

Energy efficiency

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**Prime office
space
sustainable
future.**

Transparency creates trust

As an international real estate company Züblin has a major responsibility to its tenants and shareholders and – as the owner of centrally located office properties – to the public in general. While companies have been aware of their social and economic responsibilities for years, environmental objectives represent a new challenge. As a result Züblin has been committed to an ambitious strategy of researching, promoting and increasing energy efficiency in the real estate sector since 2006.

Züblin is engaged in an open exchange of information with its tenants about the consumption patterns of the properties. This form of transparency is a prerequisite for identifying ways of improving energy consumption and jointly taking steps to increase energy efficiency.

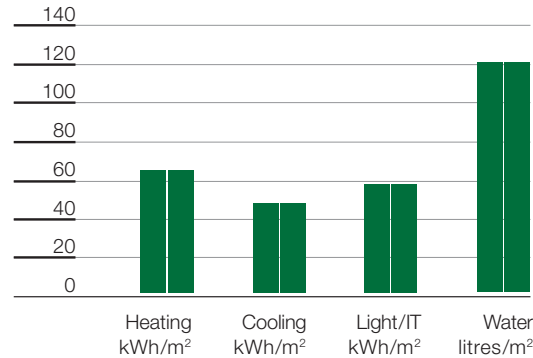
What are the aims of the energy efficiency strategy?



1. Reduction of energy, water, CO₂ and waste
2. Yield enhancement
3. Optimisation of building use

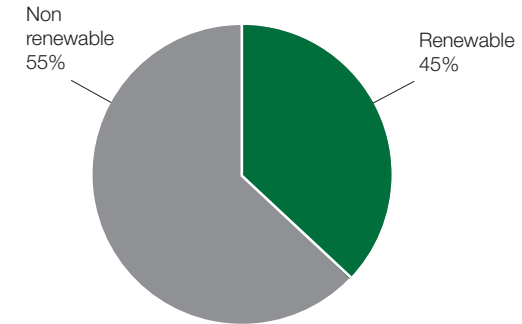
Consumption of the 4 properties with Energy Monitoring System (EMS)

Relative consumption for energy and water



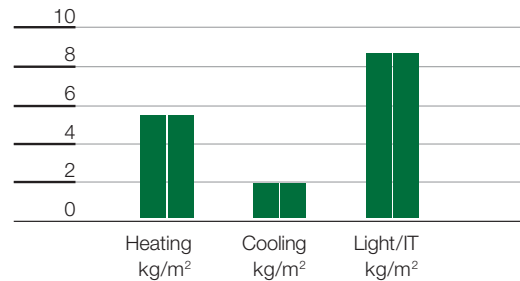
Absolut energy consumption: **4 103 115 kWh**
 Absolut water consumption: **2 895 200 litres**

Share of renewable energy



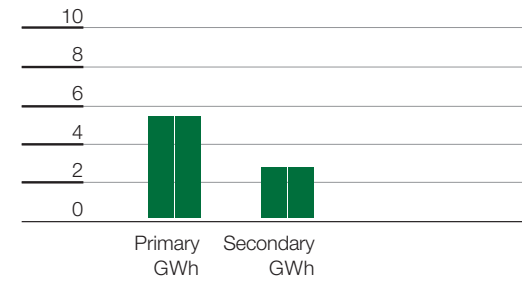
Share of renewable energy: **45%**

Relative CO₂ emissions



Absolut CO₂ emissions: **389 000 kg**

Absolut consumption of primary and secondary energy



1 GWh = 1 000 000 kWh
 Average primary energy factor: **2.1**

Züblin handling with energy efficiency

How will the reduction in environmental impact be measured and evaluated?

Züblin is currently monitoring energy consumption in four buildings, calculating the share of renewable energy, differentiating between primary and secondary energy and measuring water consumption and CO₂ emissions. The consumption figures are continuously recorded, analysed and acted upon.

How are the objectives implemented in practice?

Züblin only invests in sustainable buildings. As a result we set extremely high environmental standards when renovating buildings. Moreover, a dedicated team at Züblin works to continuously maintain and raise the efficiency of all properties.

How can energy efficiency be maintained in practice throughout the lifetime of a property?

