

# COOLSTREAM S·T·A·R

## DESCRIPTION:

CoolStream is an evaporative cooling, ventilation and air conditioning system. Its operating modes range from pure summer cooling through to all year conditioning of the internal space.

## APPLICATIONS:

CoolStream S·T·A·R systems are well suited to industries such as plastics, metal or food and for installation in warehouses, shopping centres, leisure and exhibition centres.

## FEATURES AND BENEFITS:

Environmentally safe, with low initial and very low running costs (up to seven times more efficient than conventional air conditioning), CoolStream is a reliable system with good green credentials, using proven, non-complex technology. It provides 100% cool and fresh outdoor air in summer, comfortable warm air in winter and draught-free ventilation throughout the year with a high level of air quality.

Technical data may be found on the back page.



## KEY FEATURES

### Low initial, operating and maintenance costs

Consumption of only around 1 kW and 50 litres of water per 2.8 m³/s or 10,000m³/h of supplied air, providing up to 30kW of cooling.

### Refrigerant free

There are no climate-damaging refrigerants such as CFCs needed for the cooling process.

CoolStream conforms to

## VDI 6022

("Hygienic Requirements for Ventilation Systems and Units for Internal Spaces").

CoolStream provides

# 100%

cool and fresh outdoor air in summer and does not recirculate used air. In the other seasons outdoor air is mixed with tempered indoor air.

### Highest energy efficiency

CoolStream has been designed down to the smallest detail, e.g. with highly efficient EC fans it will achieve the lowest possible operating costs.



## Running costs

Evaporative cooling is up to seven times more efficient than conventional air conditioning

## DESCRIPTION

CoolStream is an evaporative cooling and ventilation system.

It is an efficient and effective alternative to conventional air conditioning, particularly in industrial buildings, where these buildings are generally simply too large for conventional air conditioning to be cost-effective.

CoolStream draws hot air across wetted media, thereby exchanging energy and reducing the supply air temperature. The warmer and drier the outdoor air, the more efficiently evaporative cooling functions.

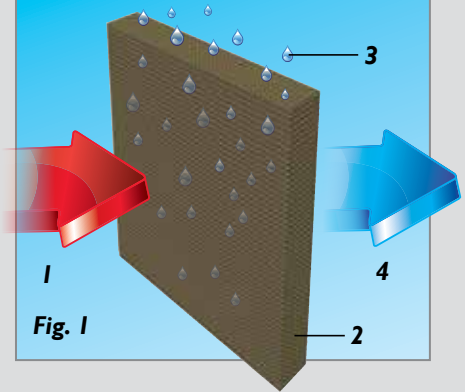
## EVAPORATIVE COOLING MEANS A COMFORTABLE WORKING ENVIRONMENT

Where outside temperatures are above 30°C, the entering air can be cooled down by 10°C or more.

Evaporative cooling involves supplying 100% fresh air, thereby maintaining good air quality. This means that CoolStream evaporative units may be used throughout the whole year providing fresh outside air, with the cooling function only being operated when conditions dictate. At the same time the hot air inside the building is normally removed at high level by

