



CCE-C

*The new generation of
Custom Air Handling Units
Smart - Efficient - Reliable - Hygienic*





OPTIMUM INDOOR AIR QUALITY WITH THE LOWEST LIFE CYCLE COSTS

As a worldwide leader in the HVAC industry, Trane creates environmentally responsible building solutions that deliver healthy indoor environments with the lowest energy consumptions and lifecycle costs. We execute programs to reduce our own impact on global climate change and help others do the same. In addition, we support green building initiatives by investing resources in the various industry committees and expertise in designing and manufacturing energy-efficient systems for buildings. Whether it is designing, operating or maintaining high performance buildings, Trane can help.

The innovative Custom Air Handling Unit CCE-C range is the result of more than 50 years of experience in air treatment in the most demanding fields combined with the integration of the latest cutting-edge technologies. The CCE-C range has been developed to provide the optimum Indoor Air Quality with the lowest energy consumption, and the highest flexibility, quality and reliability.

The CCE-C custom air handling units are ideal for the following applications :



Office buildings



Hospitals



Data Centers



Transport
industry



Shopping malls



Educational buildings



Pharma



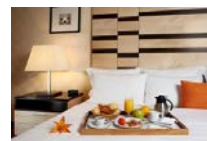
Indoor pools



Airports



Micro-electronics



Hotels



Food Industry

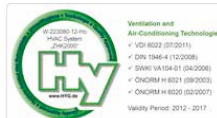
The CCE-C products comply to the CE mark requirements according to the EU regulation 765/2008. They are produced in fully atomized manufacturing facilities which are certified as per ISO 9001:2015 for the quality management and as per ISO 14001:2015 for the environmental process management.

The CCE-C units are selectable with the most advanced design and selection software to meet the exact project specifications, in compliance with the latest energy related regulations, such as the Ecodesign ErP-2018 as per EU 1253/2014.

The performances of CCE-C units and the mechanical features of the casing are Eurovent certified. The units are tested by third party laboratories on regular base, according to the EU-norms EN 13053 and EN 1886.

Specially well adapted for hygiene sensitive applications such as hospitals, pharmaceutical and micro-electronics clean rooms, the CCE-C are available with special Clean Concept options to comply with the most stringent standards such as VDI 6022, DIN 1946-4, SWKI 99-3, ONORM H6020 or the HTM 03-01.

Upon request, Atex units can be supplied for hazardous areas, in compliance to the 2014/34/EU directive.



The CCE-C Range:

- | Performances certified by Eurovent-Certification
- | Airflow : 500 to 150.000 m³/h (0,14 to 42 m³/s)
- | Modular concept, 108 standard sizes
- | Indoor or outdoor versions
- | Hygienic version as per VDI 6022 and DIN 1946 (Option)
- | Unit configuration : horizontal in line, side by side, vertically stacked or vertical
- | Delivery in one piece, in sections or in kit form
- | Fast and easy to assemble and install on site
- | Delivered with or without the integrated controls
- | Perfect accessibility, easy to maintain



Panels and doors built with thermal breaks as standard

Hinges doors and removable panels:

- | 50 mm thickness, same options as for fixed panels
- | Integrated thermal break on doors and door frames
- | Robust door frames in aluminum, powder painted
- | Hinged doors fixed on adjustable hinges made in aluminum painted.
- | Locking system composed of strong quarter turn handles and rotating anti-friction tightening system.
- | Handles with key locks provided as standard in section with rotating parts.
- | Removable panels fitted on strong aluminum frames with butterfly fasteners.
- | Options : Inspection portholes, safety chains, wired lights, open door arrester, end switches....



