MOUNTAIR

www.mountair.com

20 years

MOUNTAIR

Momentum

AIR TO BREATHE

Content

A momentum

Today, after 20 years Mountair, a momentum is visible. People have needs – also a need to build, run and own something beautiful and lasting. It is our mission to build these robust facilities; to conceive systems that run economically. It is fortunate that some property owners pay their own bills; operators are more interested in durable solutions.

You know the life cycle costs of installations. In this way solutions can be expanded, improved and reinvented again and again by creative ideas. QR codes, which are assigned to every device, enable fast access on spot to the operating instructions. Use the Mountair app. A lot is linked through this and through decentralised intelligence. We have to understand the processes and make them reproducible for the future.

An example is heat recovery. We understand it as a component which is triggered by a continuous signal. In case of the rotor, the speed is set, in case of plate heat exchangers the bypass is fixed and we want a continuous signal for power control in case of the combined cycle system. The rest of it is decentralised intelligence in the Mountair Airsol® controller. The function is now defined and is given an address through which you have access at anytime. Our monobloc in glass represents this transparency; we measure, optimise and check.

The continuous switching from controlled cooling to free cooling in hydraulic systems is also new. Combined with liquid amplifying it opens up the possibility of efficient solutions. The heat pump separates the temperature ranges, from zero to the maximum up to the system separation and switch over. In this area, Mountair has not only obtained patents but has also won awards. Thanks. The second part of the mission is to finish something; therefore rely on Mountair.

We bring you an innovative solution for your needs, be it the new hybrid recooler or another product from the Mountair pipeline.

Twentieth anniversary, twenty references, your wonderful buildings have always motivated us to provide suitable techniques. Under the motto “beautiful buildings deserve robust installations”. They are a value conserving part of the structure. That’s our profession.

You Mountair

Max Aeberhard

Novartis, Stein

Partnership from creation of ideas ...

When buildings evolve, the effective equipment is often discussed and worked on very hard. What is the definition, what benefits should an installation provide, what might it cost in terms of investment and operation?

Mountair regards itself as partner of the planning engineers and helps with creative ideas. The results of such teamwork have already been outstanding.

For implementation of the plans, Mountair cultivates partnership with first class suppliers. Every bolt is important as is the know-how of previous manufacturers of components. The selection and the interaction are crucial for the result – top quality.

Mountair Datacentre Cooling, PGS London

WINNER
INNOVATION IN THE MEDIUM-DATA CENTRE
DatacentreLeadersAwards09

InformationAge
AWARDS WINNER 2010
Green IT Innovation

Sauter Bachmann, Netstal

...through to implementation

The customer is the plant manufacturer. Mountair is a proficient and capable partner for the equipment. Technically skilled Mountair project managers are your contacts.

Mountair air conditioning units, Archhöfe, Winterthur

Unique solutions in every detail

Air conditioning equipment – so varied the applications – so varied the requirements

To meet the highest requirements, the right details are demanded in every area. As the basis for apparatus engineering Mountair uses two proprietary construction systems. There are three dimensional shells, thermally separated, tight and in any required version.

Mountair has unique solutions in detail which have been used successfully over many years.

Philip Morris International, Neuchâtel

DESI rotor cassette with drive

High pressure atomiser

Mountair Dezecor® Rotor. The sorbent is a zeolite with the best properties for the regeneration at low temperatures. The rotor cassette is welded and powder coated with a pedestal bearing and mechanical seal. The rotor drive with a continuous adjustment ratio of 1:50.

Mountair high pressure atomisation systems consist of partialised nozzle holder, separator, high pressure pump station and control. The combination of the best components available on the market produces the best humidifiers. Compliant with the directives, automatically drainable, continuously adjustable and designed for minimum maintenance.