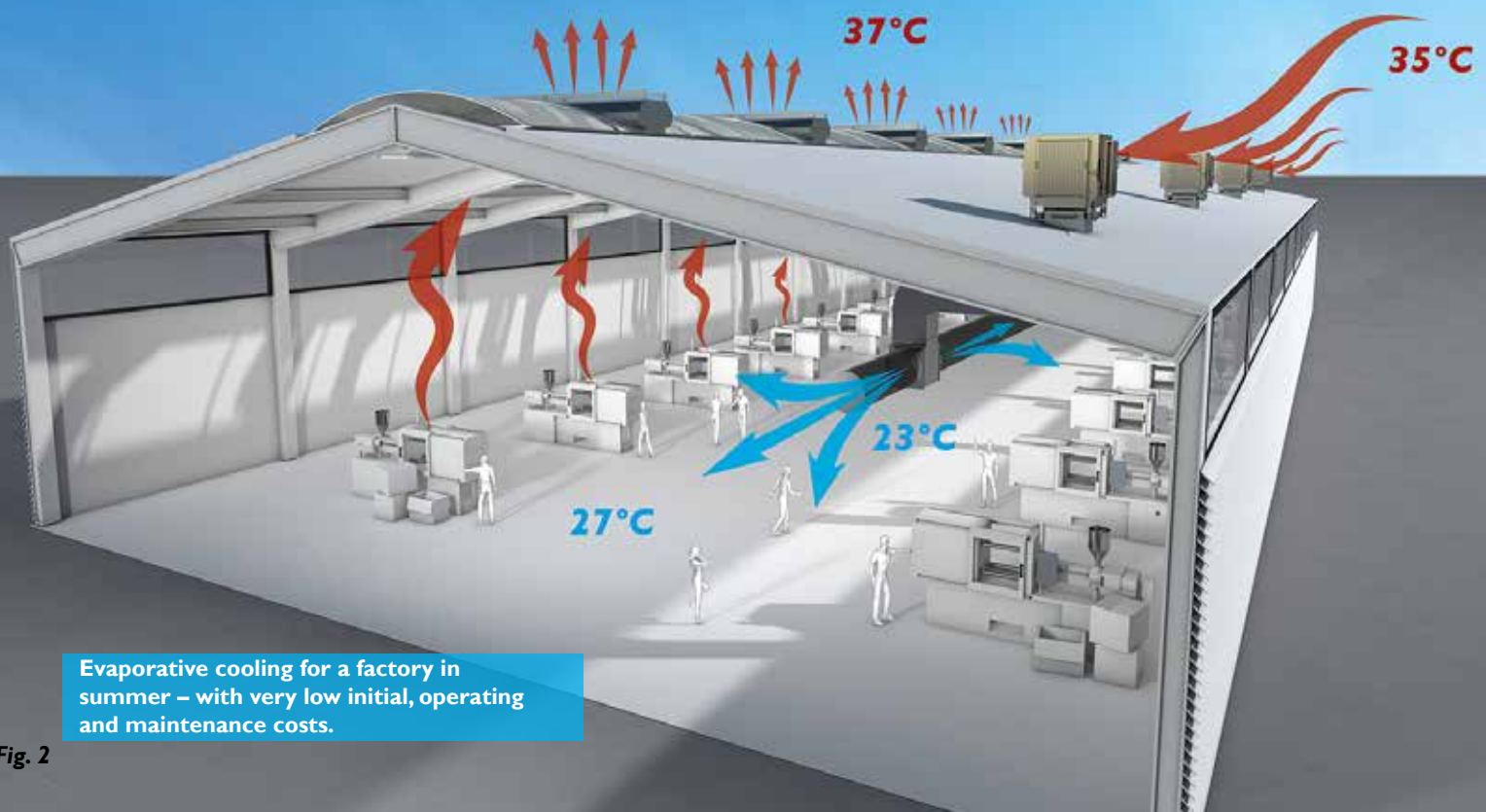
## HOW EVAPORATIVE COOLING WORKS

Hot external air (1) is drawn over a desorption medium (2). This medium is kept continuously moist by the water supply system (3). The water evaporates and energy is removed from the air, which results in a reduction in the supply air temperature (4).



natural or mechanical ventilators, providing a pleasant temperature at working level.

CoolStream systems are well suited to industries such as plastics, metal or food and for installation in warehouses, shopping centres, leisure and exhibition centres.



Evaporative cooling for a factory in summer – with very low initial, operating and maintenance costs.



## COOLSTREAM SOLUTIONS ARE INDIVIDUAL :

Fresh air is generally always required to some extent in industry, even in the winter.

Do you need as much cooling capacity as possible?

*Then a CoolStream S size 30 could be right for you.*

Do you need a quiet unit?

*Then a smaller and quieter CoolStream S size 12 could be the ideal choice.*

Do you need a solution for the many people who do sedentary work in a despatch area?

*In this instance CoolStream T would provide draught-free ventilation in winter.*

Has the fan got to be as quiet as a whisper?

*If a small attenuator is placed in the duct, then the unit can hardly be heard any more.*

How can you reclaim the heat sitting under the roof in winter?