CCE-C casing panels :

- | Double skin, 50 mm thick
- | Incombustible insulation : 20, 70 or 150 Kg/m³
- | Integrated thermal break profiles as standard
- | Standard inner skin :
 - Material : Galvanized steel
 - Thickness : 1,0 or 1,5 mm
- | Standard outer skin :
 - Material : Galvanized steel
 - Thickness : 0,7, 1,0 or 1,5 mm
 - Anti-corrosion finishing : 130 µm PVC coating
 - Color A47SME (White, close to RAL 9003)
- | Options :
 - Inner and / or outer skin in :
 - Aluminum
 - Stainless steel 304 (V2A)
 - Stainless steel 316L (V4A)
 - Galv. steel + polyester paint
 - Reinforced acoustical insulation
 - Inner skin with anti-microbial coating (AMC)



Casing profiles :

- | Made in Aluminum, protected with a powder paint as standard. (Painted in red)
- | Option : Profiles made in stainless steel

Unit base frame :

- | In galvanized steel, height 80, 100 or 200 mm
- | Options :
 - Powder painted or in stainless steel
 - 80, 100 or 200 mm high counter base frames
 - 150 to 210 mm high adjustable feet with anti-vibration rubber pads.

STANDARD CASING FEATURES

- | 50 mm double skin panels
- | Integrated thermal breaks as standard
- | Incombustible mineral wool insulation
- | 130 µm PVC coating external finishing
- | Powder painted aluminum frames
- | Base frame height 80, 100 or 200 mm
- | Wide choice of materials
- | Smooth internal walls, easy to clean
- | Hinged doors fitted on adjustable hinges
- | Performances according to EN 1886:2017
- Casing strength : D1
- Casing Air leakage : L1
- Casing Transmittance : T2
- Thermal bridging factor : TB2
- Option (09/2019) : TB1
- Casing acoustic reduction : 40 dB



Interior easy to clean

FANS

- | Belt driven FC or BI centrifugal fans
- | Direct driven plug fans with VFD
- | IE2 and IE3 asynchronous motors
- | Premium EC motors – IE4
- | Fan walls



INTEGRATED CONTROLS

- | Programmable modular controller
- | Advanced control software
- | Stand alone or integrated in a BMS
- | Constant or Variable Air Volume
- | Integrated or remote control panels
- | Factory programmed and tested
- | User friendly interface
- | Cloud remote management



HEAT EXCHANGERS

- | Hot water heating coils
- | Chilled water cooling coils
- | DX Refrigerant coils
- | Condensing coils
- | Electric heaters
- | Steam coils
- | Indirect gas heaters



FILTERS

- | Pre-filters : ISO Coarse 30% - 65% / G2,G3,G4
- | Grease filters : ISO Coarse 30% to ISO ePM₁₀ 50% / M5
- | Auto-roll filters : ISO Coarse 50%
- | Bag filters : ISO Coarse 60% to ISO ePM₁ 85% / G4 to F9
- | Compact filters : ISO ePM₁₀ 50% to ISO ePM₁ 85% / G4 to F9
- | Hepa filters E10 to H14 (EN 1822:2009)
- | Activated carbon filters
- | Electrostatic filters : Up to ISO ePM₁ 95% / E10



HEAT RECOVERY DEVICES

- | High efficiency Run Around Coils
- | Cross flow plate heat exchangers
- | Double plate heat exchangers
- | 90% Counter flow plate heat exchangers
- | Thermal wheels : sensible, enthalpic or sorption
- | Accumulator heat recovery system
- | Heat pipe (Option)



OTHER COMPONENTS

- | Dampers, Class 1,2 & 4 (EN 1751)
- | Sound Attenuators
- | Flexible connections
- | Weather louvers and hoods
- | Sand trap louvers
- | Anti frost frames
- | Droplet separators
- | Mixing chambers
- | Integrated heat pump

HUMIDIFIERS

- | Electrode type steam humidifiers
- | Resistance type steam humidifiers
- | Evaporative humidifiers
- | Air washers
- | Atomizing humidifiers



INTEGRATED CONTROLS AND HEAT PUMP SYSTEMS

Make your life easier with CCE-C Air Handling units equipped with integrated and optimized unit controls. The controller software has been developed with optimized sequences of operation to ensure the right indoor air quality with the lowest operating energy consumptions.

