2010 Product Innovations

PROD-CMS001-E4

Understanding your business needs

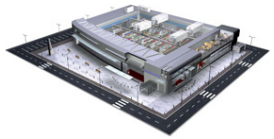
Introduction

Lodging

Repeat customers are the measure for brand loyalty.

A satisfied customer is sure to come back

- Guest comfort
- 
- Acoustic comfort
- Energy efficiency



Retail

When customers are comfortable they linger longer and spend more.

- Temperature and humidity control
- Customer comfort
- 
- Environmental leadership

Industry

Process productivity depends on reliable equipment and system.

- Energy savings
- Single source responsibility
- 
- Reliability

Office Buildings

One of your most important business assets is invisible: it is called Air.

- Indoor air quality
- System optimization
- Green buildings
- 

2010

Trane Focus

Efficient and Sustainable systems

Efficiency

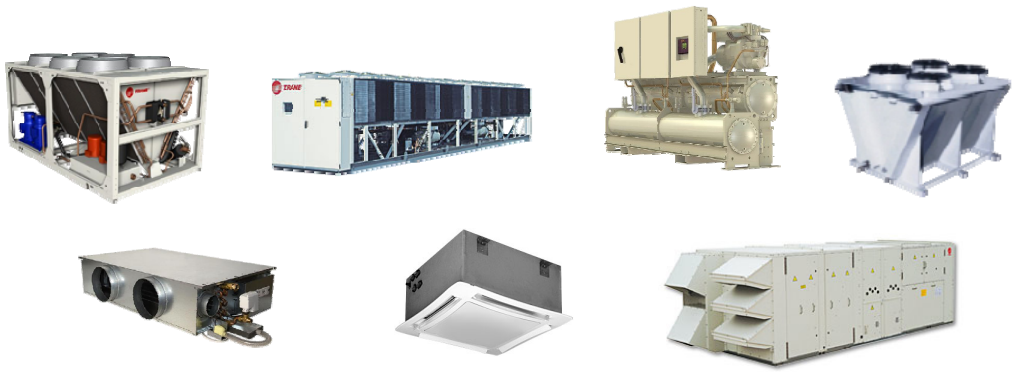
Applications

Controls

Integration

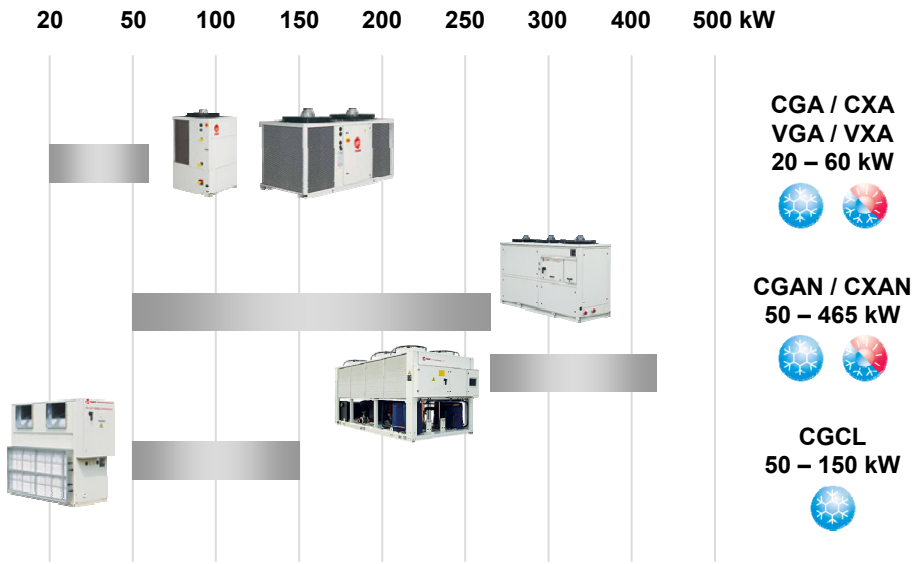
Acoustics

Products



Air cooled scroll chillers

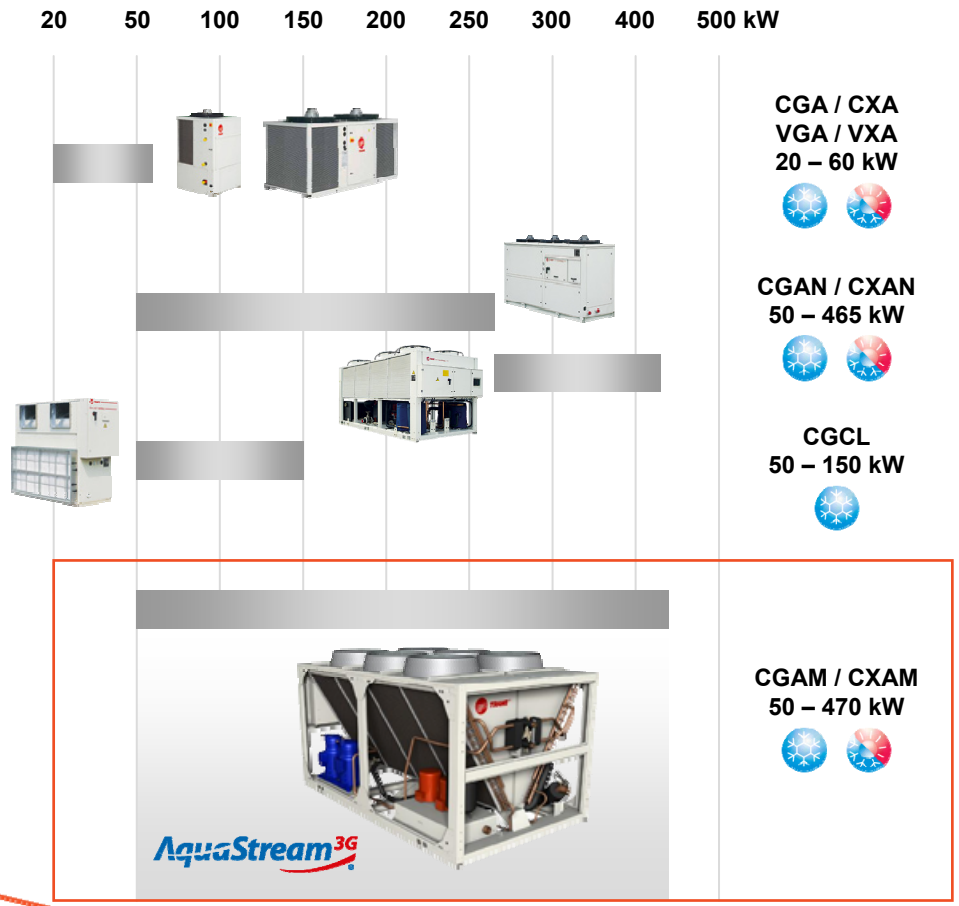
Range overview



- **20 to 465 kW**
- **R407C refrigerant**
- **Cooling only and heat pump**
- **Axial fan**
  - Standard
  - With static pressure
- **Centrifugal fan (CGCL)**
- **Hydraulic module**
- **Buffer tank**
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

Air cooled scroll chillers

New in 2010



AquaStream 3G

- **50 to 470 kW**
- **R410A refrigerant**
- **Cooling only and heat pump**
- **Class A energy efficiency**
  - EER > 3.1
  - ESEER > 5.0
- **3 Acoustics levels:**
  - Standard
  - Super quiet: -5 dB(A) Vs. Standard
  - Comprehensive Acoustic Package: -8 dB(A) Vs. Standard
- **Trane CH530 Adaptive control**
- **Energy saving options**
  - Partial heat recovery
  - Total heat recovery
  - Power factor correction (0.95)
- **Optional hydraulic module**
  - Single or dual pump
  - Standard or high pressure head
  - Buffer tank
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

Air cooled scroll chillers

New in 2010 - AquaStream3G

1. Reliability

- Trane knowledge and experience
- Scroll compressor technology
- Advanced Finite Element Analysis
- Extended testing
- Rigorous quality control

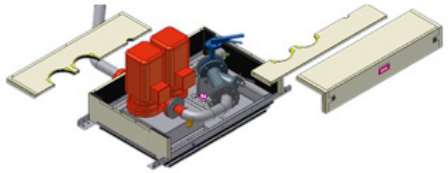
2. Energy efficiency and acoustical performance, without compromise

- Optimized compressor design
- Fans specific design
- Electronic expansion valve
- Advanced controls

