COOLSTREAM S · T · A · R

PURPOSE:

A natural climate control system that uses the principle of evaporative cooling. From pure summer cooling through to mixed air to year-round solutions, Colt CoolStream systems offer solutions for your requirements.

WHAT THIS UNIT IS USED FOR:

Colt CoolStream S·T·A·R systems are suitable for just about every kind of industry, such as plastics and metal processing, food production, the electrical, packaging and printing industries, as well as for larger premises such as logistics and distribution centres and DIY stores.

FEATURES AND BENEFITS:

Such systems are characterised by low installation costs and extremely low operating costs (up to seven times lower than with conventional air conditioning), reliable operation, energy-efficient and environmentally friendly technology.
Colt CoolStream S·T·A·R systems provide year-round draught-free ventilation, a pleasant temperature and high air quality.

Its technical details are described overleaf.

EVAPORATIVE COOLING

Colt CoolStream is an evaporative cooling and ventilation system. Evaporative cooling is an efficient and effective alternative to conventional air conditioning, particularly with industrial and semi-industrial facilities, where these buildings are generally simply too large for conventional air conditioning to be cost-effective.

By passing warm outdoor air across a wet desorption medium, energy is exchanged and a significant reduction in air temperature is achieved. The warmer and drier the outdoor air, the more efficient evaporative cooling is.

Where outside temperatures are above 30°C, the entering air can be cooled down by 10°C or more. An evaporative cooling system is between 4 to 7 times less expensive to run than a conventional air conditioning system, and has lower initial costs. In addition evaporative cooling provides 100% fresh outdoor air and thus also good air quality. This means that Colt CoolStream systems may be used throughout the whole year, providing fresh outdoor air, with the cooling function only being operated when conditions dictate. In a typical situation heat is extracted from the building at a higher temperature level using a natural ventilation system. This leads to a pleasant temperature at working level.

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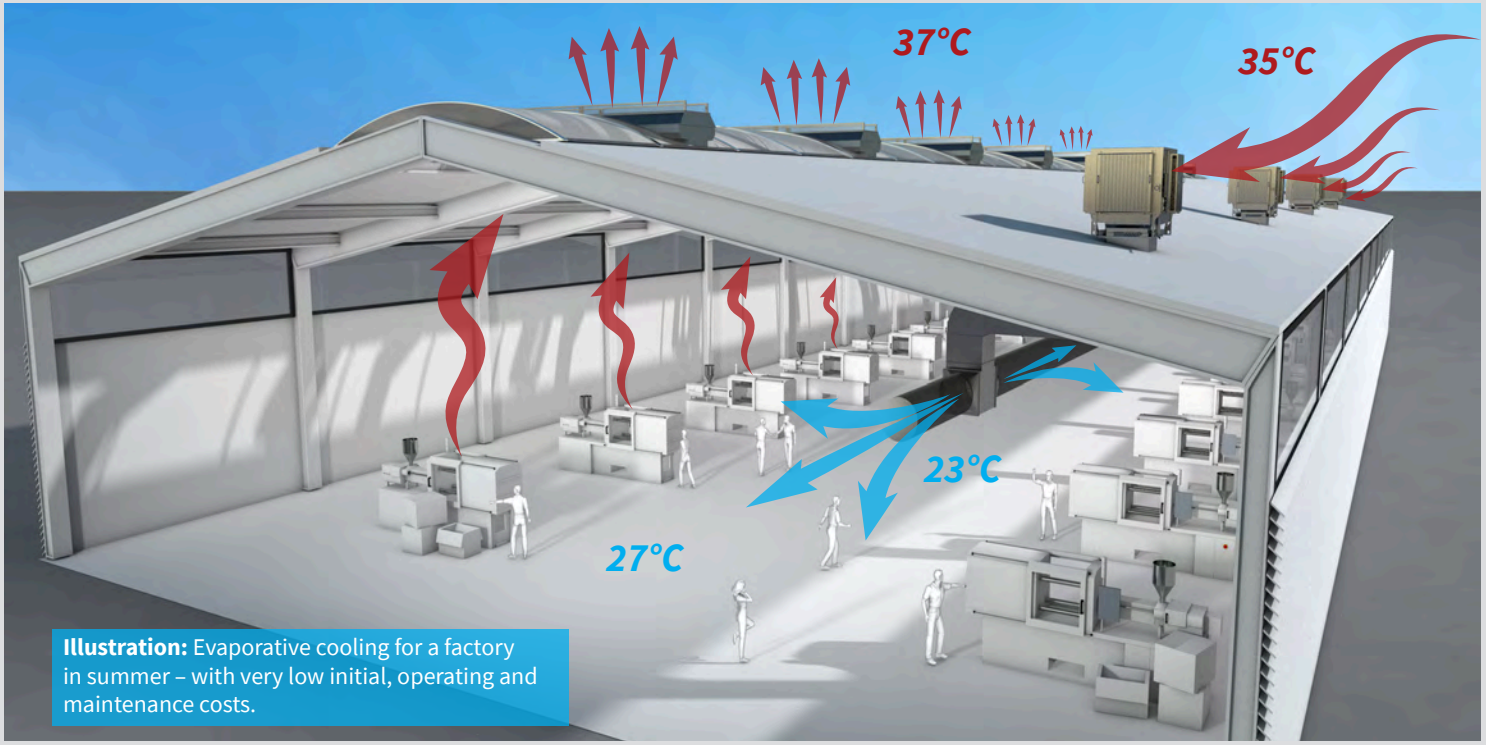
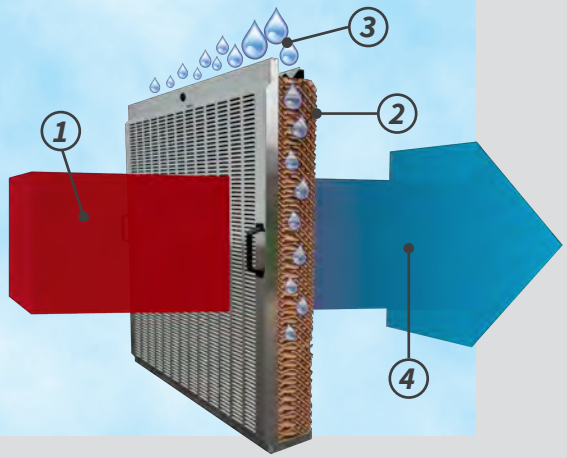


