

Fläkt Woods – Building Future

Saving energy in building ventilation



*Energy, Expertise
and Environment
with Fläkt Woods*



You must save 20% on energy before 2020.

Following the Kyoto protocol the European Union has set a target to reduce energy consumption. For buildings the target is set at a 20% reduction by 2020.

The 160 million buildings in the EU use over 40% of Europe's energy and create over 40% of its carbon dioxide emissions. And unfortunately that proportion is increasing.

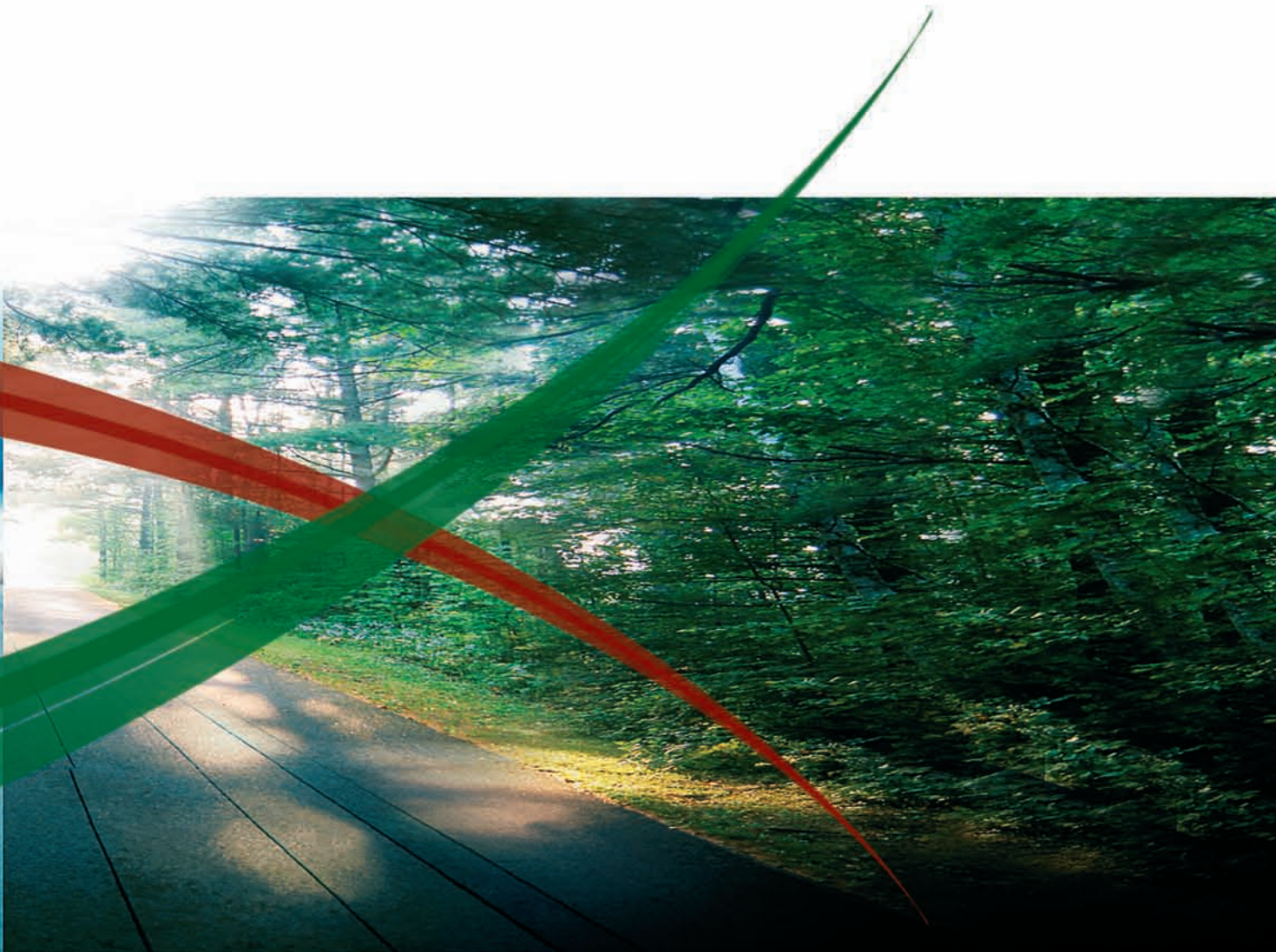
Therefore the Commission of the European Union has issued The Energy Performance of Buildings Directive (EPBD). The directive has been in force since January 2003.

