

# Econet

*Where renewable and recoverable energy combine*



**FläktWoods**



## Our innovative Econet system is saving energy in several ways

**T**he components in Fläkt Woods' innovative Econet system are connected together to provide a more reliable and more efficient AHU system. Heat recovery, heating and cooling are integrated into a common circuit as heating/cooling coils, pumps, valves, pipe systems, insulation, etc. The result is a shorter and more compact ventilation unit.

This is highly beneficial from an environmental point of view because much less energy is used to transport the air through unnecessary components. Further development of the principle of energy recovery has also led to increases in efficiency of 50% compared with traditional coil recovery systems.

### News

#### **Dry-box solution (accessory)**

High moisture combined with impurities in the outdoor air can sometimes damage the outdoor air filter. To protect the outdoor air filter, the pre-heater coil has traditionally been installed before the filter. This traditional solution reduces the energy recovery by 30%. Therefore, with Econet dry-box solution both coils are connected in the supply air instead. Advantages of this system are that there is no impairment of the recovery, the system is self-regulating and the components are protected from failure with the help of Econet's frost protection.

#### **Controls**

The control unit for Econet's recovery function has been updated and has been given more flexibility and better functionality. The control unit can also be supplemented with its own efficiency/energy measurement function.

#### **Twin pump solution (accessory)**

A twin pump solution is available for Econet. This is the optimal solution for buildings where the ventilation is crucial for an ongoing process and Econet must never stop. If one of the pumps has a breakdown, the twin pump solution sets the other pump going.

#### **Heat exchanger package (accessory)**

In most cases some form of supplementary heating or cooling is necessary. Instead of ordering cooling/heat exchanger separately, Fläkt Woods offer a complete heating exchanger package. This means that shorter delivery times are possible, and better precision is achieved in the building.

## *Problem:* **Energy consumptions in buildings**

We spend approximately 90% of our time indoors. A lot of energy resources are consumed to maintain the right temperature and air quality, which is becoming more and more important. On average, 68% of a building's energy needs are spent on heating, cooling and ventilation. Since we can affect both

heating and cooling through the ventilation system we have a lot to work with. Together that means that you can make an impact on somewhere about half of the total energy consumption of a building when focusing on ventilation. That is something worth considering!

## *Solution:* **Energy efficient systems**

### **Reusing energy**

An obvious energy approach is to reuse the heat and cooling. This mostly applies to reuse of existing energy in the exhaust air. It is best achieved by using a recovery system with the highest recovery rate. Econet has a recovery rate of 65 -75%.

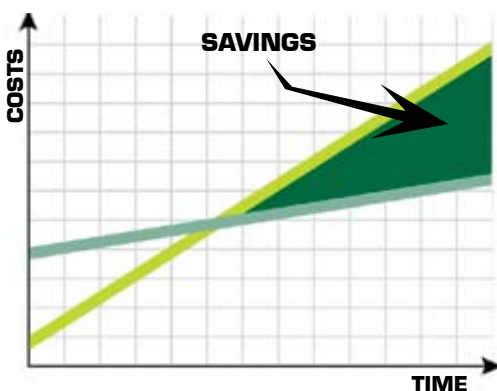
### **System optimization**

Through its intelligent design, Econet is able to influence the entire energy chain. Thanks to the high degree of efficiency, the energy requirement can be reduced steeply. The entire energy chain from production, distribution to consumption can be optimized with the help of Econet, thanks to the fact that energy sources that

were previously unusable can be used in the Econet system.