Illustration: Evaporative cooling for a factory in summer – with very low initial, operating and maintenance costs.

How evaporative cooling works

Hot outdoor air [1] moves through the desorption medium [2] which the system keeps moist [3]. The water evaporates and thereby makes the air temperature [4] drop to a great extent.



CoolStream solutions are individual:

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

Do you need as much cooling capacity as possible?
*In that instance, a **CoolStream S** with a large centrifugal fan could be the correct solution.*

Do you need the system to be even more quiet?
Then a smaller and quieter CoolStream S with an axial fan would be the optimal choice.

Are there many workers sitting down in the despatch area?
*In this area it is important to achieve draught-free ventilation in the winter as well. A **CoolStream T** would be the optimum choice.*

Should the ventilation system be as quiet as a whisper?
If a baffle is installed into the ducting, your system can be barely heard.

Does the warm air gather under the roof in winter?
*A **CoolStream A** can bring the warm air back down again.*

Do you need a little more warm air down at working level?
In that instance we can provide supplementary additive warm air recirculation which provides a good deal of heat for the people in the common area.

Are you short of heat?
*A **CoolStream R** fitted with a gas heater does not take up much space on the roof, is quickly and inexpensively installed, and provides a variable amount of heat. It exactly matches the heat that is needed right now.*

And best of all:
*The **Cortiva** control system ensures that all controls work together perfectly.*

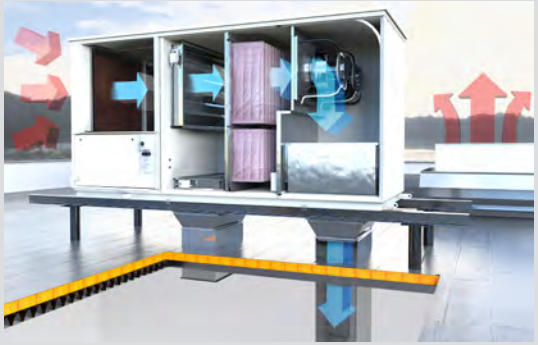
Colt offers a variety of CoolStream solutions that are compliant with EU Regulation 1253/2014, based on the EU Ecodesign Directive 2009/125/EC.