CGAM / CXAM

3. Ease of installation

- Plug and play concept
- Highly customized
- Factory fitted options

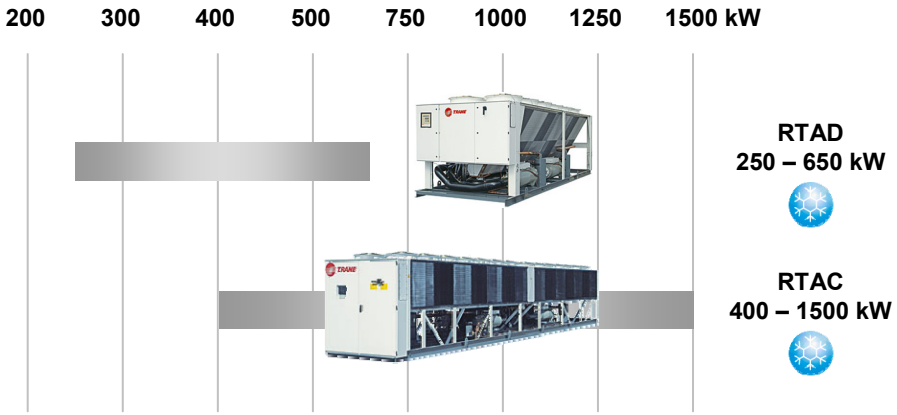


4. Cost of ownership

- Low energy consumption and high reliability
- Energy saving options
- Adaptive control and system integration

Air cooled helical rotary chillers

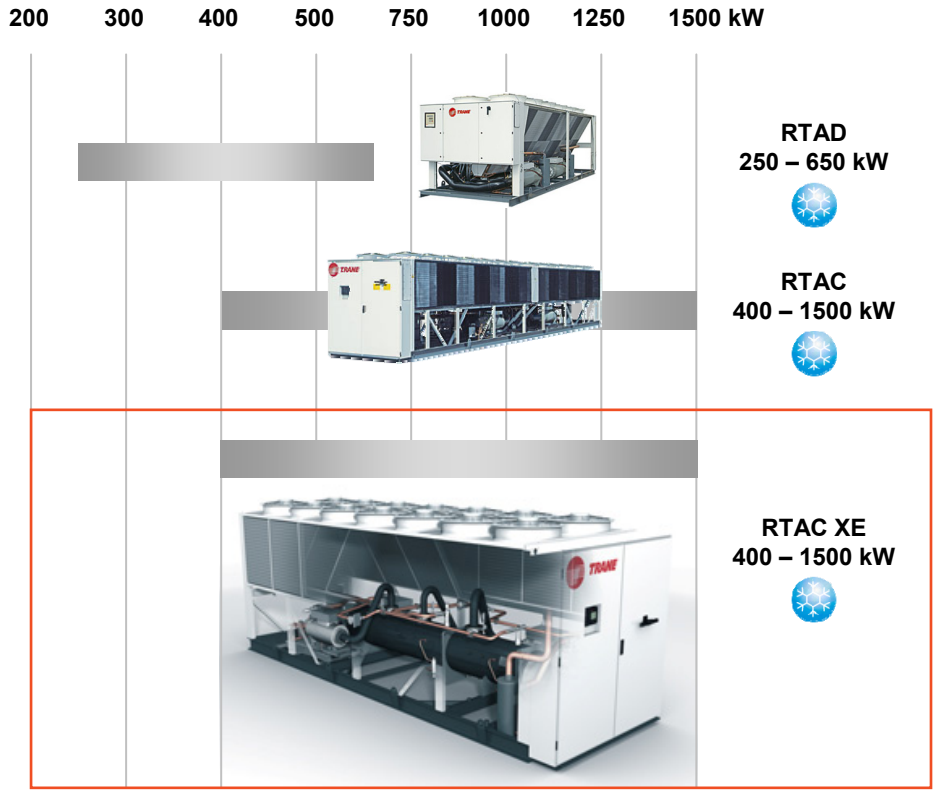
Range overview



- **250 to 1500 kW**
- **R134a refrigerant**
- **Cooling only**
- **Axial fan**
  - Standard
  - With static pressure
- **2 efficiency levels**
  - Standard
  - High efficiency
- **2 Acoustic levels:**
  - Standard
  - Low noise: -3 dB(A) Vs. Standard
- **Trane CH530 Adaptive control**
- **Heat recovery (RTAD)**
  - Total
  - Partial
- **Free cooling (RTAD)**
- **Hydraulic module (RTAD)**
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

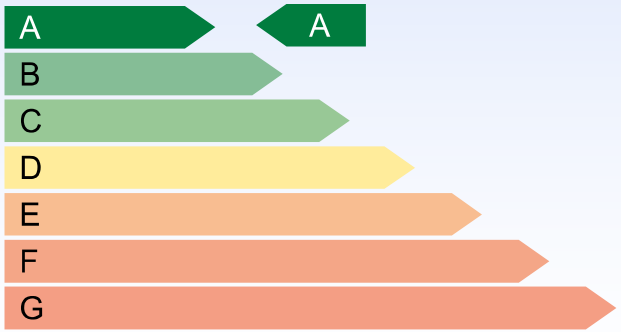
Air cooled helical rotary chillers

New in 2010



RTAC EXtra Efficiency

- 420 to 1520 kW
- R134a refrigerant
- Cooling only
- Class A energy efficiency
  - EER > 3.1
  - ESEER > 4.9



Air cooled helical rotary chillers

New in 2010 - RTAC XE

1. Reliability

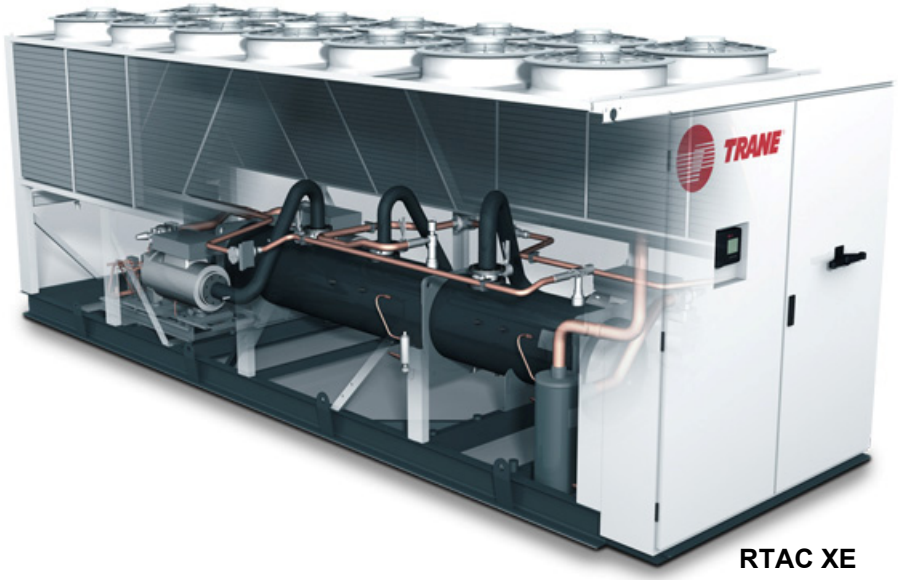
- Trane knowledge and experience
- 6th generation screw compressor
- Extended testing
- Rigorous quality control

2. Energy efficiency

- New version XE → Eurovent class A
- Falling film evaporator
- Advanced controls

3. Cost of ownership

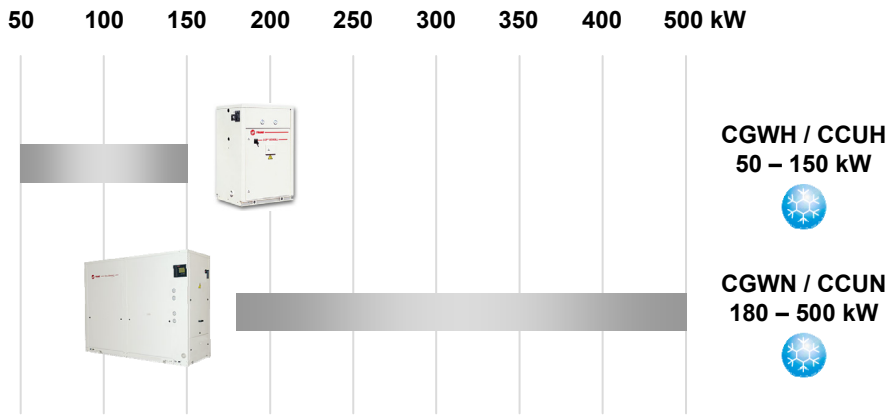
- Low energy consumption and high reliability
- Adaptive control and system integration