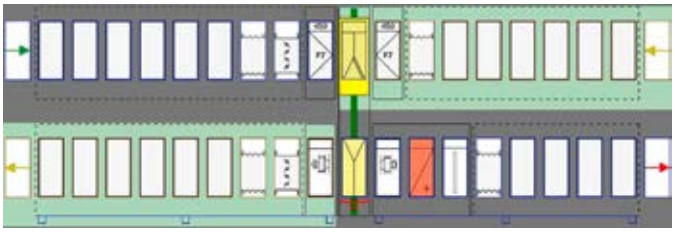
Mountair Design

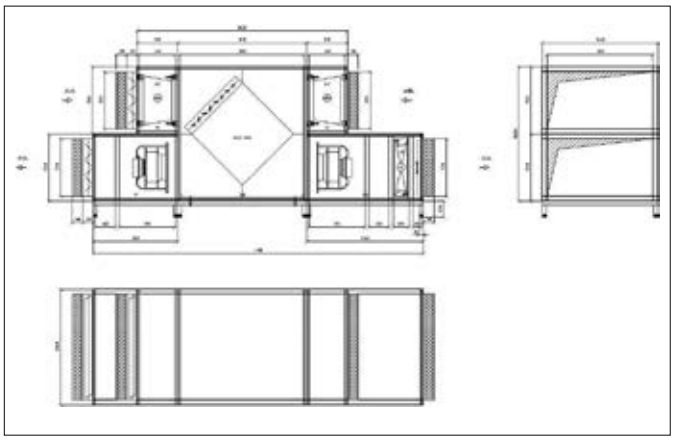
Tested tools are available for technical calculations and preparation of plans. Customary air conditioning units consist of a number of elements. These are strung together as functional modules.

A continuous process is created which reproduces the air with heat recovery for summer and winter; further calculations set out how high the annual power and operating costs are.

The calculation is property-specific and takes into consideration the location (height above sea level and climatic data) as well as the individual requirements for the room climate. The outcome is a specification including the technical data, the quality standards and the accessories. This specification is sufficient to form the basis of a contract.

Various systems are available for energy recovery, filtration, drying, humidification, heating, cooling, noise insulation, etc.





MxCAD screen photos

Quality assurance – as built – QR code. To build a plant, plans, technical specifications and wiring diagrams are prepared. The plant is CE compliant. The operating instructions contain the data for the plant as delivered with spare parts lists. A Mountair QR code is affixed to each device. This enables the operating instructions to be accessed with a smartphone/tablet.

Aussenluft

Luftmenge [m³/h]	Bezug					
5000	**20**	℃	**40**	%r.F.		
		℃		%r.F.		

Schallleistungspegel saugseitig	[Hz]	63	125	250	500	1000
$L_{WA, total}$ **58.7** dBA	[dBA]	**32**	**47**	**54**	**52**	**51**

Flexmanschette

Klappe

Hersteller	Typ	Zone	Anordnung	Ausführung		Material	Breite	Hö
Mountair	**KL**		aussen	-	-	Alu	125mm	720

Luftfilter

Fabrikat	Klasse	Filtertyp	Filterrahmen	Aufnahmerahmen	610	305_H	305_Q	305/2	Fl. [m²]
Unifil	**F7**	**KW85**	Holz	pv	2	0	0	0	**26.6**

Plattenwärmetauscher

Hersteller **Heatex**		Sommer	Winter			Sommer	Winter	
Typ **900-1011-158-3.0-3.0**	Ein AUL	**32.0**	**-11.0**	℃	Ein ABL	**26.0**	**20.0**	℃
Tiefe **1049** mm		**40**	**90**	%r.F.		**100**	**30**	%r.F.
Beipass mit Klappe **Ja**	Aus ZUL	**27.6**	**12.5**	℃	Aus FOL	**30.4**	**-0.4**	℃
Material **Al**		**52**	**15**	%r.F.		**78**	**90**	%r.F.
	P	**7.2**	**37.4**	kW	Abluft		**5000**	m³/h
					Kondensat		**0**	kg/h

Ventilator mit Direktantrieb

Hersteller **EBM-Papst**	Volumenstrom	**5000**	m³/h	Welllenleistung	**1.26**	kW
Typ **K3G 450 AY8602**	Externer Δp	**350**	Pa			
Ausblasöffnung LG90	Gesamtdruck	**584**	Pa	Düsenkallibrierfaktor		**240**
	Stat. Wirkungsgrad	**64**	%	SFP(RLT)	907	W/m³/s
	Ventilatordrehz	**1593**	min^{-1}	SFP(SIA)	0.252	W/m³/h

Oktav-Schallleistungspegel Ventilator [Hz]	63	125	250	500	1000
druckseitig [dB]	70	77	76	77	78
saugseitig [dB]	65	73	75	71	69

Extract Mountair data sheet

Applications

In our “Book of Systems“ we go into more detail about numerous typical applications. This section can be found at www.mountair.com. When we talk about typical applications, we mean by this repeated problem solutions. Thus a kitchen at customer A will probably have the same air conditioning system as that of customer B.