COOLSTREAM FOR ALL-YEAR ROUND OPERATION

The Colt CoolStream S · T · A · R series consists of ventilation, cooling, heating and destratification for all-year round operation.

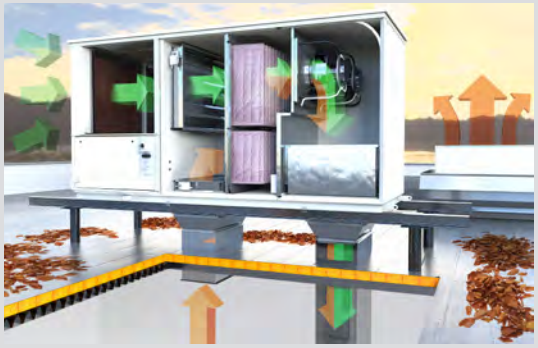
SUMMER

In summer, CoolStream S · T · A · R series systems make use of the principle of evaporative cooling. Outdoor air is drawn through a special cooling medium in the roof section and drawn into the room.



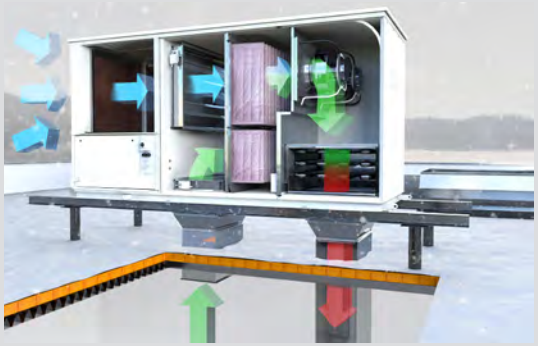
SPRING AND AUTUMN

It is possible that there is a need for cooling, e.g. in internal spaces that have high heat loads. T, A and R systems make use of this warm air, mixing it with fresh outdoor air to predefine the indoor air. The fresh air is mixed with internal warm air at a high level by warm air recirculation, so that the supply air is preheated.

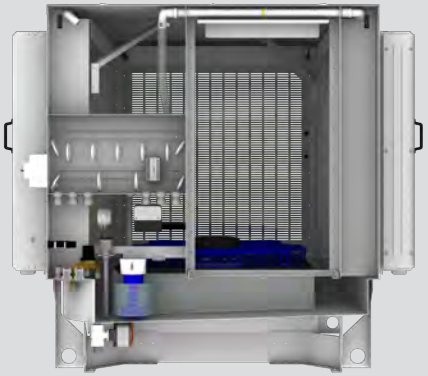


WINTER

In the winter months it is possible to combine the internal hot air with the outside air using destratification. In the case of a CoolStream R this combining of air flows enables pre-heating so as to achieve a desired temperature if necessary.



CoolStream **S**

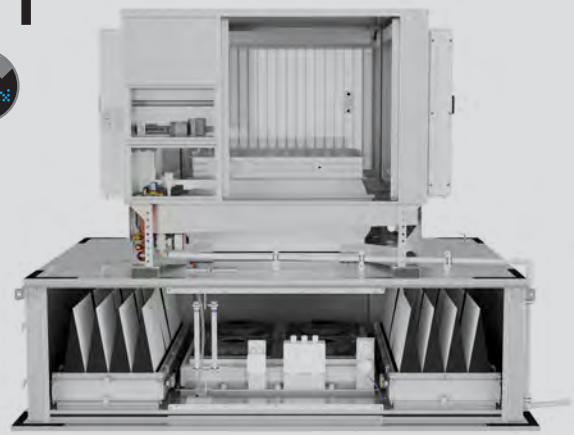


CoolStream S ventilates or cools as needed. In ventilation mode the system provides fresh outdoor air. On warmer days when pure ventilation is no longer sufficient the unit switches to evaporative cooling. The air temperature is then reduced via the process of evaporative cooling.
The system works with 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 150 mm 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 power 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 automatically adapts to the demand.