Optionally, extract-supply combined CCE-C units can be provided with customized integrated DX cooling or Heat Pump systems as plug and play products.

These options, selected, installed, programmed and tested at the factory will save you a valuable time at all stages of your projects, from the component selection, the purchasing, the coordination, the installation to the commissioning of the units.

Integrated Controls Features :

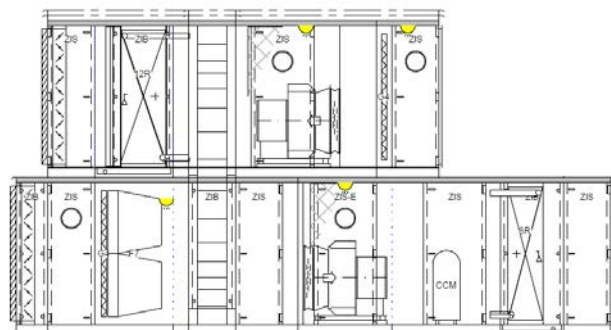
- I Intuitive operation for the end-user use
- I Factory installed, programmed and tested
- I Available for all types of unit configurations
- I Programmable controller with remote digital interface
- I Sensors and actuators factory fitted and wired
- I Stand alone or communicant operation
- I ModBus IP communication protocol as standard
- I Pre-defined operation modes :
 - Constant or Variable Air Volume mode
 - Comfort mode (100% air flow)
 - Eco mode (50% air flow)
 - Free cooling mode
 - Building warm up mode
 - Night purge mode
 - Standby mode
- I Default alarms
- I Week scheduler
- I Standard Options :
 - Energy meter
 - Room interface (Remote control)
 - Filter pressure switches/sensors
 - Air flow control VAV
 - Pressure control CAV
 - Humidity sensors
 - CO2/VOC control
 - Smoke detector
 - Humidifier control
 - Integrated heat pump controls
 - Fan bearings vibration controller
 - 3 way valves for heating and cooling coils
 - Thyristors control for electric heaters
 - Modbus RTU/RS485 module
 - BacNet IP or BacNet MS/TP module
 - Controls quick connect system
 - Climatix IC Remote control via dedicated cloud



Integrated DX cooling and heat pump systems

Features :

- I DX system , Cooling only or reversible operation
- I Fully customizable unit configuration
- I Cooling capacity from 5 to 280 KW
- I Refrigerant : R407C, R410A, R134C
- I Compliant to the pressure equipment directive 2014/68/EC.
- I Designed with all needed components for an optimized and safe operation including :
 - Copeland scroll compressors (1,2 or 3)
 - Air/refrigerant evaporator
 - Air/refrigerant condenser
 - Thermostatic or electronic expansion valve
 - High & Low pressure switches or sensors
 - Buffer tank
 - Filter dryer
 - Oil sump heater
 - Standard Options
 - Digital scroll for modulating capacity
 - Water condenser (pool application)
 - Hot gas bypass



The basic construction of the CCE-C units provide all features required to ensure a perfect interior cleanliness and an optimal supply air quality : Excellent casing air-tightness, optimum filter frames airtightness, smooth internal walls with no dust traps, components easily removable and cleanable, efficient inclined drain pans...

But hygiene sensitive applications such as clean rooms in hospitals, pharmaceutical, micro-electronic or food industries require enhanced features to prevent contamination in the air stream. For health care applications, the CCE-C can be supplied with particular options to comply to the most stringent hygiene standards such as VDI 6022, DIN 1946-4, the HTM 03-01 or SWKI VA104-01.

Furthermore, additional options have been developed to comply to particular project specifications.