The applications and the associated system proposals are listed in the “Book of Systems”. They can be divided into different areas which have the same basic requirements. Thus the basic requirement for residential buildings, schools, offices etc. is probably fresh air. The fundamental slogan “Air to breathe” stems from this realisation.

The incredible variety of applications becomes apparent in the compilation. Every moment in our lives we are in touch with water, air and heat. The individuality of the building with its special requirements makes its contribution.

Alpenklang

Each system has quality defining characteristics. It is mostly a combination of efficiency and life cycle cost. The scope is limited by regulations. Thus, today, it is a primary objective to optimise heat recovery. Plate heat exchangers and rotation heat exchangers make simple systems possible with efficiencies of over 80 %.

Under the name Alpenklang we offer compact units capable of adjustment. First class counter flow heat exchangers and fans with EC motors are incorporated. These plants mostly run 24 hours a day, are robust and easy to maintain.

Mountair has developed special products for circuit connected systems, desiccant air systems and hybrid recoolers.

Here, in addition to the experience and the detailed specification, mastery of the system also plays a role. High standards of construction and material quality are specified.

ALPENKLANG

Airsol® circuit connected system

Airsol® – this is the Mountair connected circuit heat exchanger. The heat exchangers are optimised in their hydraulics and enable close temperature control. The top standard is maintained by using optimum design parameters and substantial material thicknesses.

The hydraulic systems have a pump station and an Airsol® controller. The supply of heating and cooling in the system facilitates a further reduction in pressure loss on the air side.

Pumpstation, Cilag

Celgene, Boudry

Applications

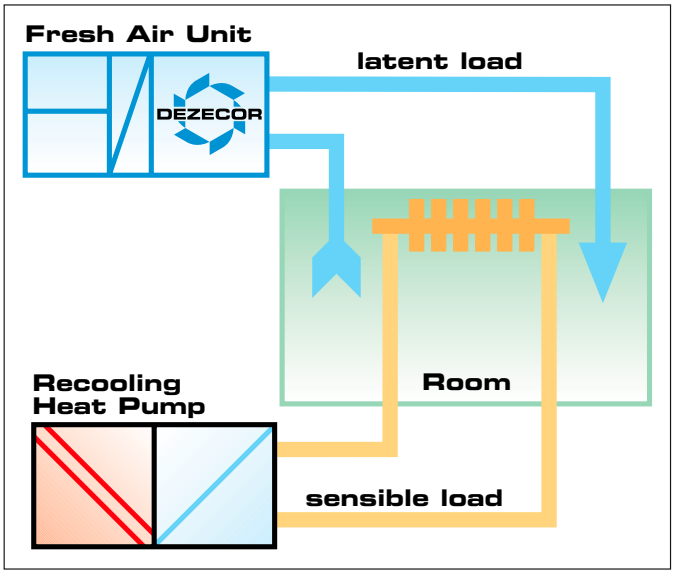
Dezecor® plants

DEC stands for Desiccative Evaporative Cooling. This process was first propagated in the USA. It is a plant that produces cooling with heating. At our first HILSA in 1996 Mountair exhibited a prototype in the Hallenstadion in Zurich, equipped with DESI rotors from Engelhard ICC. This resulted in notable buildings in Europe being equipped with these rotors.

The practicability of this process has been continuously improved over the years, control algorithms optimised and every year plants have been built with the appropriate feedback being provided. Today, Mountair is one of the leading suppliers of DEC plants, or as we say in Europe: Sorptive Air Conditioning.

The DEC technology is growing slowly but surely from its embryonic origins, as can be seen from the award for the "Phoenix", Tagelswangen (Brunner Haustechnik). Energy benefits, impressive references, expert planning and implementation – you will find it all at Mountair.