RTAC XE

Water cooled scroll chillers

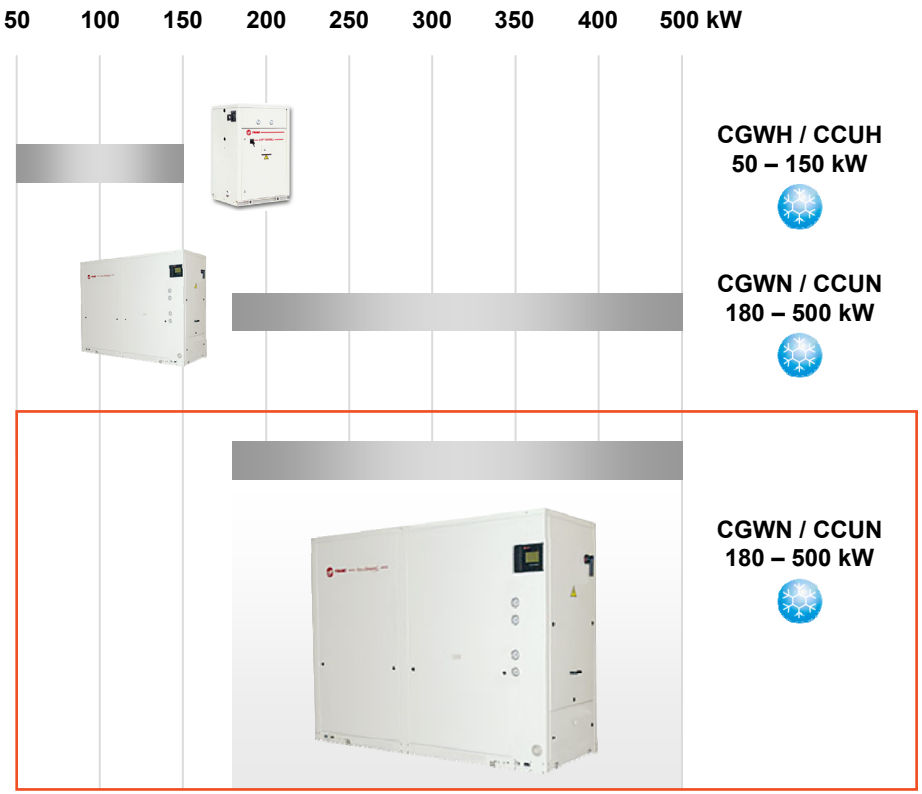
Range overview



- **50 to 500 kW**
- **R407C refrigerant**
- **Operating mode**
  - Cooling only
  - Heat pump function
- **2 acoustic treatments**
  - Standard
  - Compressor sound jacket (-3 dB(A))
- **Hydraulic options (CGWN/CCUN)**
  - Pump package
  - Buffer tank
- **Condenser-less version**
  - CCUH
  - CCUN
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

Water cooled scroll chillers

New in 2010



CGWN/CCUN R410A

- **180 to 380 kW**
- **R410A refrigerant**
- **Operating mode**
  - Cooling only
  - Heat pump function
- **Class B energy efficiency**
  - EER = 4.76
- **2 acoustic treatments**
  - Standard
  - Compressor sound jacket
- **Trane CH530 Adaptive control**
- **Hydraulic options**
- **Pump package**
- **Buffer tank**
- **Condenser-less version (CCUN)**
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

Water cooled scroll chillers

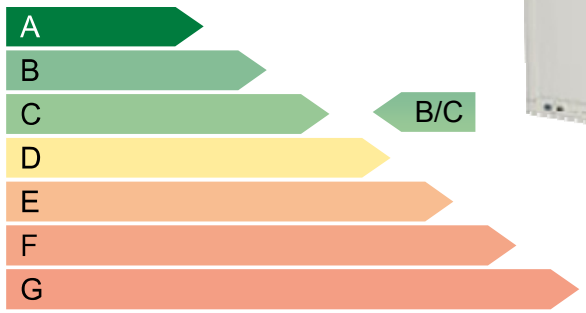
New in 2010 - CGWN / CCUN R410A

1. Reliability

- Trane knowledge and experience
- Scroll compressor technology
- Extended testing
- Rigorous quality control

2. Energy efficiency

- Optimized compressor design
- Electronic expansion valve
- Advanced controls



CGWN / CCUN

3. Ease of installation

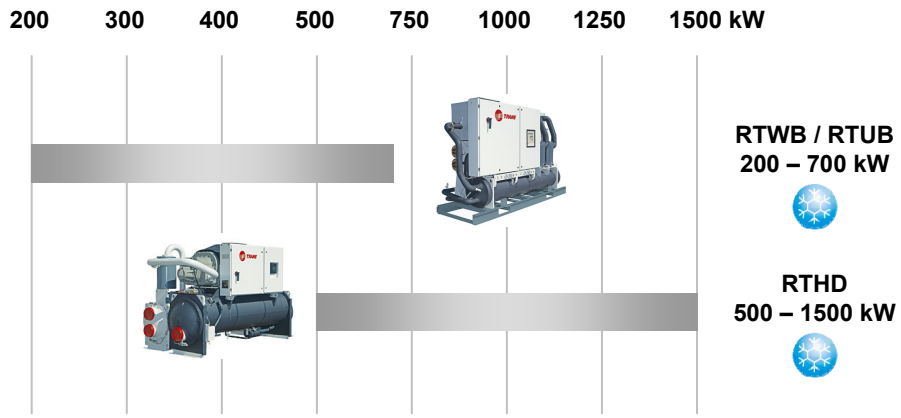
- Single connection
- Fit into a single door
- Integrated pump package

4. Cost of ownership

- Energy saving capability: water to water heat pump, heat recovery, etc.
- Adaptive control and system integration

Water cooled helical rotary chillers

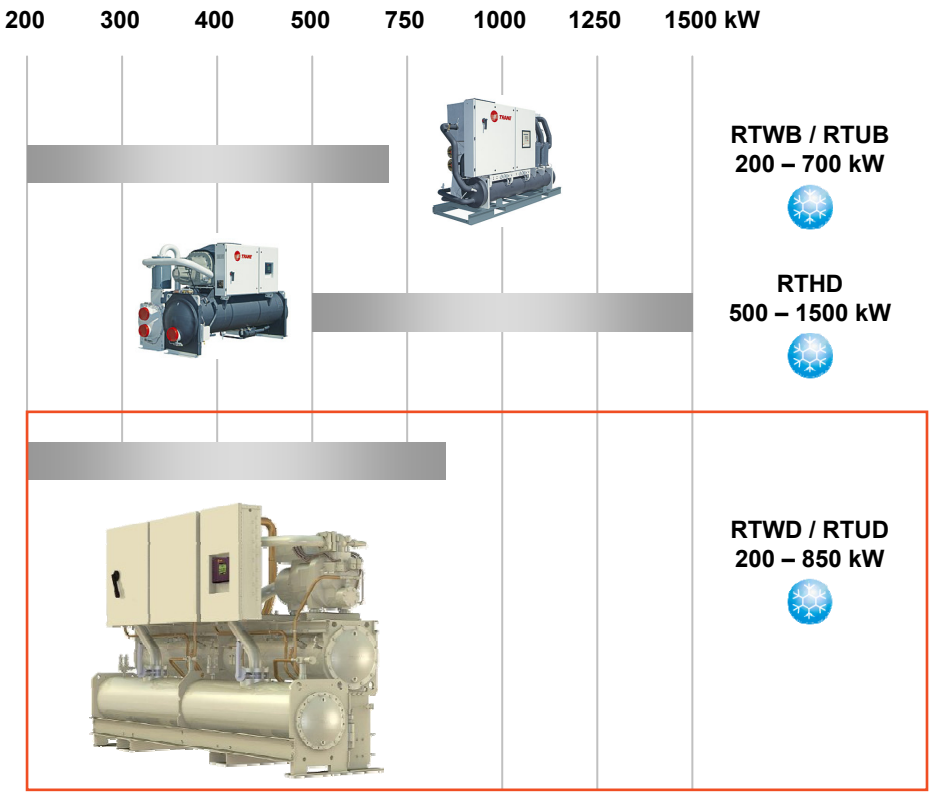
Range overview



- **200 to 1500 kW**
- **R134a refrigerant**
- **Cooling only**
- **RTWB double circuit from 200 to 800kW**
  - EER from 4.0 to 4.6
  - ESEER from 5.1 to 5.7
- **RTHD single circuit from 500 to 1500 kW**
  - EER from 5.4 to 6.4
  - ESEER from 6.1 to 7.2
- **Trane CH530 Adaptive control (on RTHD)**
- **Condenser-less version RTUB up to 800 kW**
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