3 sloped drain pans compliant to VDI 6022 & DIN 1946



Easily removable fan-motor groups



Disinfection sections with UVC lamps



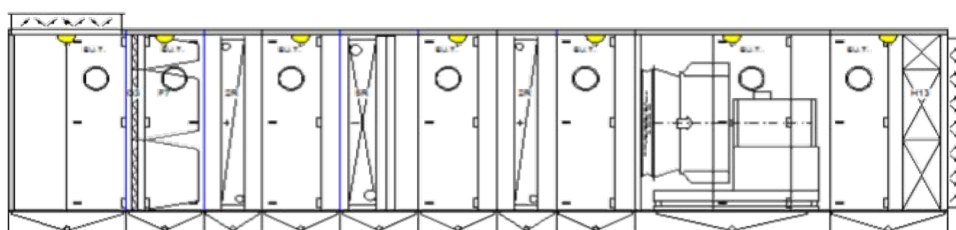
FILTERSAFE Airtight HEPA filter frames



Dampers Class 4 as per EN 1751 and DIN 1946



Anti-Microbial Coating (AMC)



Fully washable hygienic units with inclined floor



CCE-Compact :

- Specially designed for comfort applications
- 3 standardized plug and play units
- Airflow from 1000 m³/h (0,27 m³/s) to 6500 m³/h (1,8 m³/s)
- Indoor and outdoor versions
- Plate heat exchanger or thermal wheel
- Integrated controls as standard
- Plug fans with premium EC motors
- M5 or F7 bag filters
- Optional heating and cooling coils
- Quick and easy to install and commission
- Eurovent certified performances



CCE-Flat :

- Specially designed for false ceiling installation
- 6 unit sizes, 50 mm panels – Very low sound levels
- From 700 m³/h (0,19 m³/s) to 3600 m³/h (1,0 m³/s)
- Unit overall height : 405 and 557,5 mm
- Access to components from bottom with removable panels or hinged doors.
- High efficiency plug fans with EC motors
- Optional plate heat exchanger or run around coils
- Fully customizable unit configuration
- Eurovent certified performances



CCE-Flat : The only false ceiling unit on the market fully customizable, Eurovent certified with 50 mm panels.



CCE-Pool :

- Specially designed for indoor pool applications
- Eurovent certified performances
- Integrated controls as standard
- Interior completely treated against corrosion
- CCE-C Pool Spa : for pool up to 110 m²
 - Vertical configuration, indoor installation
 - 3 unit sizes, up to 5200 m³/h (1,45 m³/s)
 - Double plate heat exchanger 90% efficiency
 - 3 versions available : Basic, Dry and Cooling
- CCE-C Pool Olympic : For pool up to 600 m²
 - Horizontal configuration, indoor installation
 - Fully customized dimensions & configuration
 - Air flow up to 37,000 m³/h (10,2 m³/s)
 - Single plate heat exchanger
 - 3 versions available : Basic, Dry and Cooling



ASEPSIS:

- Specially designed for the food industry
- Free cold bridge casing design, adapted for very low supply air temperature
- Unit Interior fully washable with inclined floor and rounded corners
- 50 to 100 mm fiber glass panels insulated with polyurethane foam.
- Customizable dimensions and configuration
- All components easily removable and cleanable
- Thermal classes : T1/TB1 as per EN 1886





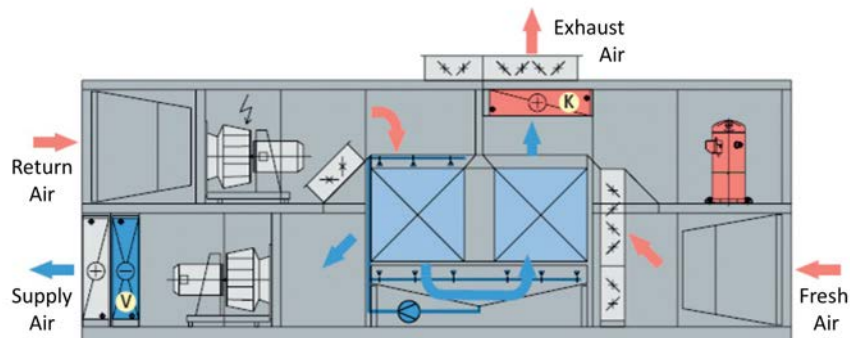
CCE-Cleanline

- Specially designed for operating theaters & clean rooms
- Vertical configuration, indoor installation
- Integrated controls, Plug and play concept
- Delivery in one piece (Monobloc)
- 4 unit sizes, up to 10,000 m³/h (2,7m³/s)
- Exhaust air fan included
- Final filter up to H14 efficiency (EN1822)
- Steam Humidifier (Option)
- Integrated cooling / heat pump system (option)
- Compliant to hygiene standard : VDI 6022, DIN 1946-4
- Eurovent certified performances