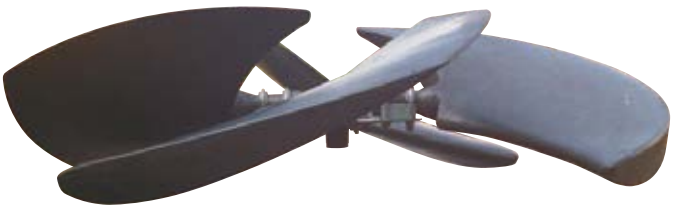
SBB Bern



Hybaco® Hybride Recooler

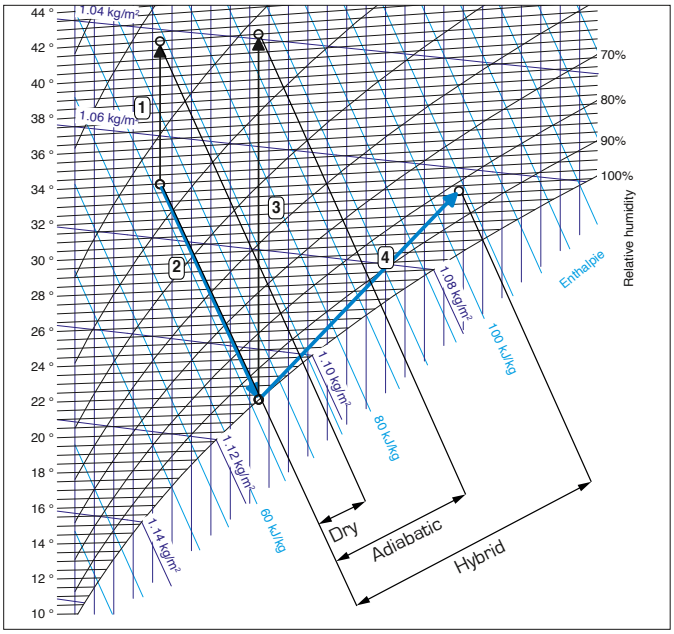
Mountair hybrid recooling that is energy efficiency and innovation. The high quality recoolers are tailored to the needs of the operator. Easy accessibility gives easy maintenance.

They are now indispensable in the energy policy landscape. We improve our Carnot process – we improve our COP. Here, the story has a successful sequel in the continuous further development. The new generation of the Hybaco® is equipped with EC motors and Howden blades, the heart beats a little faster.



Howden model blade

EWZ, Wagi-Areal, Zurich



Mollier HX diagram for moist air

Roche, Kaiseraugst

1 Dry recooling
2 Adiabatic cooling of the air to the wet bulb temperature
3 Dry recooling after adiabatic humidification
4 Hybrid recooling

Mountair Mission

By cultivating partnerships we achieve marketability

We are reliable

We provide solutions

We want to be the preferred supplier for the customers

Listen and react quickly

Keep promises

Innovation

Passion

Impressions

Robust installations in beautiful buildings, innovations, effective solutions. These are pictures of exceptional plants of which we are proud. We thank the builders, the engineers and the plant manufacturers for the trust in Mountair as supplier and partner.

The Home of FIFA

Headquarters, Zurich

Design and supply of all air handling equipment, four heat pump plants for producing heat and cold, integrated hybrid recoolers for compensation with the environment, in summer and winter. Monoblocs with rotor and integrated heat recovery on cooling in dry operation.

Petroleum Global Survey

PGS, Datacentre, London

Design and supply of two plants for centralised cooling of a data centre. Award winning project. The warm air from the racks is fed back through the double ceiling into the plant and blown via the cold wall into the room space.

The cooling is via a hybrid recooler. In case of high outside temperatures continuous switching from free cooling to mechanical cooling is used. The records over recent years show effective PUE factors below 1.2.