Local legislation and time-tables in member-ship states are being developed. Reducing the energy use of buildings without compromising the indoor environment and services is the key challenge for Europe.

■ EPBD Facts

- Issued by the Commission of the European Union
- Directive in force since 2003
- Local legislation to ratify directive under way
- 20% reduction by 2020
- Viable for all buildings, domestic and non-domestic





Fläkt Woods' e³ Concept makes it come true.

To address the needs created by the EPBD directive, Fläkt Woods has poured a lot of effort into creating the e³ Concept. Our solution is a broad approach leaving no stone unturned to achieve optimum results.

High-performing components are an obvious starting point. With over one hundred years of experience that is what our customers have come to expect from us over the years. Utilizing the latest technology to create smart solutions is achieved through experience coupled with massive R&D investments. Being a large

global player we have got what it takes. But it is by combining products into a system, utilizing smart controls, one can achieve the best energy solutions. This strategy requires that the systems and individual components are designed together. It takes thorough knowledge of the individual products impact on each other and the ultimate combined effect.

Luckily Fläkt Woods develop and produce components as well as design systems. That's why we can combine the parts into harmonic overall solutions.

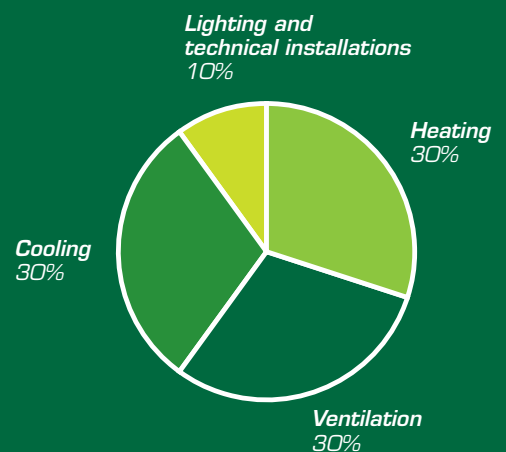




Problem: **Energy consumption in buildings**

We spend approximately 80% of our time indoors. The indoor environment is becoming more and more important. A lot of energy resources are consumed to maintain the right temperature and air quality. Normally we say that 30% of the energy is spent on ventilation, another 30% for cooling and 30% for heating. (The last 10% is for the lighting and technical installations.)

With ventilation representing a third of the consumption we have a lot to work with. But we can also affect both heating and cooling through the ventilation system. 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's something worth considering!



Solution: **Energy efficient systems**

Reducing the energy consumption in a building through ventilation can be achieved following some principal routes:

❑ Avoid wasting energy

As a start you might take a look at what you are presently using and consider if that is necessary. A good example is the ventilation of spaces like cafeterias and conference rooms. They are typically ventilated according to peak demand. But in real life only fully occupied for short periods of time. We have solutions that addresses this waste. We call it Demand Control Ventilation.

❑ Reusing energy

An obvious energy approach is also to reuse the heat and cooling. This can be achieved for instance with our Econet solution with recovery rates up to 70%.

❑ Intelligent design

Different situations call for different requirements. Cooling down the building on a hot day requires large volumes of air to be transported.

Heating the same premises on a slightly chilly day is achieved with a fraction of that effort.

Traditional ventilation systems have a constant air-flow. We use variable air velocity (VAV) that varies with demand. That means considerable savings in fan drive energy.



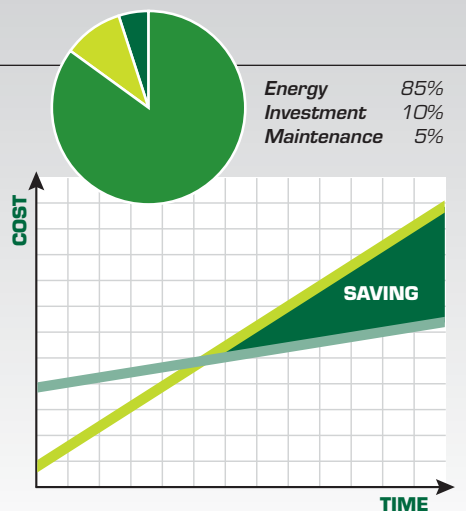
❑ Downsizing

Using compact integrated system design one can achieve the required effect with reduced energy consumption. The combination of the chilled beam, chiller and our Econet units reuses cooling refrigerant and reduces the amount of liquid. Smaller pipe dimensioning and size of pumps can in some cases reduce the chiller load with up to 50%.