Water cooled helical rotary chillers

New in 2010



RTWD/RTUD

- **200 to 850 kW**
- **R134a refrigerant**
- **Operating mode**
  - Cooling only
  - Heat pump function
- **Class A energy efficiency**
  - EER from 5.12 to 5.6
  - ESEER from 5.8 to 7.2
- **3 efficiency levels**
  - Standard
  - High
  - Premium
- **3 acoustic versions**
- **Trane CH530 Adaptive control**
- **Condenser-less version (RTUD)**
- **Communication ability**
  - Lon
  - Modbus
  - BACnet

Water cooled helical rotary chillers

New in 2010 - RTWD / RTUD

1. Reliability

- Trane Screw compressor technology
- Unequaled reliability
- Advanced Finite Element Analysis
- Rigorous quality control

2. Energy efficiency

- Uncompromised performance at full load and part load through use of proven components
- LEED Certification – up to 3 points granted

3. Ease of installation

- Single connection
- Fit into a single door

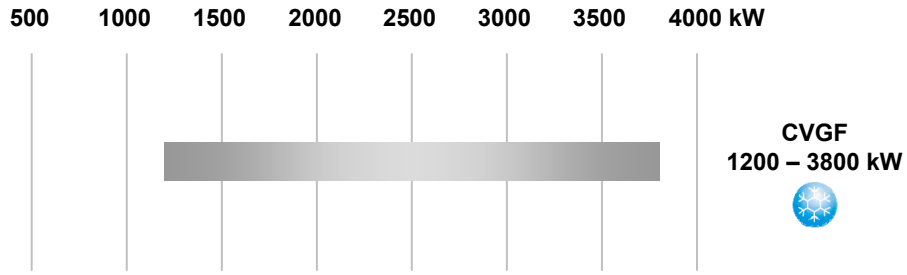
4. Cost of ownership

- Low energy consumption and high reliability
- Energy saving capability: water to water heat pump, heat recovery, etc.
- Adaptive control and system integration

RTWD / RTUD

Water cooled centrifugal chillers

CVGF

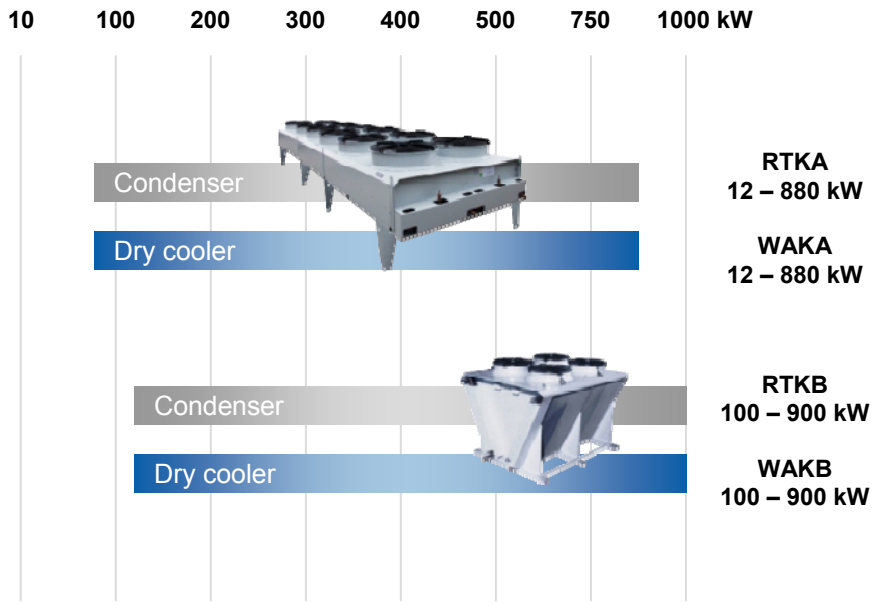


CVGF

- **1200 to 3800 kW**
- **R134a refrigerant**
- **Cooling only**
- **Class A energy efficiency**
  - EER from 5.6 to 6.5
  - ESEER from 5.8 to 7.9
- **Single circuit**
- **Centrifugal compressor**
  - Semi-hermetic
  - Double stage
- **NEW control Tracer Adaptiview offering various communication capabilities**

Condensers & Dry coolers

Range overview



RTKA
12 – 880 kW

WAKA
12 – 880 kW

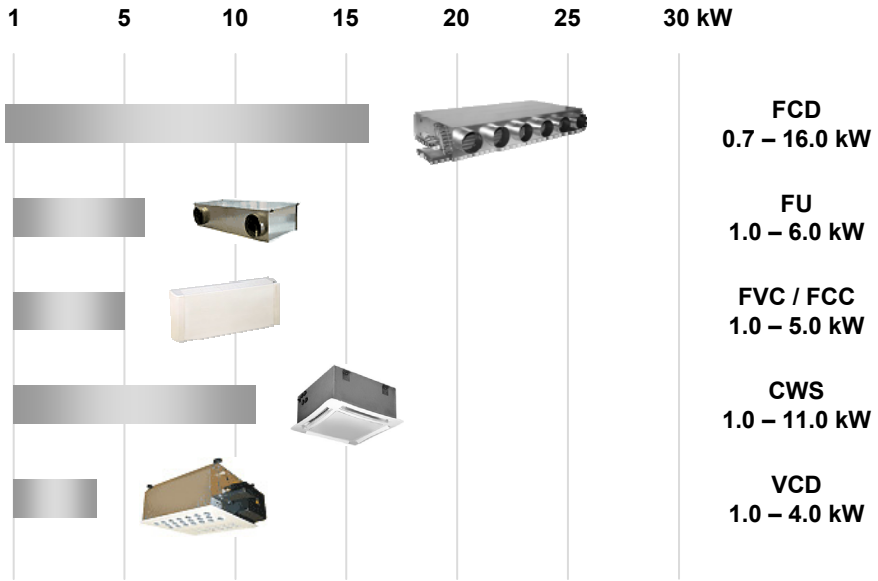
RTKB
100 – 900 kW

WAKB
100 – 900 kW

- **Air cooled condensers**
- **R407C and R134a**
  - RTKA = Horizontal coil
  - RTKB = V coil
- **Dry coolers**
  - WAKA = Horizontal coil
  - WAKB = V coil
- **3 different fan speeds available**
- **Various coil materials available**

Water Terminals

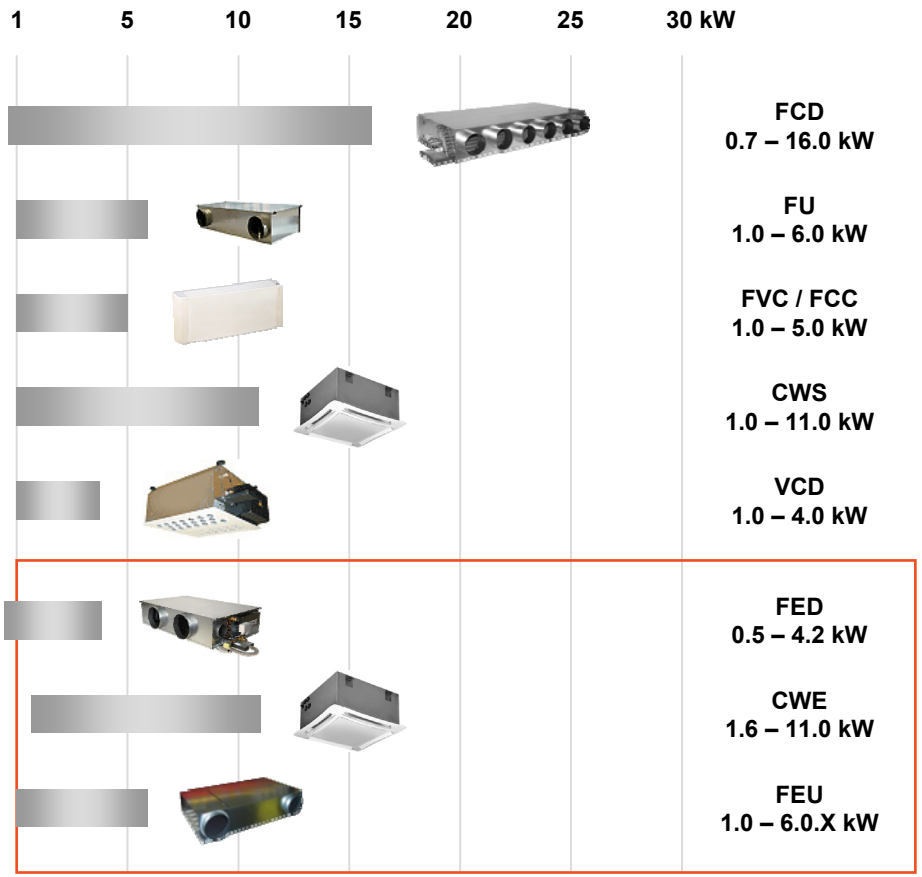
Range overview



- **0.7 to 30 kW**
- **Applications covered**
  - Offices
  - Hotels
  - New or existing buildings
- **Concealed or cabinet units**
- **With static pressure available**
  - Up to 80 Pa
  - Various duct configurations
- **2 or 4 pipes**
- **Low sound level**
- **Controls**
  - Dedicated Trane ZN523
  - Factory configured and mounted