There is only one way, which is to monitor energy consumption. By constantly measuring all relevant consumption figures the potential to optimise consumption can be identified. With energy monitoring, for example, leaking water pipes, faulty cooling units or inefficient light controls can be identified rapidly.

Further information, including measurement methods, references and partner organizations is available on our website.

www.zueblin.ch/energieeffizienz

How does Züblin handle the label issue?

There are two aspects to the drive to create more energy-efficient buildings. Firstly the emphasis on energy efficiency in building renovations and secondly maintaining efficiency during the operating phase.

When renovating buildings Züblin works with recognized certification labels, which are popular in the rental market, where possible. These include Minergie in Switzerland, DGNB in Germany and BREAM, HQE and BBC in France.

However, Züblin's experience in the operating phase is that building management systems that may be well adjusted at the beginning lose a considerable amount of precision and efficiency in the first few years. The result is increased energy consumption with a corresponding impact on energy bills and environmental costs. Züblin is committed to tackling this widespread problem. Building labels currently take too little account of this issue.

Which fact makes the Züblin way of monitoring unique?

One important factor is the measurement of tenants' electricity consumption. This often accounts for the majority of overall electricity consumption and therefore has a corresponding potential for energy savings. In the properties it was measured that the total electricity consumption is roughly equal to the energy requirement for heating. Failing to measure and analyse tenants' effective electricity consumption is therefore missing a trick!

Current energy efficiency projects

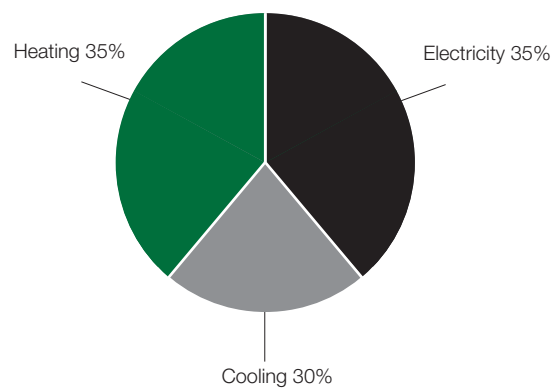
- 7 Renovation projects
- Systematic introduction of energy monitoring in 22 properties

Primary and Secondary energy requirement

Secondary energy requirement: This comprises the energy supplied to the building and used there. For example the quantity of oil supplied or the electrical energy consumption -> the lower the requirement, the more efficient the building.

Primary energy requirement: This comprises the secondary energy requirement plus energy-related inputs required for extraction, conversion and transport of the energy. -> the lower the factor between primary and secondary energy, the more efficient the energy source.

Energy consumption breakdown of Züblin EMS properties

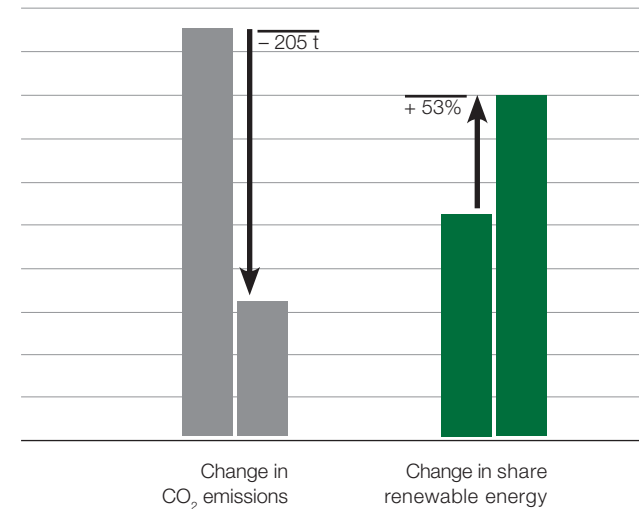
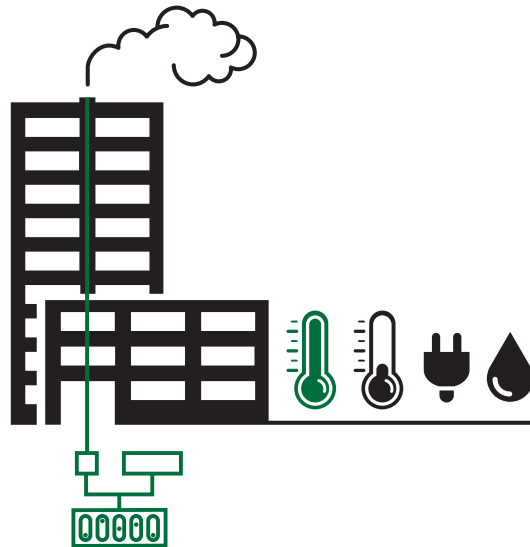