❑ 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 systems life time.

Not surprisingly a smarter system comes out on top. About 85% of the life time cost is typically energy costs, 10% initial investment and 5% maintenance.



Integrated advantages

Econet

Econet is an integrated Air Handling Unit. It integrates heating, cooling and energy recovery into one component. Due to better heat recovery from the exhaust air the need to heat the supply air can be reduced by up to 40%. Econet can also control a liquid based cooling system with considerable savings in overall energy consumption



Chillers

The Fläkt Woods range of chillers are designed to minimise the overall annual energy consumption in all types of buildings.



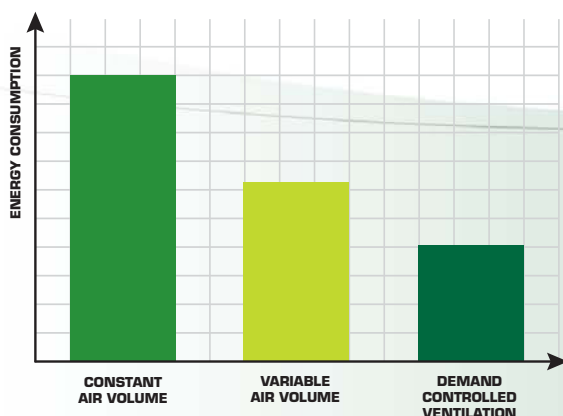
Demand controlled ventilation

Demand controlled ventilation provides desired ventilation based on the actual occupancy of the room. It increases indoor air quality and saves energy normally wasted in ventilating unoccupied spaces. This can be applied to areas where there are frequent changes in occupancy, such as conference rooms, board rooms, cafeterias etc.

Field experience indicates that actual occupancy levels are at least 25% lower and perhaps as much as 60% lower. In normal office building the offices are not occupied more than 60% of the time during a normal working day.

This means that demand controlled ventilation can reduce ventilation as well as heating and cooling loads by 10%–30%.