*A CoolStream A will bring the heat downwards.*

Maybe you need a little bit more heat?

*In this case you can supplement the system by the destratification of warm air, and as a result can use the heat to warm people in a large adjacent internal space.*

Do you have a requirement for additional heating?

*A CoolStream R rooftop unit with its gas heater is compact, quickly and inexpensively installed and provides you with just the heat that you need, as well as the cooling and ventilation functions.*

And the best for last:

*The Colt Cortiva controls ensure that all units work perfectly with one another.*



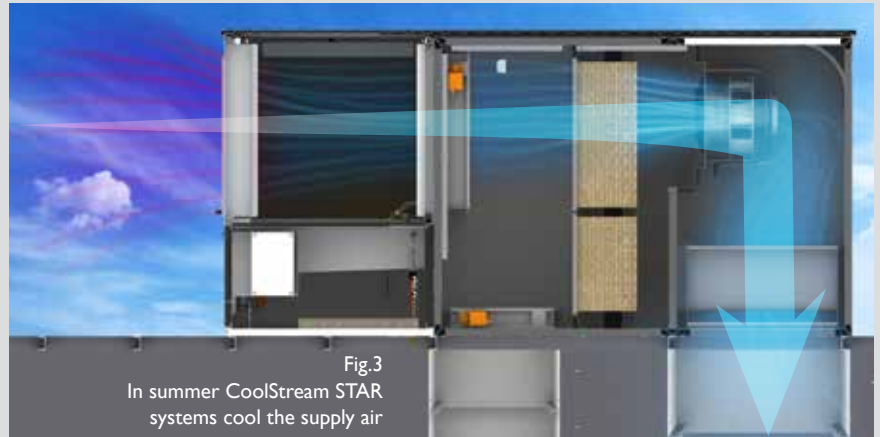
ErP: All CoolStream S · T · A · R systems are compliant with EU Regulation 1253/2014, based on the ErP Directive 2009/125/EC.

## Colt CoolStream S·T·A·R product range - maintaining year-round excellent conditions

The Colt CoolStream S · T · A · R product range comprises ventilation, cooling, heating and heat reclaim systems for year-round operation.

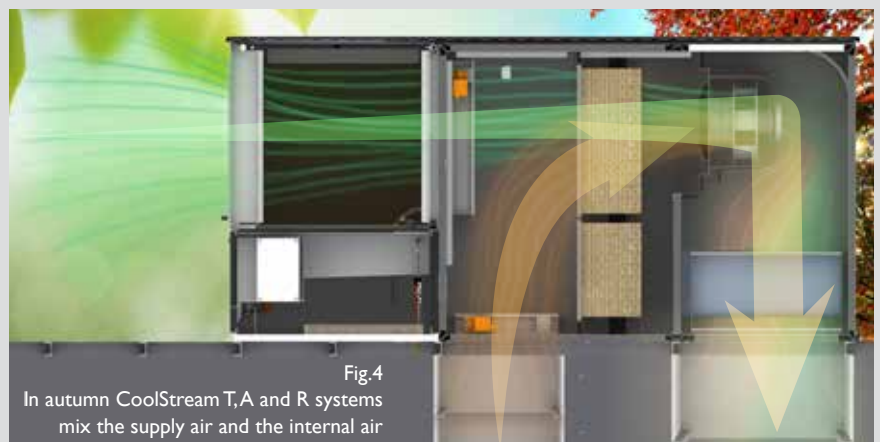
### SUMMER

In summer, Coolstream S · T · A · R systems provide direct evaporative cooling. External air is brought into the internal space from roof level over a special cooling medium and supplied to the room. A CoolStream R system is shown in these illustrations.



