

Econet Compact

Where renewable and recoverable energy combine



FläktWoods



Our innovative Econet system is saving energy in several ways

The 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 com-

pact 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

Controls

The newest Econet innovation is to reduce the pump unit size and to optimize the number of components. This has been done with the result of even a more compact pump unit. There are no unnecessary components or functions. The most interesting innovation is to combine the Econet control box and the frequency inverter into only one single component. This has been achieved by using a multifunctional frequency inverter where all energy recovery functions are integrated. No external stand for a separate frequency inverter and a separate control box is needed. Everything is now integrated and mounted directly on the pump. The unit and all

software needed for the recovery function and all project based data is already configured in the factory.

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 on site.

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 buildings 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 it 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.

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





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 than 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.

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 volume (VAV) 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 power 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.
- First to use an multifunctional, integrated frequency inverter.

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

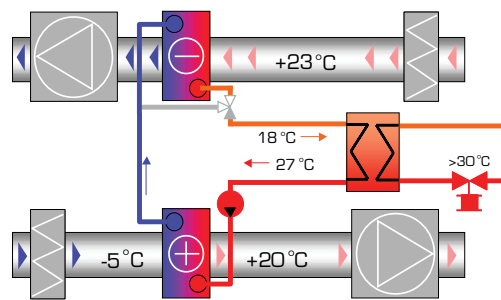
Econet can utilize lower hot water temperatures, which makes it entirely possible to utilize the return heating water from the radiator system, for example. This means that the return heating water to the district heating network can be lowered to 20-25°C in optimal cases, which results in reduced energy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

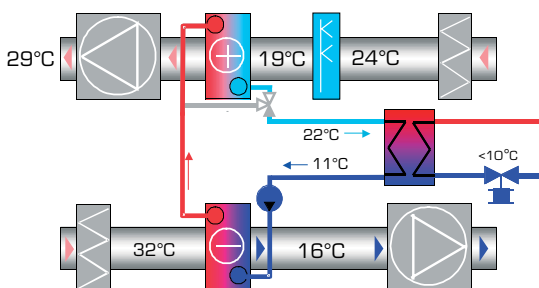


Energy from ground source cooling/ seawater

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 power requirement from the chiller, which results in a smaller chiller and lower operating costs.



Over 2000 Econet systems installed

Econet in supermarkets

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 offices and commercial Buildings

The ventilation requirements in these types of buildings vary during the 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 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 multi-dwelling houses

In multi-dwelling houses it is of several importance that no leakage flow occurs between the supply- and the exhaust air in order to avoid moisture and "smell" transfer back into the building. The size of the equipment rooms for the air handling units are very limited which sets high demands of the flexibility of the AHU:s. The Econet is shorter than normal AHU:s and the supply- and the exhaust air units can be separated from each other.

References: Paris Tower, Helsinki, Finland/Kiloterinaukio, Espoo, Finland/Alavink, Outokumpu, Finland/Välkkylä, Oulu, Finland.

When using ECONET instead of the Rotary heat exchanger:

From the recovery efficiency point of view the Rotary heat exchanger is outstanding compared to other recovery systems. However, there are circumstances where the RHE is not suitable.

The following features are unique for Run around Coil systems, like ECONET and should therefore be the first choice when:

- Hygienic applications, the recovery system has to be cleanable, the air streams has to be 100% separated from each other. No cross contamination allowed, no smell transfer.

- Separated Air Handling, due to small equipment rooms, duct work or other reasons.

- Different Air flows, supply and exhaust air flows do not match each other. The units are of different sizes.

- The refurbish market where an upgrading of the AHU:s are limited due to space etc.

- Housing applications where moisture and odour transfer are not allowed.

When using ECONET instead of the the traditional RAC, Ecoterm:

Fläkt Woods has to main Run around coil systems, the ECONET and the traditional Ecoterm.

The following features are unique for ECONET and should therefore be the first choice when:

- A VAV system, a flexible and integrated control system optimizes the recovery for all situations.

- Thermal energy of low temperature, allows utilisation of alternative energy sources.

- Protection of the supply air filter, our dry-box solution protects the supply air filter without a negative impact on the recovery.

- Cooling recovery, due to high efficiency ratio even interesting concerning cooling recovery.

- Short installation time, due to prefabricated pump unit including controls and software for energy recovery.

- Reduction of electricity consumption, 1 coil in the supply air instead of traditional 3 coils (recovery, heating and cooling coils) reduces the electricity consumption for the fan.

- And last but not least, with the ECONET system energy recovery ratios up to 70% can be reached.

An example of savings in energy costs:

Location: London, running hours 8760 h, air flow 10 m³ /s, electricity 0,15 €/kWh, heating 0,12 €/kWh.



	Temperatur efficiency	Electricity		Heating	
	η	MWh	€/year	MWh	€/year
ECONET	68%	89	13350	59	7080
Ecoterm, traditional RAC	57%	98	14700	120	14400

A reduction of heating energy of 50% and electricity of 10%.

Annual savings with ECONET 8670 €.

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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