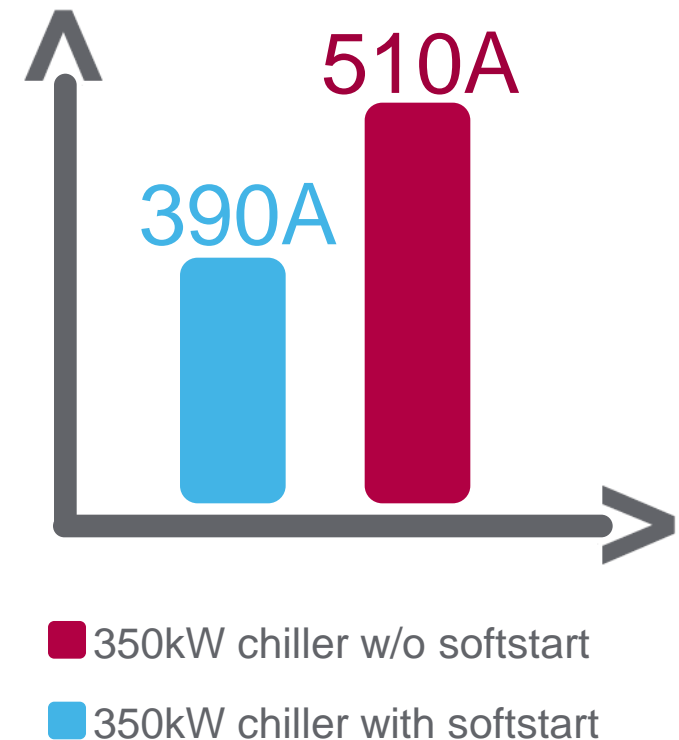
Extremely wide configurability

	TRA*	ARA*
Electronic Expansion Valve	Option	On request (ETO)
Softstart for compressors	Option	On request (ETO)
EC fans	Option	On request (ETO)
Modulating fans	Standard feature	Option
Low noise version	Option	Option
Inverter driven pumps	Option	On request (ETO)
Glycol free	Option	On request (ETO)
Double power supply with internal ATS	Option	On request (ETO)
Separate power supply	Option	On request (ETO)
Double thermostat for heaters	Standard feature	Not available
Compressors protection for linked to the control board	Standard feature	Not available
Min/max volgate relay	Standard feature	Standard feature
Refrigerant Leakage sensor	Option	Not available
Energy current meter	Option	Not available
Crimped pipeworks	Standard feature	On request (ETO)
RS485 communication card	Standard feature	Standard feature
Clock card	Standard feature	Standard feature
USB card	Standard feature	Not available
Double BMS connection	Standard feature	Not available
0-10V variable set-point	Standard feature	Option
Max external temperature 50°C on Chiller	Standard feature	Not available
Max external temperature 45°C on Free-cooling	Standard feature	Not available

-  Standard feature
-  Option
-  On request (ETO)
-  Not available

Low starting currents

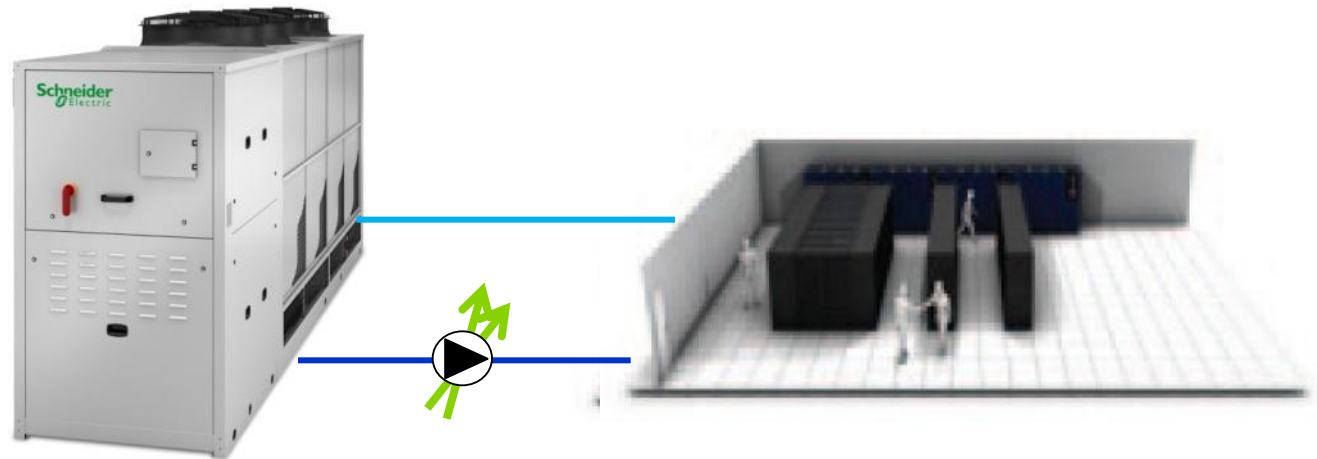
- **4 compressors** from 150kW allow reduction in starting current
- Optional compressors **soft starters**
- Starting current **30% less**
- Less electrical stress to the unit
- Lower impact on the electrical lines with benefits to the general **reliability** of the plant
- **Less CAPEX** for the electrical distribution grid