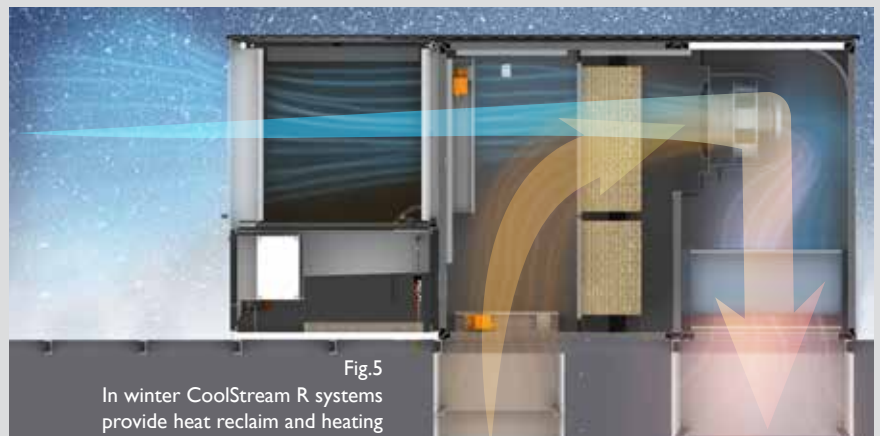
### SPRING AND AUTUMN

In spring and autumn there may still be residual cooling demand, for example where there is a high internal heat load. CoolStream T,A and R systems mix outdoor air with warmer high level internal air via a process of destratification, in such a way that supply air is pre-heated.

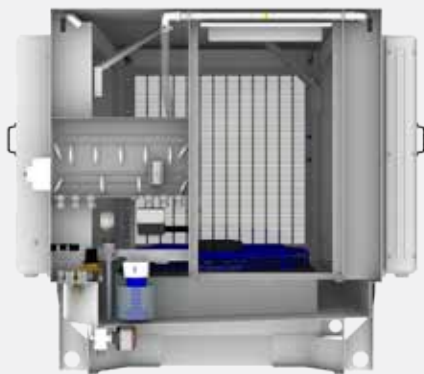


### WINTER

In the winter months CoolStream R systems can combine the warmer high level internal air with external supply air to achieve the desired temperature. The proportion of outdoor air is reduced to a minimum to necessitate as little heating energy as possible and heat is reclaimed.



# CoolStream S



## DESCRIPTION

**CoolStream S** ventilates or cools as needed. In ventilation mode the system provides fresh outdoor air. On warmer days when pure ventilation is no longer sufficient the unit switches to evaporative cooling. The incoming air is then cooled via the process of evaporative cooling.

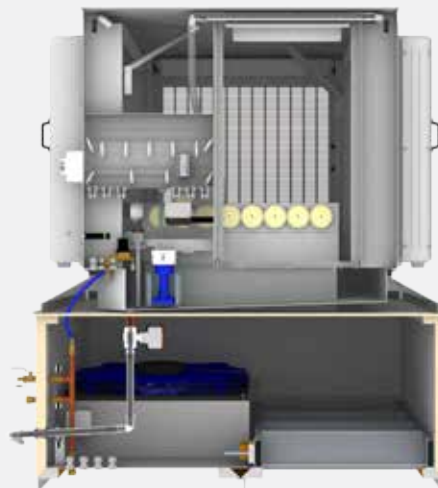
The system works with ordinary drinking water. To protect against calcification, the water is changed regularly. This is done in the background, so that there is no interruption to the cooling process. The 150mm thick high-efficiency desorption medium ensures that an evaporative saturation level of 90% is achieved. At the end of each day, the water is automatically emptied and the medium dried, so that the highest levels of hygiene are guaranteed.

Coolstream S is available in eight sizes. There are four types of axial fans and four types of centrifugal fans that meet most requirements for airflow and acoustic performance. So the right kind of equipment may be chosen for your project, and if the operating conditions should change then CoolStream's output can be made to automatically adapt to the demand.

## FEATURES AND BENEFITS

- Corrosion resistant aluminium body with powder coated water reservoir. All connections are either aluminium or stainless steel.
- An integrated water quality system. Safe circulation with temperature control and regular renewal of water to avoid the growth of bacteria and scale. CoolStream conforms to VDI 6022 ("Hygienic Requirements for Ventilation Systems and Units for Internal Spaces"). This is a rigorous standard for air conditioning systems and confirms the high quality of supply air.
- An optional integrated shutter ensures that little warm air can escape in winter.
- CoolStream S units can weigh as little as 130 kg, thereby enabling them to be easily installed on any roof.

