VIVALDI CLIMATE CONCEPT

DESCRIPTION:

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

APPLICATIONS:

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

FEATURES AND BENEFITS:

Environmentally safe, with low initial and very low running costs (up to 7 times more efficient than conventional air conditioning), Vivaldi is a reliable system with good green credentials, using proven, non-complex technology. It provides 100% cool and fresh outside 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

Power consumption of only around 1 kW and 50 litres of water per 10,000m³/h of fresh supplied air – more than 30 kW cooling capacity

Refrigerant free

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

Colt products conforms to

VDI 6022

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

CoolStream provides

100%

cool and fresh outside air in summer and does not recirculate used air

Highest energy efficiency

Vivaldi products has been designed to the smallest detail on efficiency, e.g. with highly efficient EC fans to achieve the lowest operating costs

Running costs

Evaporative cooling is up to 7 times more efficient than conventional air conditioning

DESCRIPTION

Vivaldi is an evaporative cooling, heating 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.

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

EVAPORATIVE COOLING MEANS A COMFORTABLE WORKING ENVIRONMENT

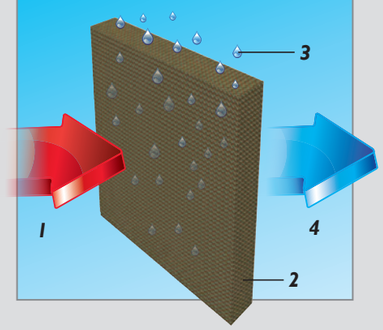
Where outside temperatures are above 30°C, the entering air can be cooled down by 10°C or more.

Evaporative cooling involves supplying 100% fresh air, thereby maintaining good air quality. This means that Colt 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 natural or mechanical ventilators, providing a pleasant temperature at working level.

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

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).



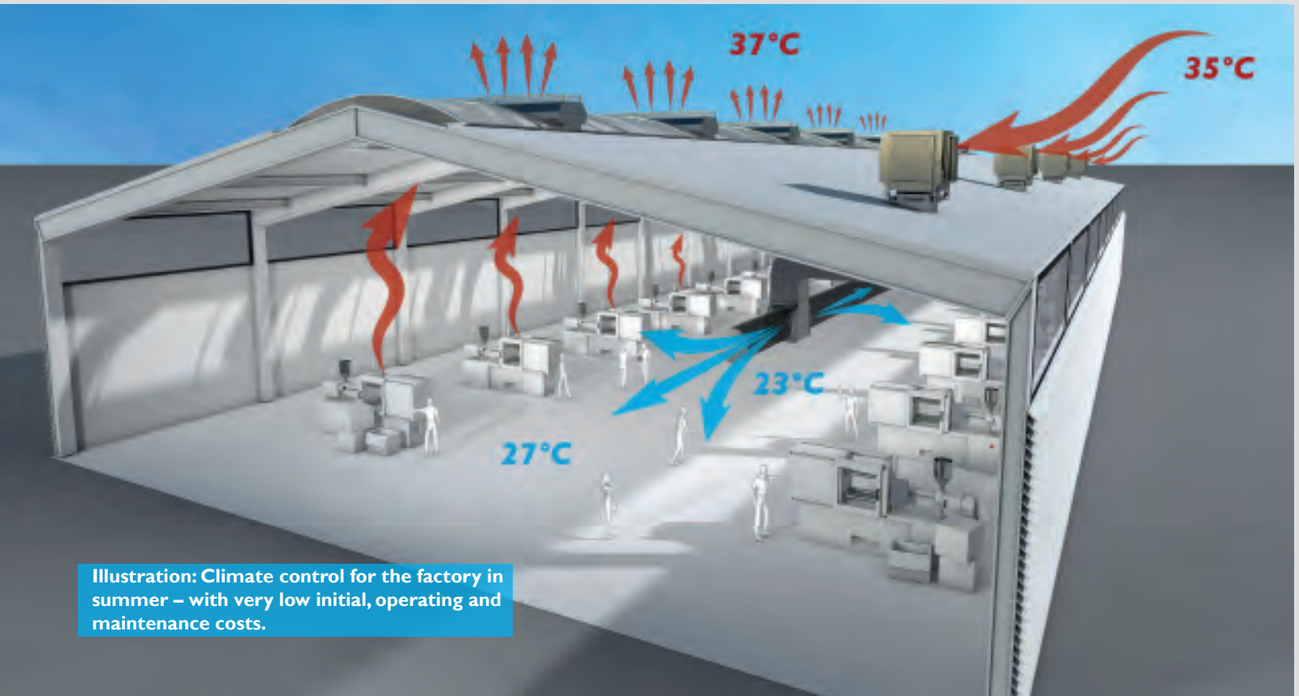


Illustration: Climate control for the factory in summer – with very low initial, operating and maintenance costs.

VIVALDI 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 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.