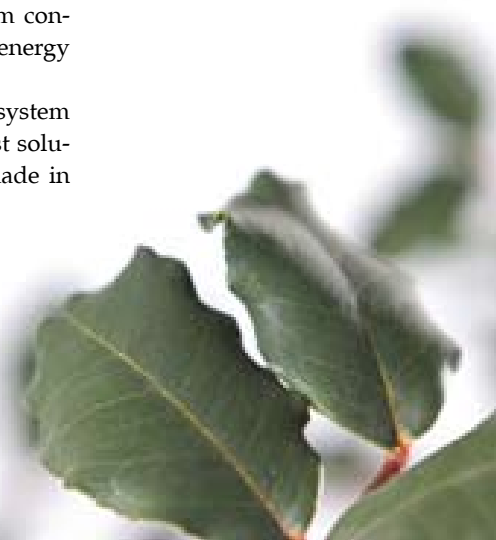
An example of system optimization is to combine Econet with a chiller. The temperature of the cooling water is usually determined with reference to the requirement of the ventilation unit, which leads to a relatively low cooling water temperature (6°C). This means that the efficiency of the chiller is limited. If an Econet system is used instead, the cooling water temperature can be increased significantly. This leads to a more efficient and smaller chiller, smaller pipe dimensions and pumps, i.e. economies in both investment costs and operating costs are possible.

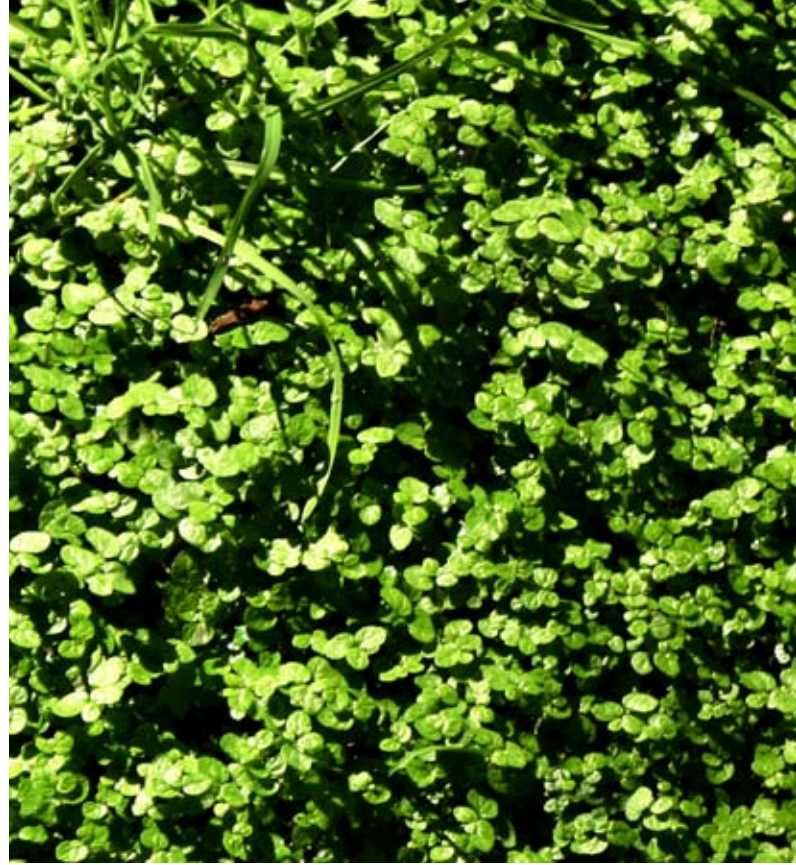
## **LCC sums it all up**



Within the industry we use an analysis approach called "Life Cycle Cost" when designing ventilation systems. It balances the cost of better components and smarter system control with savings in maintenance and energy costs over the system's life time.

Not surprisingly, a more expensive system with better quality will be the cheapest solution in the long run as savings are made in energy and maintenance.





## Heating

The design temperature in a heating system is traditionally 80/60°C. Econet is a low-temperature system, which means that it is possible to use heating water at a temperature of 25-35°C. This means that there is a possibility of utilizing hot water that was previously considered to be unusable. The heat source for Econet can be the return water from district heating, waste/condenser heat or return water from radiator systems, for example.