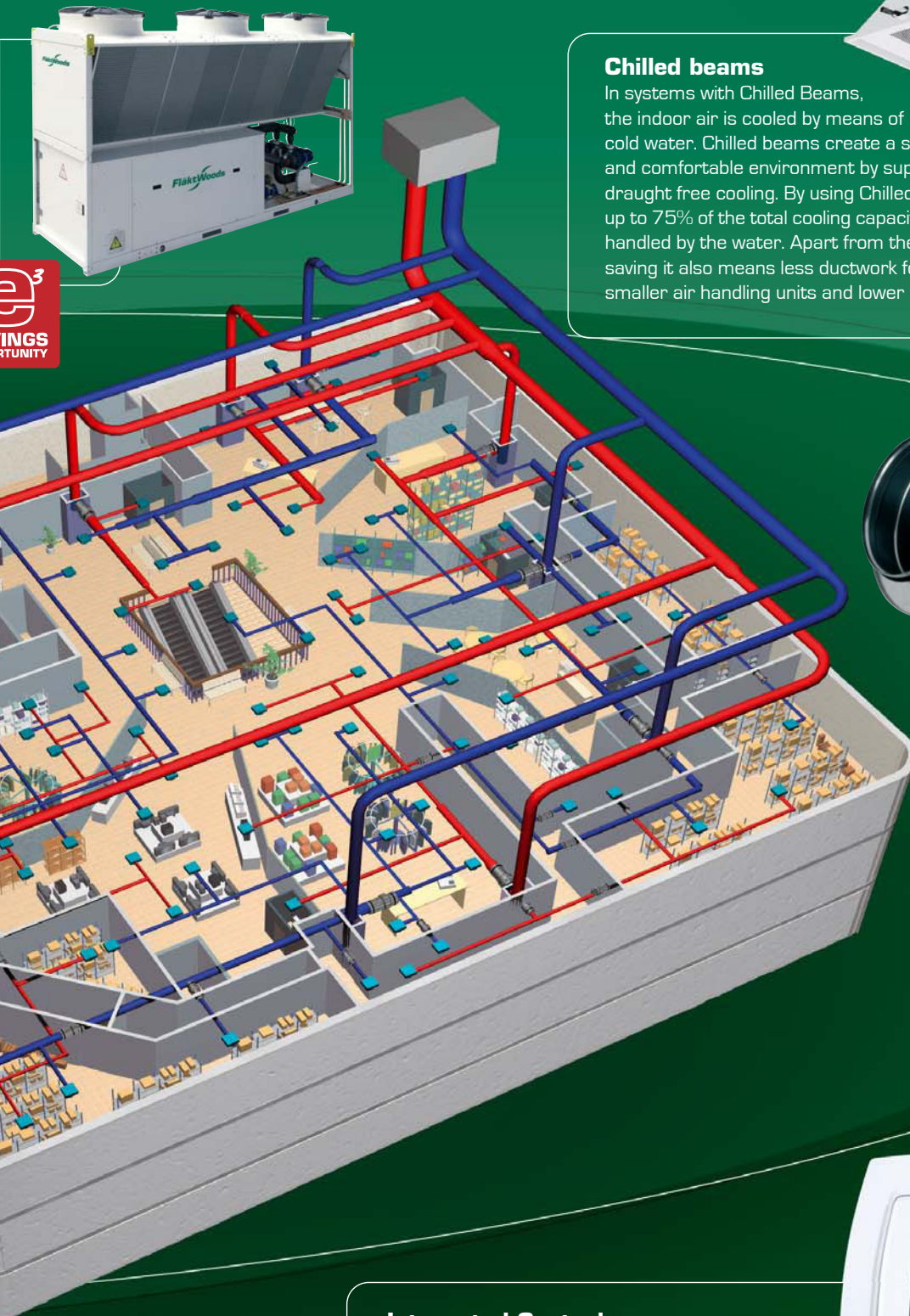
Energy consumption – air transportation



ReCooler - Energy efficient cooling unit for eQ air handling units

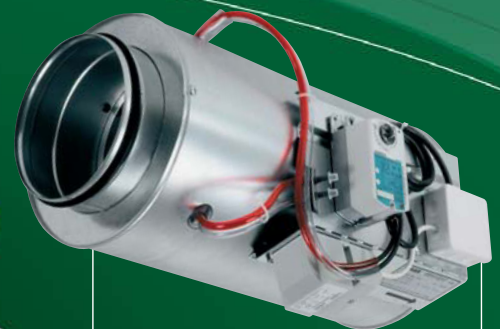
ReCooler from Fläkt Woods offers cooling integrated in the air handling unit with exceptionally low energy consumption. ReCooler offers the added feature of a built-in rotary heat exchanger, designed to provide sensible and latent cooling recovery, which reduces the energy consumption for cooling by 20%.





Chilled beams

In systems with Chilled Beams, the indoor air is cooled by means of cold water. Chilled beams create a stable and comfortable environment by supplying draught free cooling. By using Chilled Beams up to 75% of the total cooling capacity will be handled by the water. Apart from the energy saving it also means less ductwork for air, smaller air handling units and lower noise.



Air Volume Control

Flow variators are products for the control and adaptation of airflows in VAV (Variable Air Volume) systems. The system saves costs and energy because the flow and cooling effects are adapted to the actual demand in the room, with the result that the total flow for the air treatment units is reduced.



Integrated Controls

The heart of the Demand Control Ventilation system is the controls. Fläkt Woods has adapted the thinking into our control package. This strategy provides a way to create maximum indoor air quality

to minimum energy cost. FWG offers integrated control solutions based on open communication protocols enabling further integration with other systems in the building. Integrated control systems reduce installation cost and maximize functionality — turning products into energy efficient systems.



These are areas where savings typically can be made. The savings potential must however be analysed considering existing installations and specific circumstances on a case-by-case basis.



We Bring Air to Life

Fläkt Woods 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

Fläkt Woods 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.

Energy recovery

Dessicant-based product and systems that recover energy, increase ventilation and control humidity.

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.

Acoustical Products

A complete line of sound attenuating products, including rectangular and round silencers, Media Free silencers, custom silencers and acoustic enclosure panels.

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