# CoolStream T



## DESCRIPTION

**CoolStream T** ventilates or cools as needed while providing the option of heat reclaim (see p. 3, Fig.4), so (as with CoolStream A) it is suitable for use both within and outside of the cooling period. If there is enough heat in the building, it can provide heating via recirculation all year round.

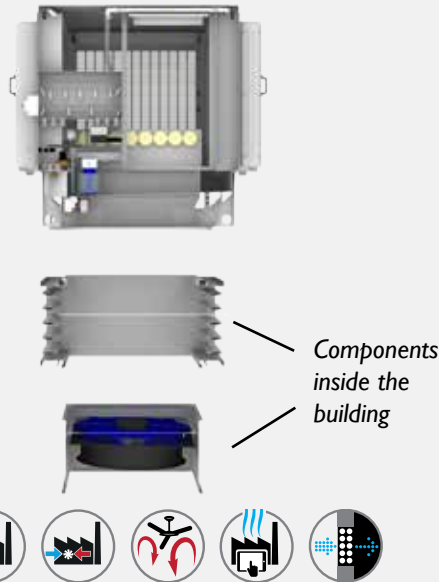
If it is cooler outside and some additional heat is needed, the fresh outdoor air is mixed with the warm air within the building. The supply air then ensures a pleasant temperature. This method of making use of the warmer air at high level reduces the heating bill considerably. Two infinitely variable actuators control the proportion of air that is recirculated.

Coolstream T is available in six sizes. There are four types of axial fans and two types of centrifugal fans. The unit is compactly installed on the roof, so that no additional space is needed within the building.

## FEATURES AND BENEFITS IN ADDITION TO COOLSTREAM S

- The unit is plug and play: this reduces installation costs and simplifies service. Everything is accessible from the roof.
- The 44mm thick mineral wool insulated panels are cold-bridge free and keep both thermal losses and sound emissions low. It is easy to fit a sound baffle within the ducting if required.
- The aluminium housing not only looks good but is also extremely durable. The unit can be installed directly onto an upstand. The base frame at the same time forms the rainproof barrier to the building.

# CoolStream A



## DESCRIPTION

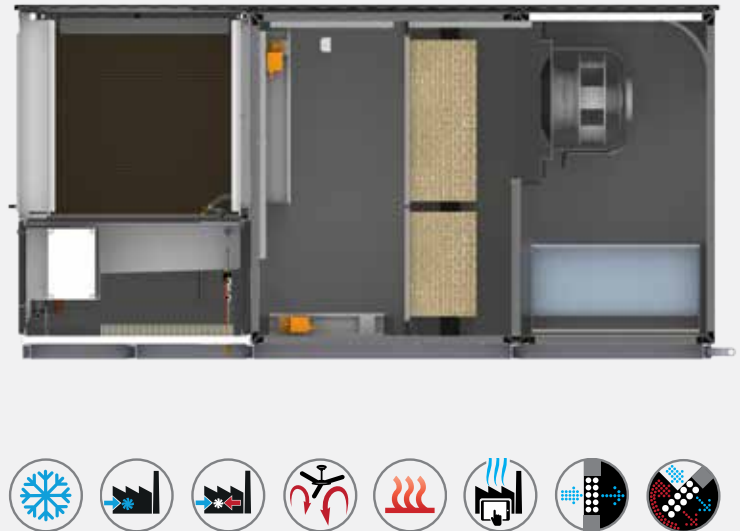
**CoolStream A** consists of three modules: an evaporative cooling module, a mixed air module and fan module. Just as with the Coolstream T or R, the fresh outdoor air is mixed with the warm air within the building, so (as with CoolStream T and R) it is suitable for use both within and outside of the cooling period. If there is enough heat in the building, it can provide heating via recirculation all year round. The supply air is mixed with the air directly beneath the ceiling.

Coolstream A is available in eight sizes. There are four types of axial fans and four types of centrifugal fans that meet most requirements for airflow and acoustic performance. The cooling module may be fitted with bottom, side or top connections, meaning that it can be installed not only on the roof but also next to the building façade. It has a compact design of mixed air and fan module. Its downstream components are internal and are therefore uninsulated which reduces initial costs.