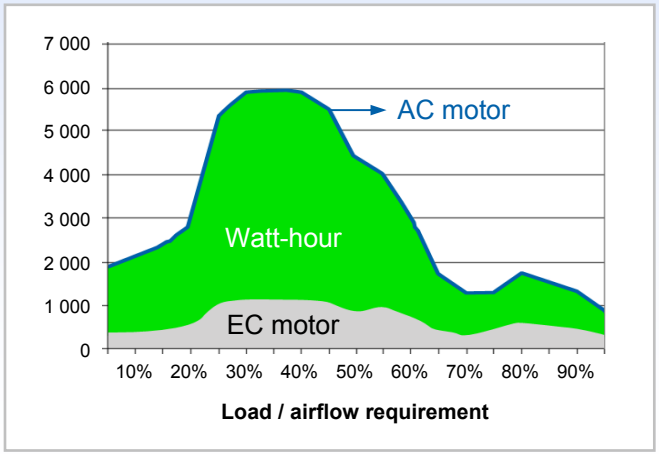
Water Terminals

New in 2010



EC motor terminals

- **Electronically Commuted Motor**
  - Up to 66% less consumption
  - Variable Speed
- **Controls**
  - Dedicated Trane ZN525
  - Factory configured and mounted



Water Terminals

New in 2010 – EC motor terminals

1. Innovation

- EC motor technology
- Optimized fan and housing design for optimized airflow and sound
- Continuously variable fan speed

2. Benefits

- Reduced electricity bills up to 66%
- Improved reliability
- Improved comfort
- Improved sound signature without perceivable fan speed shift

3. Trane controls make the best utilization of EC motor technology

- Monitors water flow and fan speed
- Field fan speed adjustment without electrical hardware changes
- Turn Off EC motor power supply saves additional Watts when unoccupied

Sustainable development

Trane response
EC motor on all chilled water terminals

CWE **=**
CWS with EC motor

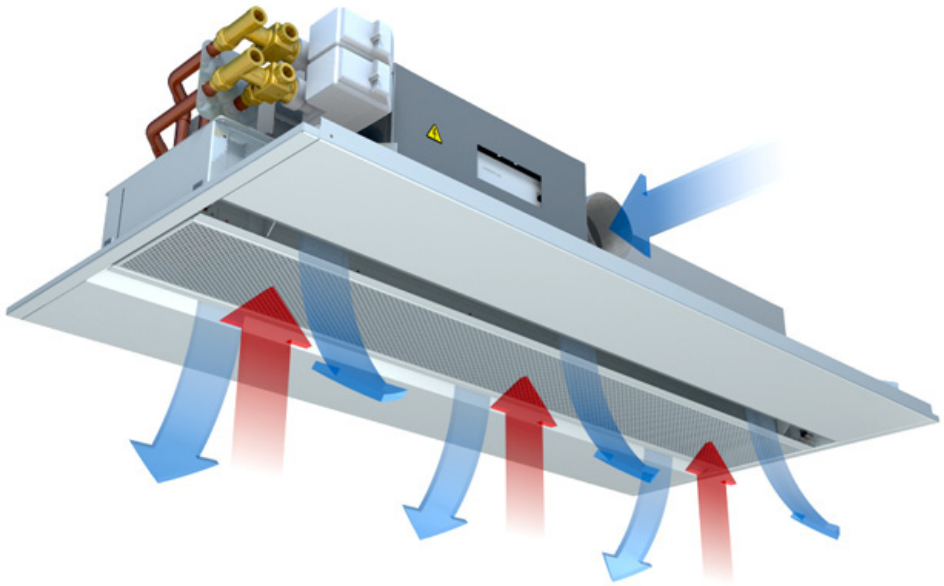
FED **=**
FCD with EC motor

4. High return on investment

- Lower consumption means higher value for easier selling or renting
- EC motor technology increases standing of buildings

Water Terminals

New in 2010



Active Chilled Beams

- **1200 to 3600 mm**
  - 5 coils length
  - 4 width
- **Compatible with standard ceiling tile dimensions**
- **Compatible with various ceiling structures**
  - T Bars
  - Fineline
  - Plaster board
- **2 or 4 pipes**
- **Right or left hand connections**
- **Side or end air entry plenum**
- **Hinged front panel**
- **Factory mounted controls**
  - Trane ZN523
  - 2 or 3 way valve package (hot wax)

Water Terminals

New in 2010 – Active Chilled Beams

1. Efficient operation

- No power consumption
- Extended use of free cooling with water and primary air temperature around 14°C
- Best heat recovery via primary air and low hot water temperature

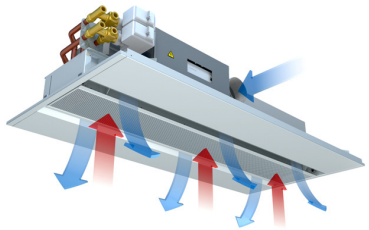
2. Improved Hygiene and comfort

- No accumulation of dirt and bacteria in difficult access areas
- Low sound signature
- No sound shift
- Coanda air diffusion avoids cold air drafts and creates homogeneous temperature mixing

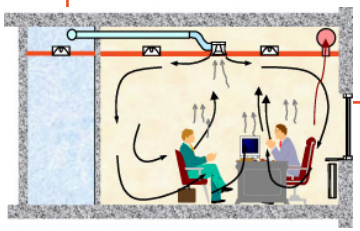
3. Long life cycle

- No wearing parts
- Extended maintenance intervals
- Filtering and CO2 control at the Air Handler level

BAC **=**
Beam Active Concealed



ZN523 **with**
condensation safety module

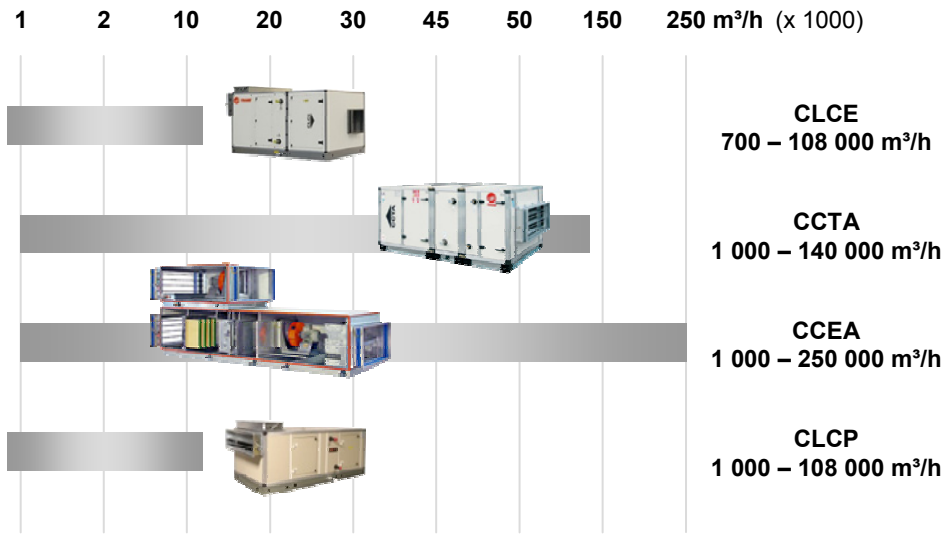


4. Optimum ambient temperature control

- Factory configured and mounted ZN523 controller with water valves
- Return air temperature sensor for best ambient temperature control
- No condensate safety operation module avoids water drips

Air Handling units

Range overview



CLCE

- Comfort & Hospital applications
- CO4 Compliant
- 25 & 50 mm panels
- Factory Mounted controls

CCTA

- Comfort & Hospital applications
- High Flexibility
- 25 & 50 mm panels
- Eurovent certified