- Corrosion resistant aluminium body with powder coated water reservoir. All connections are either aluminium or stainless steel.
- Highest levels of hygiene: Water management, drip-free supply air and trouble-free operation ensure complete compliance with VDI 6022 ("Hygiene requirements for ventilation and air-conditioning units").
- An optional integrated damper ensures that no warm air can escape in winter.
- Lightweight: A **CoolStream S** unit can weigh as little as 150 kg (in its smallest version), thereby enabling it to be easily installed on any kind of roof.

CoolStream **T**



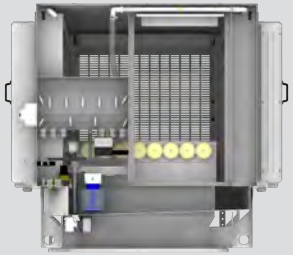
CoolStream T performs several tasks in spring, summer, autumn and winter: it cools and ventilates using outdoor and mixed air, offers flexible warm air recirculation and continuous air filtration. The **CoolStream T** can do everything that an air conditioner suited for large volumes of space in industry and commerce can do - except provide heat on its own.

If it is cooler outside and some additional heat is needed, the fresh outdoor air is mixed with the warm recirculated air within the building. The targeted supply of warm air then ensures a pleasant temperature. This permits hot air to be returned to the working area, thereby significantly reducing your heating bills. A big advantage for companies where there is a lot of air pollution is the filtering of the outside air as well as the provision of recirculated air from inside the building.

CoolStream T is available in eight sizes. There are four types of axial fans and four types of centrifugal fans. The unit is compactly installed on the roof with an integral roof flange, so that no additional space is needed within the building.

- The unit is fully connected: this reduces installation costs and simplifies service. Everything is accessible from the roof. The insulated panels keep both thermal losses and sound emissions to the outside very low. It is easy to fit a sound baffle internally to the defined duct connector if required.
- The housing is made from aluminium and stainless steel, and is extremely durable. The unit can be installed directly on a roof upstand: in this instance the device frame also forms the rain protection edge.

CoolStream **A**



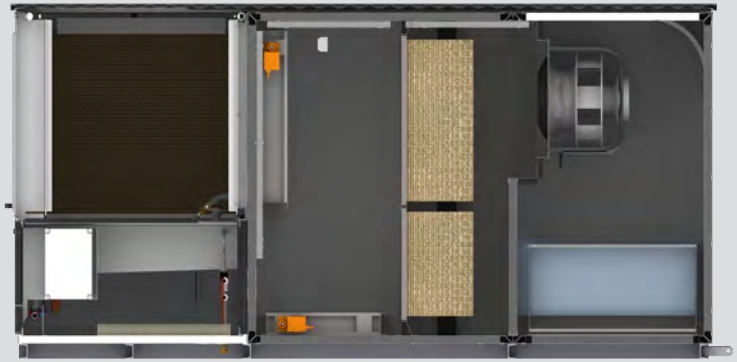
CoolStream A consists of three modules: an evaporative cooling module, a mixed air module and a fan module. Just as with the CoolStream T or R, the fresh outdoor air is mixed with the warm recirculated air. The air supply air is mixed with the air directly beneath the ceiling.

CoolStream A is available in eight sizes. There are four types of axial fans and four types of centrifugal fans. The individual modules of **CoolStream A** can be positioned in many places, thereby allowing maximum flexibility. The cooling module is available in all duct connection variants (bottom, side, top).

A **CoolStream A** can be installed not only on the roof, but also next to the building. It has a compact design of mixed air and fan modules. Some of its downstream components are internal and therefore uninsulated. This all means that **CoolStream A** offers high performance at a low initial cost.

- The configuration of all three modules in one unit means efficient ventilation, cooling and air recirculation. Standardised wiring connections make the necessary third-party 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 via the process of destratification. The unit is variably controlled so that no disruptive draughts are produced.

CoolStream **R**



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

The R stands for Roof: **CoolStream R** is a rooftop unit which incorporates evaporative cooling. The fact that it is installed on the roof saves large amounts of space inside. **CoolStream R** is suitable for the air conditioning of larger industrial, semi-industrial and commercial spaces. There are various filter classes and types of heater (hot water or gas) with different power levels to choose from.