Should the fan be quiet as a whisper?
If a small attenuator is placed in the duct, Then unit can hardly be heard any more.

How should one deal with the heat sticking under the ceiling of the factory in winter?
A CoolStream A will bring the heat downwards.

Maybe you need a little bit more heat?
Then we can supplement the system with additive warm air recirculation, 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 Maximair 2020 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 Cortiva control system ensures that all units work perfectly with one another.

Your Colt partner can provide additional info.

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

Colt Maximair 2020 product range - maintaining year-round excellent conditions

The Colt Maximair 2020 product range comprises ventilation, cooling, heating and heat reclaim systems for year-round operation.

SUMMER

In summer, Maximair 2020 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. If needed, the cooling function is switched on automatically.

Fig.3
In summer Maximair 2020 systems cool the supply air

SPRING AND AUTUMN

In spring and autumn there may still be residual cooling demand, for example where there is a high internal heat load. Maximair 2020 systems mix outdoor air with warmer high level internal air in such a way that supply air is pre-heated.

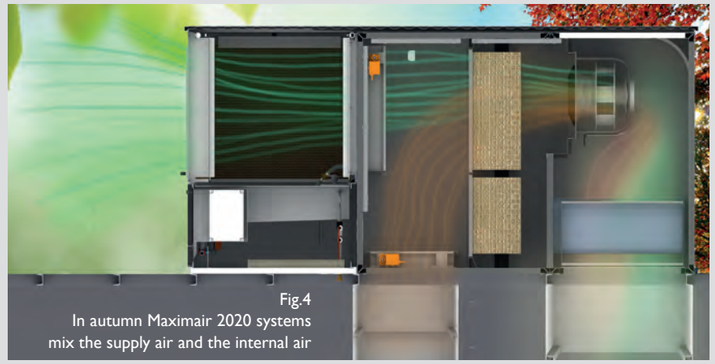


Fig.4
In autumn Maximair 2020 systems mix the supply air and the internal air

WINTER

In the winter months Maximair 2020 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.

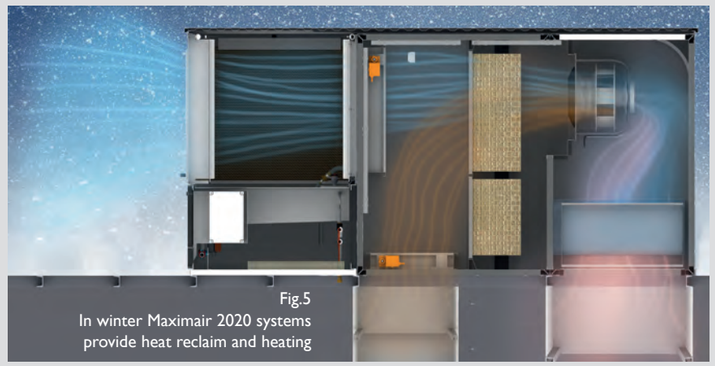
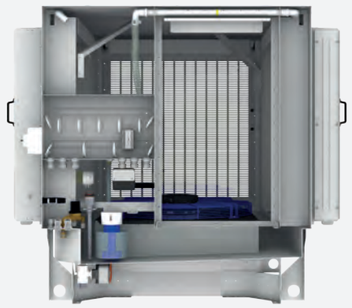


Fig.5
In winter Maximair 2020 systems provide heat reclaim and heating

CoolStream **S**



DESCRIPTION

CoolStream S ventilates or cools as needed. In ventilation mode the system provides fresh outside 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.

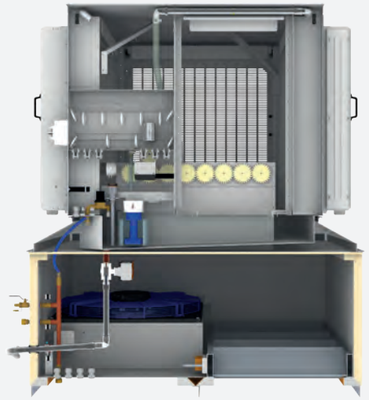
The system works with ordinary drinking water. To protect against calcification, the water is changed regularly. This is done in the background, so that there is no interruption to the cooling process. The 150mm thick high-efficiency desorption medium ensures that an evaporative saturation level of 90% 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 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 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.
- 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.
- Optional integrated shutter for the Coolstream S ensures that little warm air can escape in winter.
- Lightweight: CoolStream S units can weigh as little as 130 kg, thereby enabling it 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).