CCEA

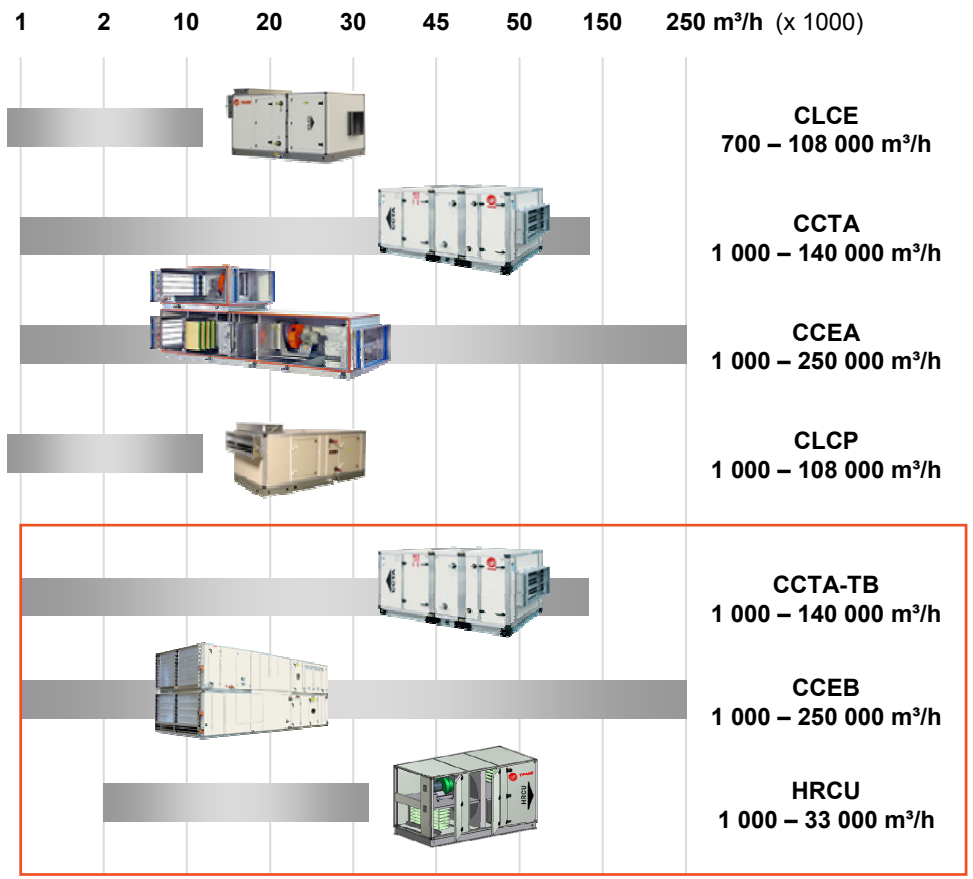
- Comfort, Hospital and Industrial applications
- 30 & 50 mm panels
- High quality & reliability
- Eurovent certified

CLCP

- Comfort & Hospital applications
- 25 & 50 mm panels
- Eurovent certified

Air Handling units

New in 2010



- **CCTA - TB**
  - Thermal Break profiles
  - Hygienic concept
  - 40 & 60 mm panels
  - T2/TB2 - Eurovent certified
- **CCEB**
  - Comfort, Hospital and Industrial applications
  - 50 mm panels
  - High quality & reliability
  - Eurovent certified
- **HRCU**
  - Comfort & Hospital applications
  - Heat recovery as standard
  - Factory Mounted Controls as standard
  - Eurovent certified

Air Handling units

New in 2010

1. High performances

- Framework with thermal break
- Panels with thermal break
- T2/TB2 Eurovent certified
- Smooth internal walls

2. Reliability & Flexibility

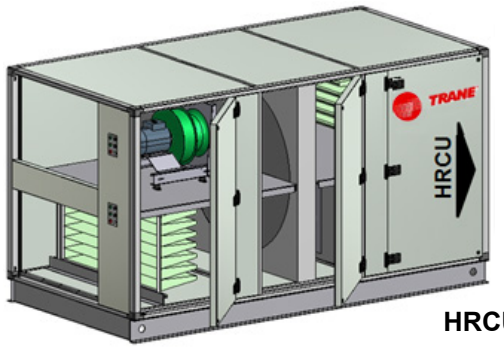
- Improved Eurovent classes
- High built quality
- More unit sizes & options

3. Energy efficiency & easy installation

- High efficiency heat recovery device as standard
- Plug fans & VFD as standard
- Advanced controls
- Compact plug and play concept

CCTA-TB

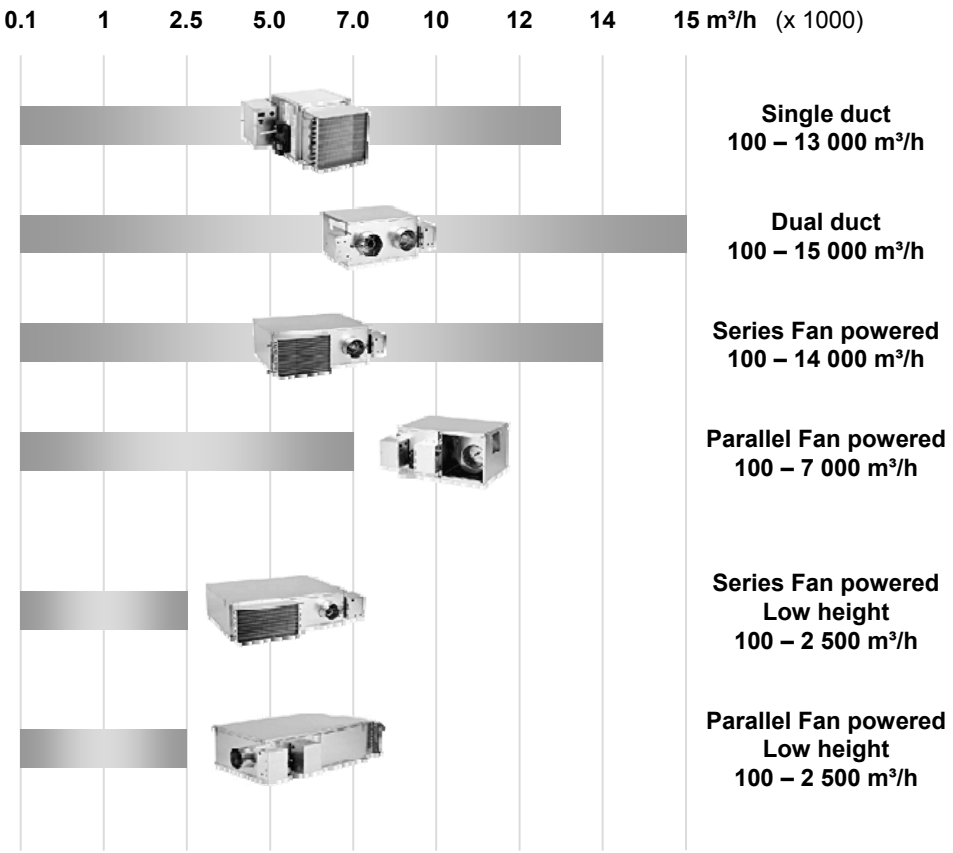
CCEB



HRCU

Air Terminals

Range overview



VariTrane

Variable Air Volume systems

- 350 to 15000 m3/h
- High energy performance
- ARI certified performances
- Double skin option
- High configurations flexibility
- Dedicated Trane factory mounted control

Air terminals

Ceiling diffusers

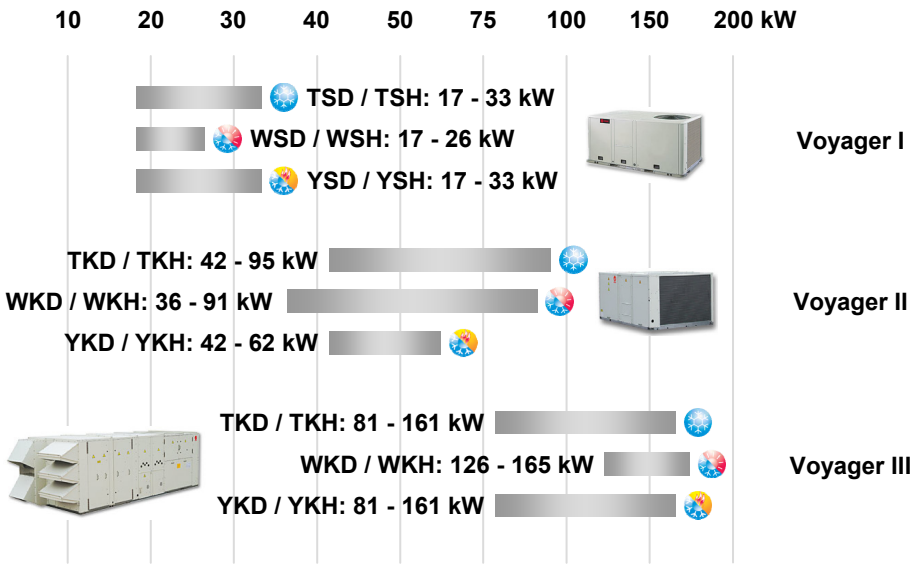
DLEA

DSEA

- **Common options**
  - Insulated or non Insulated plenums
  - Integrated filters G2 to G4 (Option)
  - Damper & air flow meter (Option)
  - Same Aesthetic for exhaust & supply
- **Linear slot diffusers – DLEA**
  - 100 to 1200 m3/h
  - Aluminum, epoxy painted RAL 9010
  - 6 standard lengths 600 to 1800 mm
  - 2 to 4 slots
  - On site adjustable air flow patterns
- **Architectural Square diffusers – DSEA**
  - 100 to 800 m3/h
  - Aluminum, epoxy painted RAL 9010
  - 3 standard sizes
  - 1 to 4 slots
  - Plenum with top or lateral air inlet