- In the **summer** energy-saving EC fans draw in up to 18,000 m^3/h warm outdoor air. This air flows through the evaporative cooling unit. The air is cooled down, filtered and brought into the building. At the same time, the indoor air heats up and is removed from the room by a natural exhaust ventilator.
- In **spring and autumn** warm air recirculation kicks in: outdoor air is mixed with warmer indoor air. This mixed air is at a pleasant temperature and is filtered before being brought into the building. The total amount of outdoor air needed is reduced to the level which is needed within the building, thereby saving significant energy costs.
- In **winter** the air heater is used. The proportion of outdoor air is reduced to a minimum to necessitate as little heating energy as possible. Again the mixed air is filtered and then drawn by the fans through the heater. The mixed air is heated and pleasantly distributed to the inside of the building, and so the interior is heated up.

Connection variants

In the classic version, the CoolStream S or A is installed on the roof with a bottom duct connection [A]. The cooled supply air is introduced into the room using a Coltair ventilation system.
A side duct connection [B] is typically used when the unit is installed next to a building. If the unit is placed on the floor, the supply air is first conveyed upwards [C]. In this instance a top duct connection is used.

A

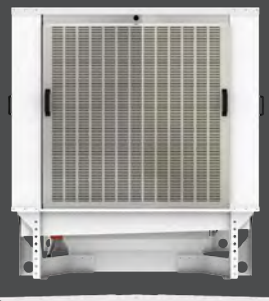
B

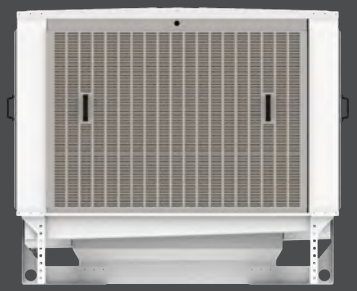
C

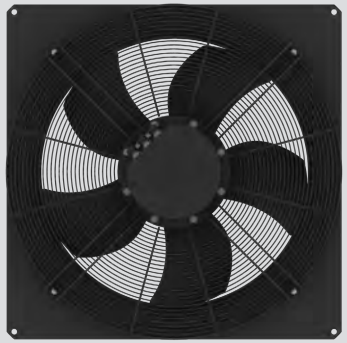
Housing sizes

M, L or XL housing sizes

M


L


XL



Fans

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

Only premium EC fans are used in CoolStream systems:

variable speed, electronically controlled, reverse polarity, protection against blocking and over-temperature, passive PFC, motor current limit, soft-start, under-voltage and phase failure detection, fault analysis and automatic supply, auto changeover if a fan failure.

Outdoor air filter

From Coarse class 70% to ePM_1 55% to ISO 16890. Easy filter change even during operation.

VDI 6022

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

Recirculation air / supply air filter

Recirculation air filter for CoolStream T: $ePM_{2.5}$ 55% to ISO 16890. CoolStream R supply air filters: From Coarse 70% class up to ePM_1 50% to ISO 16890.

Controls options

CONTROL OF THE COOLSTREAM WITH CORTIVA

Colt Cortiva is ushering in a new era in the world of climate control systems. 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. Thanks to the dynamics of the infinitely variable fans in the CoolStream, the Cortiva control system controls them in such a finely-tuned way that energy savings of up to 50 percent can be achieved.

Colt Cortiva is easy to use - via a web browser or mobile via a tablet or smartphone. No special expertise is required to configure or control the air conditioning system as needed. The change or setting of individual climate control parameters can be done conveniently from an office.

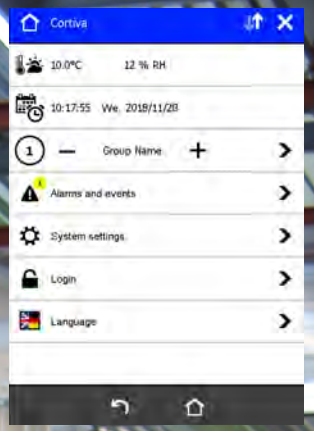
"Cortiva - a user-friendly control system for CoolStream STAR units - operating via a tablet or a smartphone".