VSD on-board pumps

- TRA* units can be fitted with std or VSD onboard pump/s (1 or 1+1)
- Head pressure and water flow can be adjusted on site
- Head pressure and water flow can be dynamically adapted to the real operating conditions

Start up



Variable Speed Driven on-board pumps

- High **efficiency**, thanks to the continuous speed adaption on the circuit pressure drops
- **flexibility & modularity**. It is possible to adapt the head pressure, allowing an on site optimization and modular installations
- reduction in **CApital EXpense**, since a single circuit design can be easily applied, saving the extra cost primary/ secondary circuits

Power Supply

TRA* chillers are available indifferent power supply to **cover a worldwide solution**

Standard arrangement is **400V/3ph/50Hz**, while, on request are available different power supply*

- 380/3/50
- 460/3/60
- 380/3/60

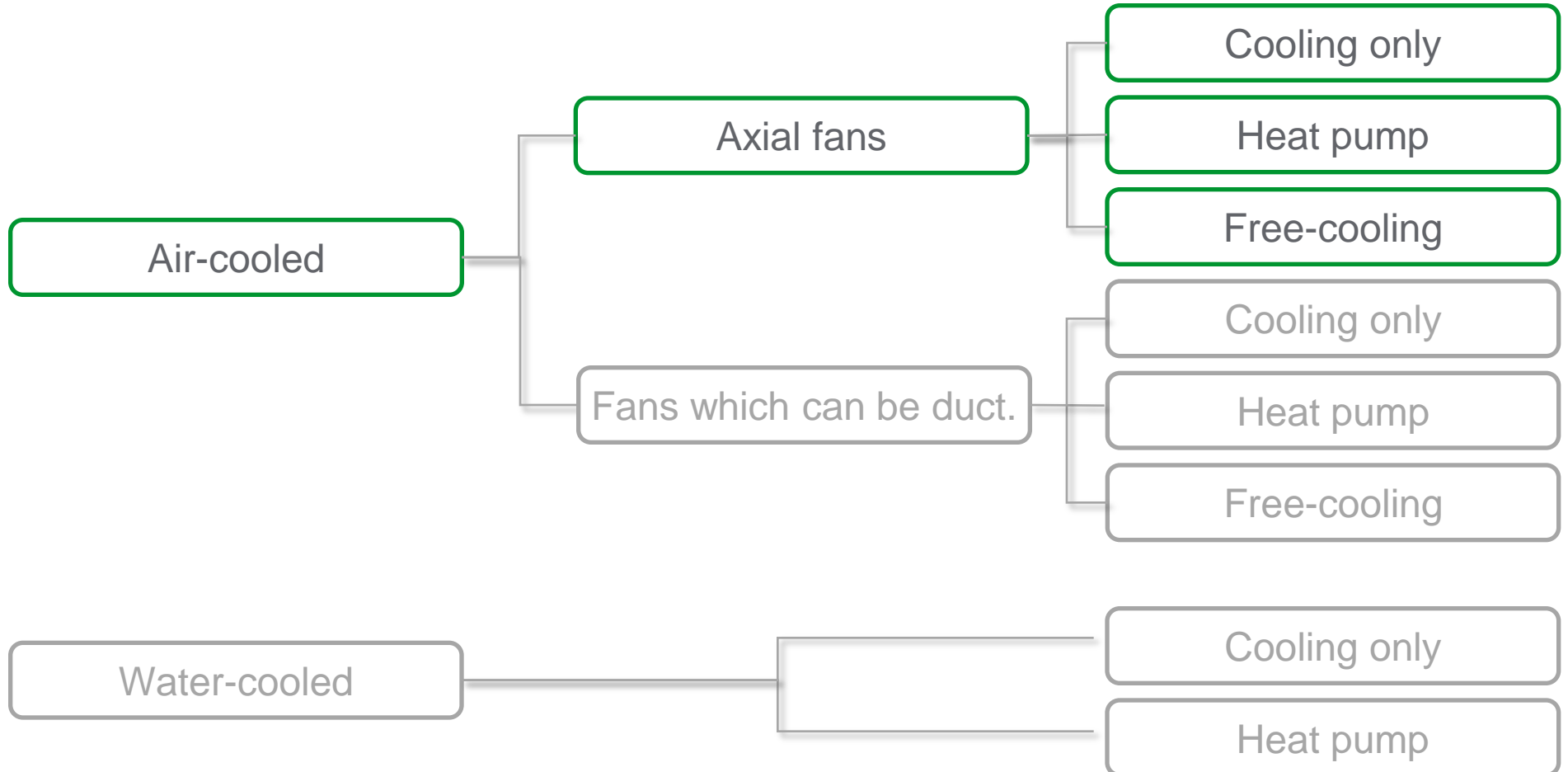
*some options/models may not be available



Offer management



Aquaflair Range



Product Organization: SKU

T



T: technological

R



R: rotary scroll

A



A: air-cooled

C



C: cooling only

F: free-cooling

H: heat pump

Aquaflair

Uniflair TRAC, TRAF and TRAH

Air-cooled chillers, free-cooling chillers and heat pumps with scroll compressors

120-350kW