Rooftops

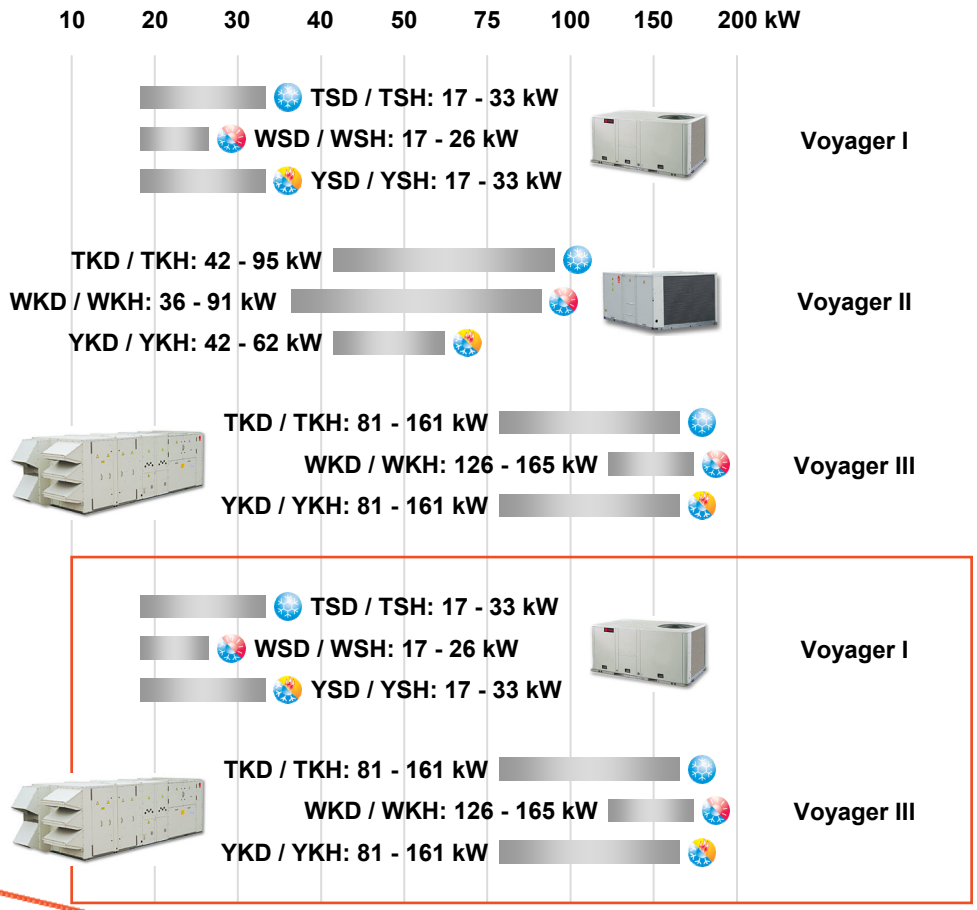
Range overview



- **17 to 165 kW**
- **R407C refrigerant**
- **High efficiency**
- **Versions**
  - Cooling only
  - Heat pump
  - Gas fired
- **Air discharge**
  - Horizontal (H models)
  - Down-flow (D Models)
- **Enthalpy economizer**

Rooftops

New in 2010



Rooftops R410A

- 17 to 165 kW
- R410A refrigerant
- Increased efficiency
  - EER
  - COP
- Heat recovery
  - Plate heat exchanger
  - Recovery wheel
- Modulating gas burner (Voyager III)
- Dual fuel units

Rooftops

New in 2010 – Rooftop R410A

1. Energy efficiency

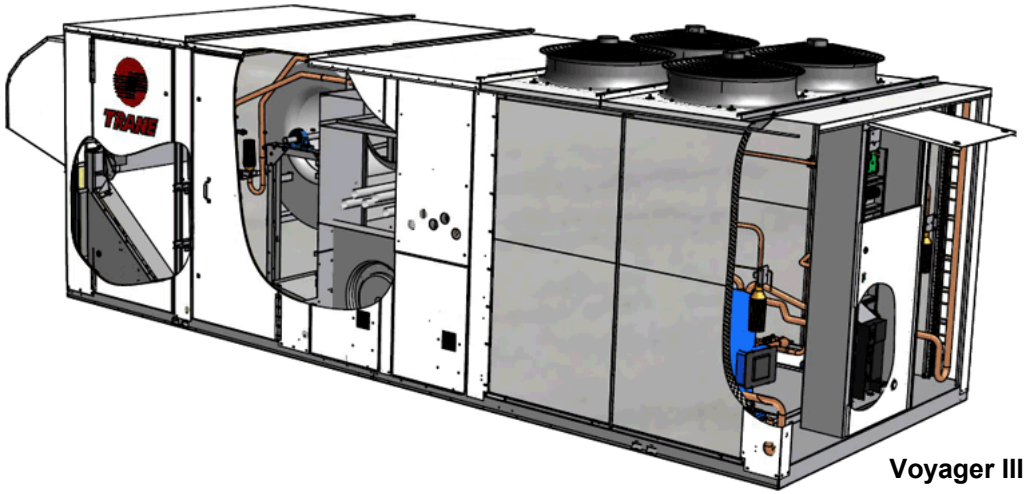
- Optimized compressor, fans & coil design
- Smart defrost heat pump
- Variable supply fan speed option for accurate airflow management

2. Safety

- Separated power & control areas
- Integrated speed inverter
- New “rain shield” access door
- Hinged access doors
- Belt guard

3. Ease of installation

- Easy to replace existing rooftop (footprint unchanged)
- Unit 100% factory tested: No additional field set-up



Voyager III

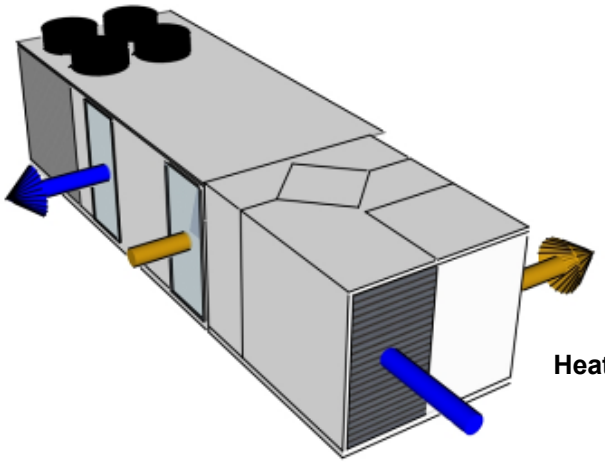
Rooftops

New in 2010 – Energy saving options

1. **Heat recovery module**
   - From 30 to 100% fresh air
   - Technologies for 2 efficiency levels:
     - Plate heat exchanger (50% efficiency)
     - Heat recovery wheel (70% efficiency)

2. **Modulating gas burner (Voyager III)**
   - Modulation from 100% to 30%
   - Condensing burner below 80% load
   - High efficiency (from 96 to 104% according to modulation rate)

3. **Dual fuel unit (Reversible primary heat with gas auxiliary heat)**
   - High heat pump efficiency in mid season operation
   - Use gas heater when heat pump efficiency & capacity decrease in cold periods