CCE-PAC

- Specially designed for green buildings
- High efficiency packaged unit
- Advanced Integrated controls
- Delivered ideally in one piece, plug & play concept
- Indoor and outside installation
- 4 unit sizes, up to 25000 m³/h (6,95 m³/s)
- Customizable dimensions upon request
- Double plate heat exchangers with efficiency > 80%
- Integrated spray adiabatic cooling system
- Integrated Cooling / Heat Pump system (Option)



K: Condenser
V: Evaporator

Eurovent Certified Performances

The purpose of Eurovent Certification Programs is to create a common set of criteria for the rating of products. Through specification of certified products, the engineer's tasks become easier, since there is no need to carry out detailed comparison and performance qualification testing. Consultants, specifiers and users can select products with the assurance that the catalogue data are accurate. The following standards shall be used as a basis for these tests:

- EN 1886: Mechanical performances
- EN 13053: Rating and performance for unit's components and sections.

Mechanical characteristics according to EN 1886 :

- Casing strength (CS)
- Casing air leakage (CAL)
- Filter bypass leakage (FBL)
- Thermal transmittance of the casing (TT)
- Thermal bridging factor (TBF)
- Acoustical insulation of casing

Unit performances according to EN 13053:

- Air flow - Available static pressure - power input
- Octave band in-duct sound power level
- Airborne sound power level
- Heating and cooling capacity
- Heat recovery performances
- Pressure loss on water side

Eurovent certified classes of the CCE-C units :

Mechanical classes certification as per EN 1886	Best class	→					Lowest class	CCE-C	CCE-C TB1 (*)																		
Casing Strength Max deflection mm/m	D1 4	D2 10	D3 >10						D1	D1																	
Casing Air Leakage Max air leakage l/s/m² @ +700 Pa Max air leakage l/s/m² @ -400 Pa	L1 0,22 0,15	L2 0,63 0,44	L3 1,9 1,32						L1	L1																	
Filter Bypass Leakage Max leakage of nominal air flow %	F9 0,5	F8 1,0	F7 2,0						F6 4,0	G1 to F5 6,0	F9	F9															
Casing Thermal Transmittance Max U transmittande W/m²/K	T1 0,5	T2 1,0	T3 1,4	T4 2,0	T5 >2			T2	T2																		
Thermal Bridging Factor Kb Mini	TB1 0,75	TB2 0,60	TB3 0,45	TB4 0,30	TB5 <0,3			TB2	TB1																		
Casing Acoustic Attenuation	<table><tr><td>Fréquences (Hz):</td><td>125</td><td>250</td><td>500</td><td>1000</td><td>2000</td><td>4000</td><td>8000</td><td>Global</td></tr><tr><td>Atténuation (dB)</td><td>19</td><td>28</td><td>30</td><td>31</td><td>32</td><td>34</td><td>34</td><td>40</td></tr></table>									Fréquences (Hz):	125	250	500	1000	2000	4000	8000	Global	Atténuation (dB)	19	28	30	31	32	34	34	40
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(*) : Available from 09/2019

Factory Acceptance Tests

Upon request, factory acceptance tests can be organized to confirm the announced performances of units specifically selected and designed for particular projects.

Most common features checked in FAT :

- Air flow – External Static Pressure
- Internal components air pressure drops
- Energy consumption
- Casing Air leakage
- Casing strength
- Radiated sound levels
- Unit vibration levels





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