## Cooling

Econet can cool a building with other water temperatures that traditional systems. About 10°C cooling water is in most cases sufficient as a feed temperature, whereas the return temperature of the cooling water can be as high as 22-26°C. If a chiller is used, the cooling factor (COP) is increased as a consequence of a better working point. Econet is always prepared for cooling, which makes it possible to add cooling in a later stage.



# Econet makes everybody a winner

To lower the costs and care for the environment, Econet makes it possible to use alternate energy sources instead of traditional. Thanks to this, Econet makes everybody a winner.

## Heat energy from a chiller

Refrigerators give off heat (condenser heat) when they produce cold. Liquid-borne condenser heat from chillers is very often at a low temperature (30-36°C), which in the past has meant that it cannot be used and thus goes to waste. Econet can utilize the waste heat in order to heat the supply air. This way of saving energy is efficient in food shops and supermarkets.

## Energy from district heating

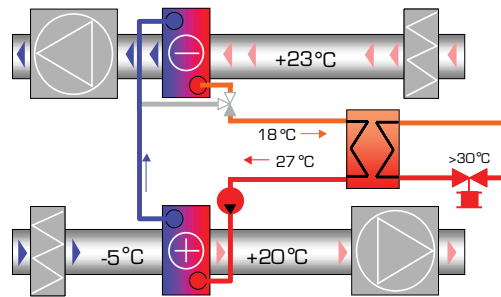
Econet can utilize lower hot water temperatures, which makes it entirely possible to utilize the return heating water from the radiator system, for example. This means that the return heating water to the district heating network can be lowered to 20-25°C in optimal cases, which results in reduced energy costs.

## Energy from district cooling

In a district cooling system, it is important that the temperature of the return water to the district cooling system is as high as possible. In an Econet system, the highly efficient coils can return the desired temperature level to the cooling water without over dimensioning the cooling coil in the ventilation unit as in traditional systems.

## Heat pump

The lower the hot water temperature produced by a heat pump, the better the operating economy. Econet can significantly lower the hot water temperature down to a level of approximately 30°C. This means that we have a more efficient and smaller heat pump with better operating economy.

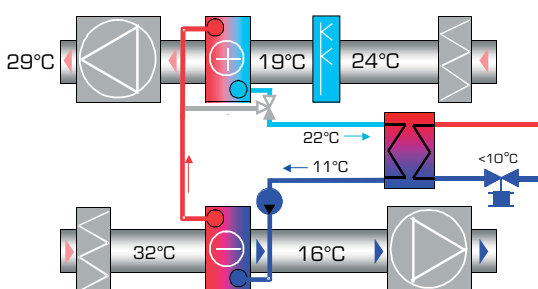


## Energy from ground source cooling/ seawater

The temperature in the ground is largely constant (8-10°C), i.e. it is more or less unaffected by the season. The temperature can rise slightly during the late autumn, however, and this can lead to problems in making use of the ground source cooling. Econet can utilize temperatures of up to 12°C, which means that the system is excellent for these environmentally friendly energy sources.

## Evaporative cooling

The exhaust air unit can be supplemented with a humidifier section where cooling recovery is desired, and indirect evaporative cooling can be utilized in this way. This method can significantly reduce the cooling effect requirement from the chiller, which results in a smaller chiller and lower operating costs.



# Over 1500 Econet systems installed

## Econet in superstores

The refrigerated counters emit waste heat that Econet can reuse. This energy is often wasted, but Econet uses it to heat the supply air.

**References:** ICA Maxi, Jönköping, Haninge, Sweden/Prisma, Turku, Finland

## Econet in industries

Within industry there is usually waste heat available. This heat is frequently sufficient for Econet to heat the air, i.e. no primary heating is required to heat the air. Due to the recovery principle employed by Econet it is possible to position the units separately from each other, in addition there is no transfer of contaminated exhaust air.