MANY POSSIBILITIES

Temperatures, operating modes, weekly programmes and much more can be set at any time. The grouping of the units ensures comfortable and at the same time energy-saving operation.

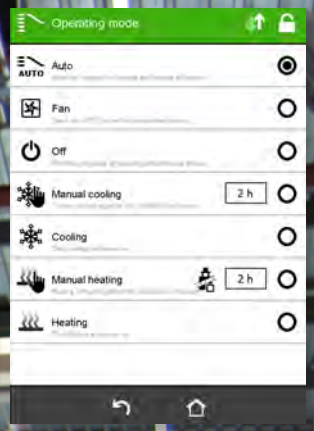
ACCESS EVERYWHERE

With the optional VPN connection via the professional cloud solution, you can access the control system from anywhere at any time - but only you and our service.
Colt Cortiva is constantly being expanded, so that your system can continue to benefit from software updates if you wish.



On the home page you can see an overview of the system values. You can select general settings and navigate to the system groups.

The first unit page provides a direct overview of the current system status and the actual values.



Different operating modes allow a quick selection of predefined situations if required.

		CoolStream S, T and A		CoolStream R
Fan and air flow				
Type		Centrifugal	Axial	Centrifugal
Axial: 0-170 Pa external / centrifugal: 200-800 Pa external	m^3/h	11750 to 31000	12000 to 32000	18000
No. fans		1 to 4	1	2
Evaporative cooling				
Cooling capacity @ 35°C, 30% RH, 1013 hPa outdoor	kW	44 to 108	47 to 116	67
Drain		Integrated drain with spring return (fail-safe)		
Inlet / intermittent minimum peak load		3/4" solenoid valve, 1 to 10 bar, 10 or 20 l/min min.		
Optional filter to ISO 16890				
Panel outdoor air filter		Coarse 70% up to ePM1 55%		-
Compact recirculation air filter		$ePM_{2.5}$ 55% (only CoolStream T)		-
Supply air bag filters		-		Coarse 70% up to ePM_1 50%
Electrical data and controls				
Rated power (without additive destratification)	kW	2.7 to 8.5	0.8 to 2.4	5.0
Power supply	V/Hz/Ph	**CoolStream S:** 380-415/50-60/ 3~+N or 480V/60/3~ **CoolStream T, A and R:** 380-415/ 50/ 3~+N		
IP rating and protection class		IP rating IP54 (DIN EN 60529) | Protection class I (EN 61140)		
Controls		Cortiva receiver, fully automatic operation, for connection to a Cortiva central controller		
Acoustic performance				
Max. sound power level air supply side*	dB(A)	93 to 99	68 to 83	83
Max. outdoor sound power level*	dB(A)	75 to 82	54 to 74	69
Max. outdoor sound pressure level at 10m free field*	dB(A)	47 to 54	<30 up to 46	41
Dimensions and weight				
Overall dimensions LxWxH	mm	1435 x 1435 x 1155 to 3050 x 1950 x 2390		3675 x 1400 x 1830
Operating weight including water	kg	150 to 750		825 to 950

* Max. means: Fan power and thus noise output are infinitely variable and can also be limited by the software if required.

	S	T	A	R
Cooling	•	•	•	•
Ventilation (outdoor air)	•	•	•	•
Ventilation (mixed air)		•	•	•
Warm air recirculation		•	•	•
Heating				•
Cortiva controls	•	•	•	•
Filter (outdoor air)	•	•	•	•
Filter (recirculation air / supply air)		•		•

KEY FEATURES

Highest reliability
Colt CoolStream products are specifically designed and manufactured for industrial applications

Low installation, operating and maintenance costs
Evaporative cooling is up to seven times more efficient than conventional air conditioning

No cooling fluids
No unecological cooling fluids (e.g. CFCs) needed for the cooling process

Conforms to
VDI 6022
("Hygienic Requirements for Ventilation Systems and Units for Internal Spaces")

The system uses in summer only **100%** ***Outdoor air***

In spring, autumn and winter outdoor air is mixed with pre-heated indoor air

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

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