Märkli

Novartis Campus

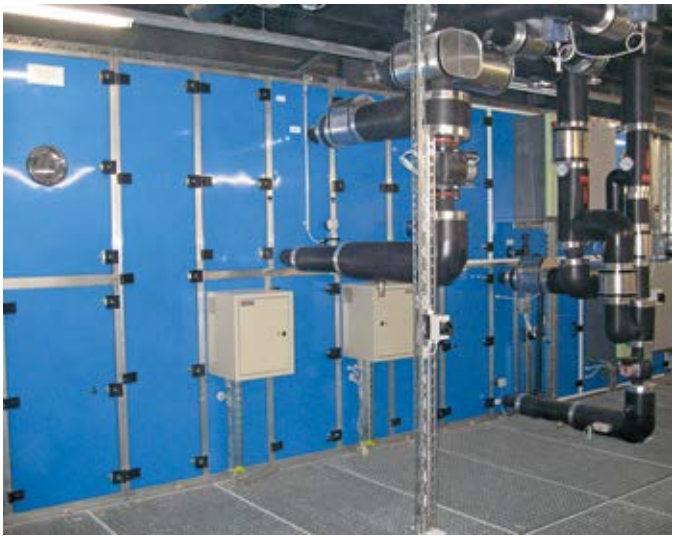
Basle

Equipment for the demanding buildings of the architects: Gehry, Soto de Mouro, Krischanitz, Moneo, Chipperfield, Märkli, Virchow.

In the services sector DEC convenience systems, in the laboratory sector circuit connected systems, dehumidification, cold recovery, adiabatic cooling, high pressure humidification, T2 roof top centres with architectural flair.

Gehry

Moneo



Krischanitz

Archhöfe, Winterthur

Services buildings

Air handling buildings equipment. Devices with rotor heat exchangers and circuit connected systems. Hybrid recoolers inside the building, adiabatic cooling.

Konradhof Richti-Areal, Wallisellen

Sunrise Tower, Zurich

Platform, Zurich

Museum of Fine Arts, Zurich

Museum buildings and galleries

Museum buildings feature very variable loads. At the same time a stable climate is a prerequisite for expensive works of art being exhibited and stored. In this application the primary air is conditioned and dehumidified by DEC plants. The sensible load is discharged safely.

Kew Gardens, London

Musée ethnographique Geneva

University Hospital Geneva, BDL 2

Hospital buildings

Supply of equipment for various hospitals, new builds and energy saving renovations. Supply of heat and cooling is via plate heat exchangers (adiabatic cooling).

S2 hygiene units are used. Devices for primary air treatment, operating theatres with dehumidification, isolation rooms and various individual units for the different medical sectors.

Triemli Hospital, Zurich

Triemli Hospital, Zurich

UKBB, Universiy Hospital Basle

University Hospital Zurich

Laminar air flow for cleanrooms

Roche Rotkreuz, Laminar flows for the production

Increasingly, clean room conditions according to ISO classes are required for the production of pharmaceutical products, for packaging and for food stuffs. The use of laminar flow with final state filters can ensure these requirements are met.

In the Roche Rotkreuz project, Mountair laminar flows with a double tight fit were used. The units are integrated into the ceiling and equipped with glass air baffles. LED Lighting and medium feed are built into the outlet. The recirculation air devices for heating and cooling are driven by EC motors.

Roche Rotkreuz

j-cube Singapore

Ice Rink Dryer

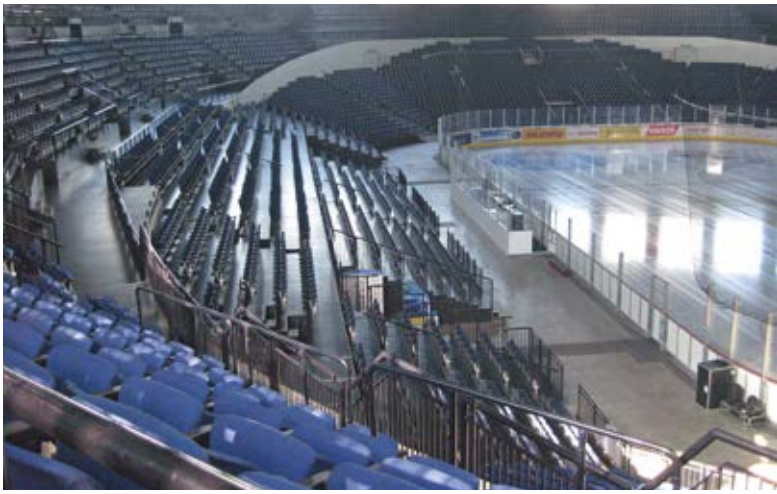
Mountair is an internationally acknowledged specialist in the indoor ice rink sector. The sorptive drying enables maintenance of very low humidity to prevent building damage and fog. Compared to condensation drying, the energy costs are lower. Mountair equipped the first Minergie indoor ice rink in Switzerland, the IWC Arena in Schaffhausen.