## FEATURES AND BENEFITS

- The configuration of all three modules in one system means efficient ventilation, cooling and air recirculation. Standardised wiring connections make the necessary on-site wiring a breeze.
- The auto-detect function of Cortiva ensures that the unit is ready for use with its modules without the need for lengthy commissioning.
- Any excess heat can be reclaimed within the air supply through the additive heating process. The unit is variably controlled so that no disruptive draughts are produced.
- It is easy to fit a sound baffle within the ducting if required.

# CoolStream R



## DESCRIPTION

**CoolStream R** provides a complete air conditioning solution over the entire year: cooling, heating, heat reclaim, air filtration and ventilation are all combined within one product.

CoolStream R is suitable for the air conditioning of large industrial, semi-industrial and commercial spaces. There are various filter classes and types of heaters (hot water, gas or electric) with different capacities to choose from.

## FEATURES AND BENEFITS

- All year round operation.
- Easy installation: since all devices are contained inside the CoolStream R unit, and since the unit is delivered ready for hoisting, the system can be installed speedily.
- Commissioning is straightforward because the controls and software are standardised and factory checked. This “plug and play” approach significantly reduces installation and commissioning costs.
- The modulating controls for any of the heaters (including the optional gas heater) ensure that supply air is free from draughts while the unit only needs to provide as much heat as needed.



A



B



C

CONNECTION OPTIONS

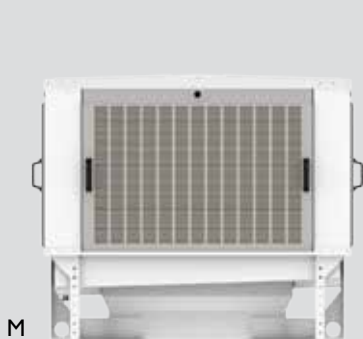
A Coolstream system is most often installed on the roof with a bottom duct connection [A]. The cooled air is supplied

into the room typically through a Coltair air inflow system. Where CoolStream units are adjacent on a building, the duct connection is usually to the side [B].

Where CoolStream units are installed on the ground, the supply air is at first supplied upwards. In this situation a top duct connection is used [C].

HOUSING SIZES

Sizes M, L or XL.



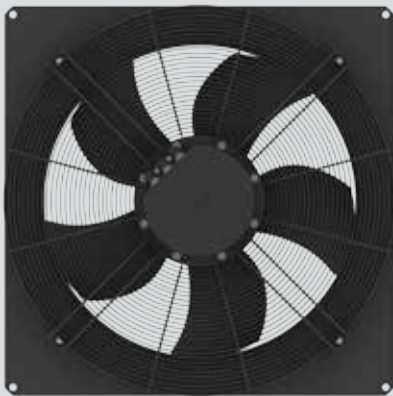
M



L



XL



FANS

For applications with low pressure losses, quiet axial fans are available, while centrifugal fans are suitable for higher filter classes and external pressures.

Coolstream systems use only energy-saving EC fans. These have the following features: variable speed, electronically controlled, reverse polarity, protection against blocking and excessive temperature, passive PFC, motor limitation, soft start, detection of low voltage and phase failure, error detection and feedback, auto changeover with fan failure.



FILTERS

From G4 up to F9 according to EN 779. Easy to change without switching off the system.



VDI 6022

The VDI 6022 option includes sight glass, a filter display and LED lighting.



## Controls options

# Controlling CoolStream systems with Cortiva

With Colt Cortiva a new era of controls for air conditioning systems begins. Cortiva is inexpensive; it obviates the need for an external control systems integrator; and its simple routines enable it to be the solution of choice in a large number of situations. The Coolstream + Cortiva combination is unrivalled from the perspective of energy efficiency.

Cortiva can finely control the CoolStream's continuously variable fans, resulting in savings in power consumption of up to 50 per cent.

Colt Cortiva is easy to use – it's accessible either via a web browser or a mobile tablet or a smart phone. It requires no special knowledge to configure the system or to make changes to the individual parameters right from your office.