**Reference:** Volvo, Gothenburg, Sweden



## Econet in offices and commercial Buildings

The ventilation requirements in these types of buildings vary during a day. Econet combined with a VAV system creates a demand controlled ventilation, which gives a high comfort but saves energy when the rooms are empty. Coil recovery in Econet guarantees no leakage flow between supply and exhaust air and decreases the length of the unit. These buildings often have access to ground source heating/cooling, and that makes Econet a perfect solution.

**References:** Akademiska Hus, Lund, Uppsala, Gothenburg, Sweden/Frankfurt Airport, Frankfurt, Germany/NATO, Brussels, Belgium/Bristol Museum, Bristol, UK

## Econet in hospitals

In hospitals it is of severe importance that there is no leakage flow between supply- and exhaust air in order to keep the indoor air hygienic. For the same reason, the ventilation units also have to be easy to maintain. That is why only indirect energy recovery can be used, i.e. coils. As the ventilation is in use day and night reuse of energy is important in order to decrease the energy costs. Econet is the best option for that.

**References:** TYKS, Turku, Finland/St. Olav Hospital, Trondheim, Norway/Imperial College, London, UK/Jansson Pharmacia, Antwerpen, Belgium

Increasing energy prices, legislation and a more environmental consideration raise the demands and old techniques are challenged with innovative solutions.

Our Econet system contains of an air handling unit and a prefabricated pump group that controls the system. A heating exchanger package can be delivered as an accessory.



### The winning ideas of Econet

- One common circuit for heating supply, cooling and heat recovery results in a diminished need of circulation pumps, pipe systems, valves, insulation etc. The result is a shorter unit and in most cases less pressure loss.
- A flexible control system that optimizes the reuse of energy.
- High recovery rate, especially suited for variable air velocity systems.
- Exceptionally low temperature requirement for hot water, allows the utilisation of alternative sources of thermal energy.
- Ideal for district cooling/heating.
- Perfect for renewable energy sources such as ground source water for cooling and waste energy for heating.
- The possibility of utilizing cooling recovery reduces the cooling effect requirement and evaporating cooling agent
- Freeze-proof system
- Separate air flows provide no air transfer.
- Our Dry-box solution protects the supply air filter without having a negative impact on the recovery.

# We Bring Air to Life

FläktWoods is a global leader in air management. We specialise in the design and manufacture of a wide range of air climate and air movement solutions. And our collective experience is unrivalled.

Our constant aim is to provide systems that precisely deliver required function and performance, as well as maximise energy efficiency.

## Solutions for all your air climate and air movement needs

FläktWoods is providing solutions for ventilation and air climate for buildings as well as fan solutions for Industry and Infrastructure.

### ● Air Handling Units (AHUs)

Modular, compact and small AHU units. Designed to ensure optimisation of indoor air quality, operational performance and service life.

### ● Air Terminal Devices and Ducts

Supply and exhaust diffusers and valves for installation on walls, ceiling or floor are all included in our large range and fit all types of applications.

### ● Chilled Beams

Active induction beams for ventilation, cooling and heating, and passive convection beams for cooling. For suspended or flush-mounted ceiling installation – and multi-service configuration. With unique Comfort Control and Flow Pattern Control features.

### ● Residential ventilation

A complete range of products for residential ventilation. Consists of ventilation units, exhaust air fans and cooker hoods designed to optimise indoor comfort and save energy.

### ● Fans

Advanced axial, centrifugal and boxed fans for general and specialist applications. Comprehensive range including high temperature and ATEX compliant options. Engineered for energy efficiency and minimised life cycle cost.

### ● Chillers

Air-cooled and water-cooled chillers with cooling capacity up to 1800kW. Designed to minimise annual energy consumption in all types of buildings.

### ● Controls and drives

Variable speed drives and control systems, all tested to ensure total compatibility with our products. Specialist team can advise on energy saving and overall system integration.

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