Mountair indoor ice rink dryers are used in over 20 indoor ice rinks in Russia – with great success.

Increasingly indoor ice rinks are being built in tropical areas of the world. This a great challenge, technically as well as from the energy viewpoint. The dimensions are frequently astonishing for us, as for example the ice rink in the shopping centre in Singapore which has the standard overall dimensions of 30 × 60 m.

The capacity of both plants is correspondingly large; the precoolers alone are each 500 kW. Plants for indoor ice rinks are supplied ready to plug in and commissioned on site. Monitoring is via a modem – voilà, we've arrived in the global village.

IWC Arena, Schaffhausen



Hallenstadion Zurich

EWZ, Wagi-Areal, Zurich

EWZ refrigeration Wagi-Areal

Hybrid recooler

Hybrid recoolers are an indispensable component for the energy efficient operation of refrigeration plants, at the same time they enable a high level of free cooling. Mountair has over the years produced large recooler plants (largest hybrid plant at Roche Kaiseraugst, largest dry recooler plant at Holcim Untervaz). Hybrid recoolers live in an industrial environment.

The well-developed design means problem-free service and maintenance. 3D design models help in planning and simulation. A novelty at EWZ is the use of large EC motors for driving the quiet running axial fans, an energetic step into the future, better adjustability and less power consumption in part load operation.

Nomura Bank

Watermark House, London

Installation of four Changeover heat pumps, total output 1MW for the whole fresh air supply for the bank. Mountair supply includes the complete plants with heat pumps and control.

Universiade Kazan, Pobedy Street

Pool Heat Pump

Freestyle Minsk – a large pool

The Freestyle property is an enormous dome with spectator stands and a pool. On the one side are diving towers up to 10 m high, on the other side a triple ski jump with a 42 m high run up – all under one dome.

Freestyle Minsk

Adventure pool "Eau lá lá'', Davos

The air conditioning of this property required an AFC flow analysis, at the same time the calculations could be checked with the computer model and the design firmed up. The evaporation amounts of over 1000 kg of water per hour. Operation is via eight swimming pool heat pumps in parallel use, where by the internal heat recovery was resolved with a circuit connected system, this is for reasons of climate. Similar plants in the wellness and swimming sector have been installed in Winterthur (Geiselweid), Davos (Eau La La) and Weinfelden (BBZ). The circuit connected system heat exchanger, particularly in renovation projects, allows a "stretched" device version which would not be possible with a plate heat exchanger. The years of experience also validate the use in "cold climate regions" such as in Noyabrsk (Russia) where the design temperature is –52 °C.

Sauter Bachmann, Netstal

Industrial processors

Industrial operations, large volumes of air, T2 roof top centres called for? They are weather proof all-rounders.

Or hygienic recirculated air coolers for meat processing? They are in stainless steel. Welded and treated with jet cleaners daily.

Ricola, Laufen

Hilcona, meat processing, Schaan

VHF, Flexcell Yverdon

PSI Synchrotronlichtquelle, Villigen

Research laboratories

Precision and do the imaginable! That is exactly the definition of the task in research laboratories. High filter level protect the environment, explosion protection, noise and vibration insulation. Narrow temperature ranges, Mountair achieves all of these in its commitment.

IBM Nanotech-Center, Rüschlikon

ZLB Bioplasma AG, Bern

Swiss Federal Institute of Technology Science Center, HIT building

Education/campus buildings

It is not always only fresh air, but in buildings or schools and education fresh air is essential for proper performance in people. Mountair for comfort.

University of Lucerne

University of Applied Sciences, St Gallen

Swiss Federal Institute of Technology, Life Sciences, Zurich

University of St Gallen

Mozart Theatre

Salzburg

DEC air conditioning engineering in pure culture. Huge load fluctuations, economic investments. Equipped with two large DEC plants. Driving heat is from the district heating network.
From the technical viewpoint renovations or the replacement of plants are often more demanding than with new build. This applies to the planning as well as to the execution.
In case of historic buildings the excessive moisture load is very frequently triggered by visitor numbers, and is frequently the reason for undesired degradation of frescos and interior decoration.

Airport Zurich Dock Midfield

Please check in for the next twenty years with Mountair!

20 years

MOUNTAIR

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