## FULL CLIMATE CONTROL

Cortiva doesn't just control CoolStream systems. It can also control the associated exhaust ventilation scheme, for instance rain-proof natural ventilators, as well as managing the indoor air quality (for instance by controlling the levels of CO<sup>2</sup>).

## FULLY AUTOMATIC

Cortiva's fully automatic routines mean that you do not need to access the CoolStream unit if there are any issues; Cortiva tries to fix these before reporting them. And it provides a clear message to enable easy troubleshooting.

## ACCESS ANYWHERE, ANY TIME

You can access the system from anywhere at any time by using the optional VPN connection to the professional cloud, but only you and our service department will be able to access it.

Cortiva is being continuously enhanced and improved in such a way that in the future your CoolStream system will be able to advantage of software updates.



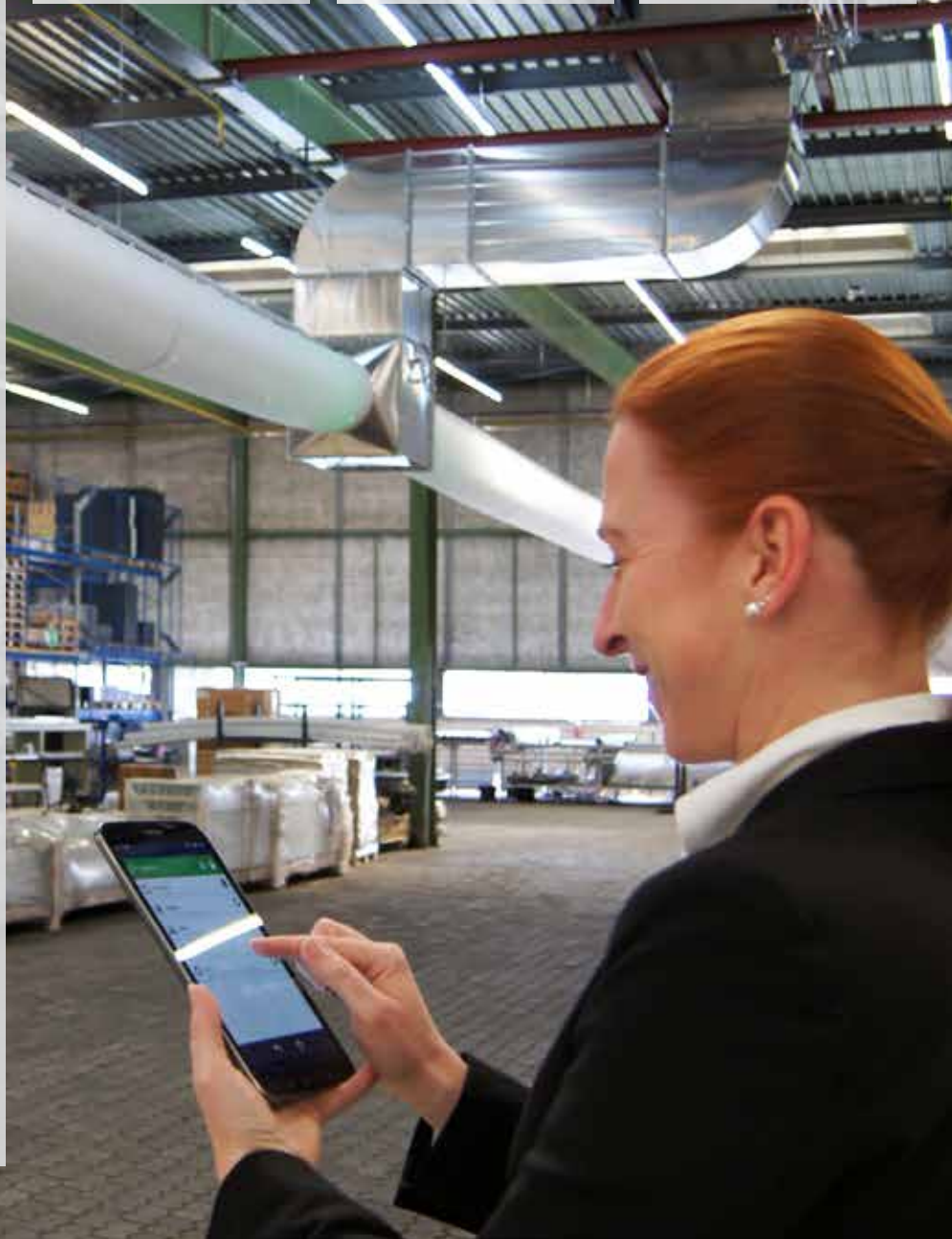
On the home page, you can see the outdoor temperature and humidity, as well as the system time and date. You can navigate between the unit groups from here.