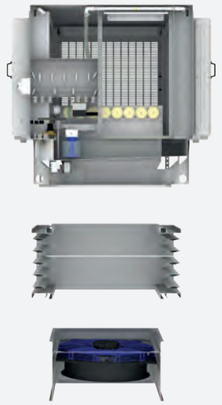
If it is cooler outside and some additional heat is needed, the fresh outdoor air is mixed with the warm air within the building. The supply air then ensures a pleasant temperature. This method of making use of the warmer air at high level reduces the heating bill considerably. Two infinitely variable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

- 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 duct connector.
- 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

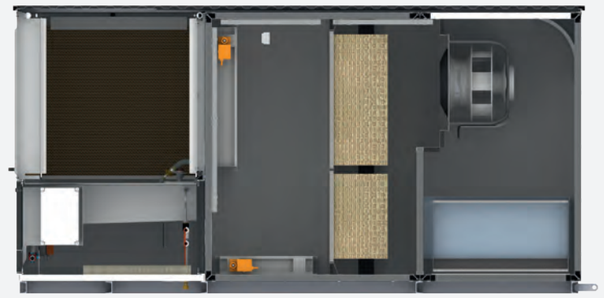
CoolStream A consists of three modules: an evaporative cooling module, a mixed air module and fan module. Just as with the Coolstream T or R, the fresh outdoor air is mixed with the warm air within the building. The air supply air is mixed with the air directly beneath the ceiling.

Coolstream A is available in eight sizes. There are four types of axial fans and four types of centrifugal fans that meet most requirements for power 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. Some of its downstream components are internal and therefore uninsulated. This can lead to lowered initial and installation 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.

Maximair 2020



DESCRIPTION

Maximair 2020 provides a complete air conditioning solution over the entire year: cooling, heating, heat reclaim, air filtration and ventilation are all combined within one product.

Maximair 2020 is the first rooftop in the world which incorporates evaporative cooling. The fact that it is installed on the roof saves large amounts of space inside.
Maximair 2020 is suitable for the air conditioning of large industrial, semi-industrial and commercial spaces. There are various filter classes and types of heaters (warm water, gas or electric) with different capacities to choose from.

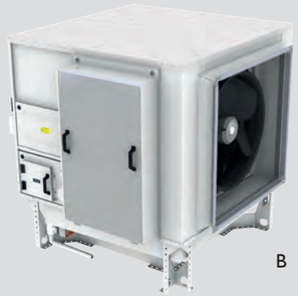
OPERATING PRINCIPLE

- ***In summer*** energy-saving EC fans draw in up to 20,000 m3/h (5.6 m^3/s) warm outside air. This air flows through the evaporative cooling unit and is cooled down by up to 15°C and filtered and brought into the building. The room air heats up and is removed from the room either by a natural exhaust ventilator.

- ***In spring and autumn*** heat is recirculated as outdoor air is mixed with warmer room air. This mixed air is at a pleasant temperature and is filtered before being brought into the building. The total amount of outside 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 pleasantly distributed to the in side of the building, and so the interior is heated up.

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.

Vivaldi systems use only energysaving 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 package includes sight glass, a filter display and LED lighting.

Controls options

Controlling Vivaldi 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 Vivaldi + Cortiva combination is unrivalled from the perspective of energy efficiency.

Cortiva can finely control the Vivaldis'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.

MAKING CHANGES TO GROUPS OF DEVICES IS EASY

One feature of Cortiva is that groups of units can be created and changed directly using the software.

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 Vivaldi system will be able to advantage of software updates.

Principal elements	• A central controller • One or more (max. 16) local controllers, one for each Maximair 2020 unit • An optional Wi-Fi router to connect to the local network • A VPN router for access to the local network from outside • A PC, tablet or smart phone
Capacity	Can control up to 16 Coolstream units and up to 7 groups of units
Technology	PLC with 32 bit CPU, multitasking, 1 MB RAM, 32 kB retentive memory, 8 GB SDHC card for logging
Network	Closed autonomous 100-Mbit Ethernet network
Operation	Fully automatic, intervention / setting only when needed
Virtualisation	Climate zone automatic control per device
Control principle	Room supply with cascaded control loop, PI controller
Heating and cooling controls	Variable, demand-driven and energy-optimized
Recirculation damper	Continuous "true fresh function" for acquiring the exact proportion of outside air
Exhaust air	Exhaust air follow-up controls with up to 4 speeds and one analogue signal per group, with wind and rain positioning
Filter monitoring	Differential pressure switch, auto-test function
Fan	Variable in automatic mode or manually in fixed steps. Automatic compensation if a fan fails
Heating safety functions	Absolute and relative temperature monitoring, monitoring of condensation (gas heater), frost protection circuit (water heater), fault message and confirmation
Cooling safety functions	Water temperature monitoring, drying cycle, automatic water change function
Alarms, events and operating data	Up to 49 entries in the RAM, fully automatic log function with alarm and confirmation on SDHC card, 30 days operation data with 16 channels per unit

	S	T	A	R
				
Cooling	•	•	•	•
Ventilation (outside 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	Maximair 2020
Fan and airflow					
Type		Centrifugal	Axial	Centrifugal	Centrifugal
Axial: 50 Pa external / Centrifugal: 400 Pa external	m^3/h m^3/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 power and thus the noise level is infinitely variable depending on requirements. The noise level may be limited if desired.