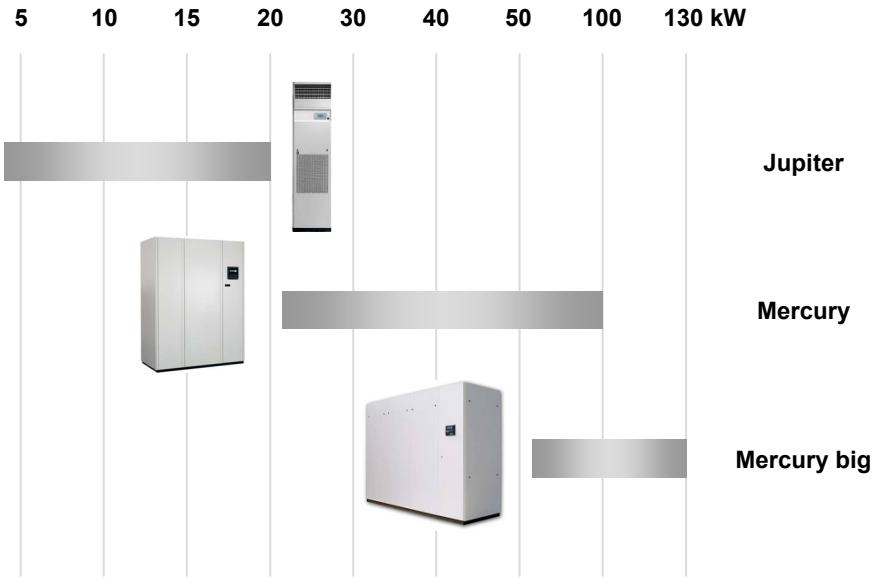


Heat Recovery module On Voyager III

Modulating Gas burner On Voyager III

Close Control Units

Range overview

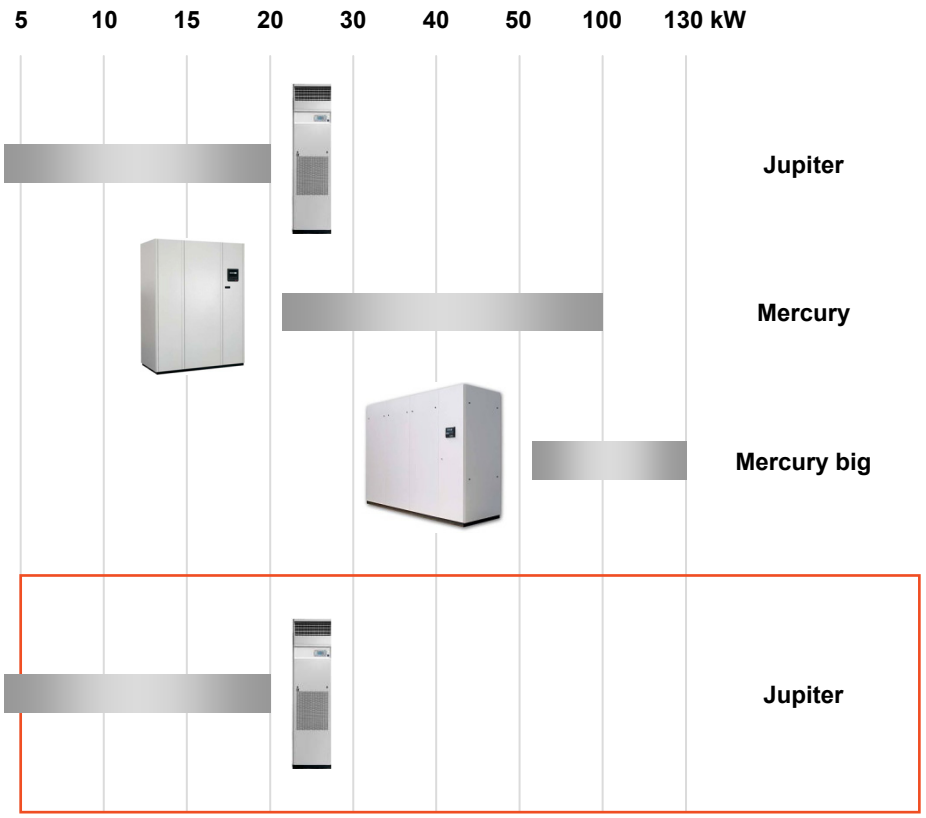


- **5 to 130 kW**
- **4 technologies:**
  - Direct expansion (air- or water-cooled)
  - Chilled water
  - Twin-cool (direct expansion + chilled water)
  - Energy saving (direct expansion water-cooled with indirect free-cooling)
- **EC Motor fan on Mercury Range**
- **Electronic expansion valve**
- **High SHR (close to 1)**
- **Advanced control for BMS integration and high system reliability**
- **Large number of different airflows**

→ ***High efficiency, precision, reliability and flexibility***

Close Control Units

New in 2010



New ***Jupiter*** range with:

- Optional EC motor fan for higher efficiency
- R410A refrigerant on direct expansion circuits
- Optional enhanced electrical heaters (up to 9 kW)

→ *Improved efficiency and flexibility*

Close Control Units

New in 2010 - Jupiter

1. Reliability

- Scroll compressor technology
- Extended testing
- Rigorous quality control
- Trane knowledge and experience

2. Efficiency

- Electronically commutated motor fan
- Electronic expansion valve
- High sensible heat ratio

3. Advanced control

- Easy-to-use interface with graphic display
- Precise monitoring of unit operation
- BMS integration
- Network operation (LAN)
- Compatibility with a number of protocols

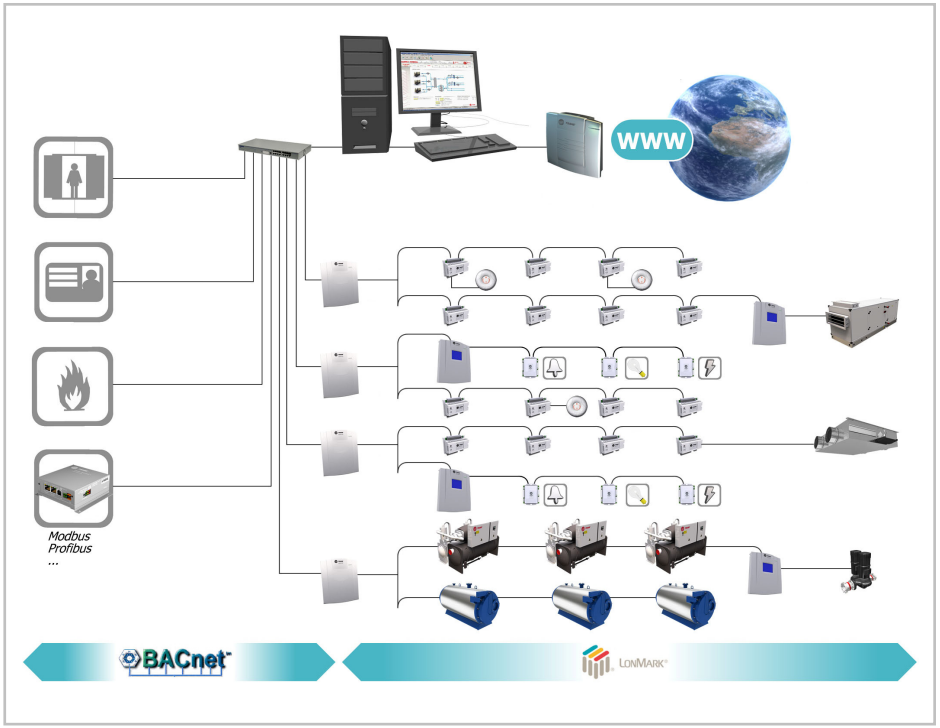
4. Flexibility

- Wide choice of airflow configurations and technologies
- Factory fitted options (modulating electrical or water heating, humidification, dehumidification...)

Jupiter

Controls

Tracer Summit



- Building Management System software for Graphical Operator Workstation front end
- Intuitive user interface based on standard and custom graphics
- Advanced alarm management interface
- Extended system data archiving capability
- User-friendly data point override interface
- Graphical trending capability with data/system event plot
- Multiple user security and level access, filtering system area access
- Alarm processing and event log
- Quick commissioning capability with auto-populating displays
- Integration platform: Supports standard protocols

Controls

Tracer Summit

- **Chiller Plant Control (CPC):** Provides intelligent control and comprehensive chiller system component monitoring
  - Optimizes chiller plant system, reducing energy consumption and maintenance costs
- **Area control:** Coordinates multiple HVAC equipment and ancillaries for a specific area of a building
- **Optimal Start and Stop:** Allows optimization of start/stop time of equipment serving a same area in a building
  - System targets energy savings by continuously analyzing building reaction time, inertia, and adapting equipment schedule while ensuring comfort
- **Timed override:** Allows equipment mode co-ordination when overridden from “unoccupied/stop” to occupied/override mode
- **Trend viewer:** Allows user data tracking data; to overlay alarms, events, and overrides; and to generate trends for selected time periods
- **Variable-air-volume air system (VAS):** Allows optimized coordination of equipment serving an air system
- **Indoor air quality control**

TRANE®

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