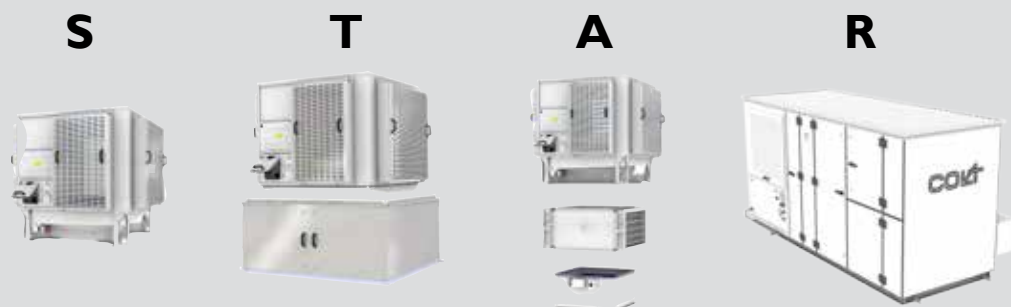


You can see the unit status and actual values on two screens.



You can switch between the different operating modes on this screen.





Cooling	•	•	•	•
Ventilation (outdoor air)	•	•	•	•
Ventilation (recirculation air)		•	•	•
Warm air recirculation		•	•	•
Heating				•
Control of exhaust ventilation	•	•	•	•
Filter (outdoor air)	•	•	•	•
Filter (re-circulation air)				•

		CoolStream S and A		CoolStream T	CoolStream R
Fan and airflow					
Type		Centrifugal	Axial	Centrifugal	Centrifugal
Axial: 50 Pa external / Centrifugal: 400 Pa external	m³/h m³/s	11750 to 29250 3.3 to 8.1	12000 to 29750 3.3 to 8.1	15000 to 22500 4.2 to 6.3	18000
No. fans		1 to 4	1	1 to 3	2
Evaporative cooling					
Cooling capacity @ 35°C, 30% RH, 1013 hPa	kW	44 to 108	47 to 116	55 to 83	67
Drain		Integrated drain with spring return (fail safe)			
Intake / minimum intermittent peak load		3/4" 1 to 10 bar solenoid valve, min. 10 or 20 l/min			
Filter options					
Filter type and filter class to EN779		Single stage: Z-line filter class G4, M5 or F7 Two stage: Z-line filter G2+F9			G4, M5 or F7 bag filter
Electrical data and controls					
Power	kW	2.7 to 8.5	0.8 to 2.4	4.3 to 6.4	5.0
Supply	V/Ph/Hz	400/3/50 +N +PE			
Protection and safety class		IP54 (EN 60529)   I (EN 61140)			
Controls		Cortiva Receiver, fully automatic operation			
Acoustical data					
Max. supply air sound power level*	dB(A)	93 to 99	68 to 83	96 to 98	83
Max. external sound power level*	dB(A)	75 to 82	54 to 74	72 to 77	69
Max. sound pressure level external at 10m free field*	dB(A)	47 to 54	<30 to 46	44 to 49	41
Dimensions and weight					
Overall dimensions L x W x H	mm	1435 x 1435 x 1155 to 1835 x 2190 x 2340			3675 x 1400 x 1830
Additional length and width of side panel with filter	mm	+290			-
Weight in operation	kg	150 to 500	300 to 700	825 to 950	

\* "Max." means that the fan speed and thus the noise level is infinitely variable depending on the requirements and may be limited by the software if desired.