Practical example: CO₂ emissions

How does the EMS help to reduce CO₂ emissions?

An example will help to illustrate this. In a new Minergie-certified property the heating systems were optimised with a major impact on CO₂ emissions. In this building the heating is supplied by a gas heating system and a heat pump. The problem was that after the building phase was completed and these systems were taken into operation the gas heating system was producing 92% of the heating and therefore the benefits of the heat pump were not being used.

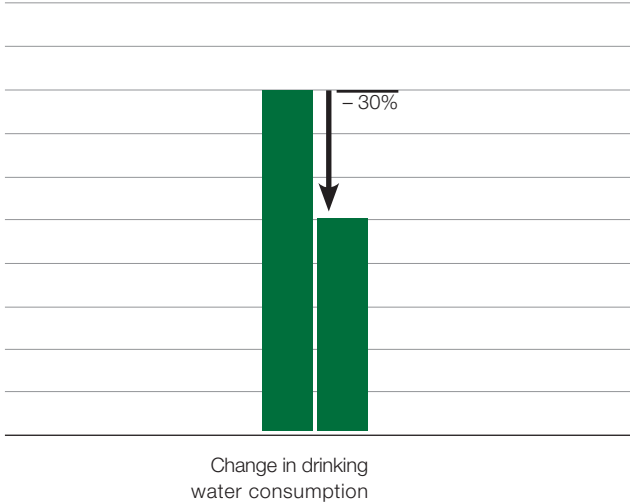
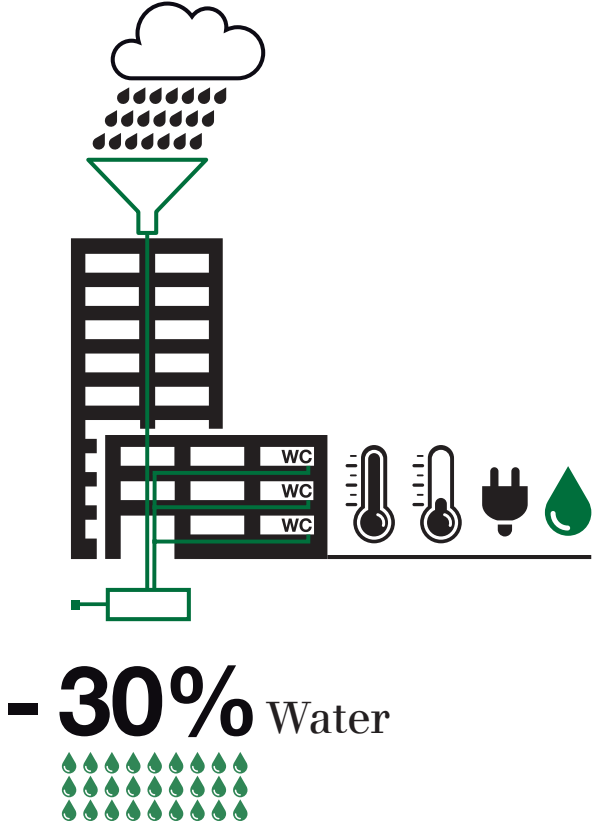
Without the EMS this situation would probably not have been recognized for a long time. By co-ordinating the control of these two heating systems a reduction in the CO₂ footprint was achieved and at the same time the share of renewable energy was increased. Saving achieved: 205 tonnes of CO₂, with a 53% increase in the share of renewable energy!



Practical example: Water consumption

One of Züblin's aims is to promote water conservation as well as energy efficiency. How do you go about achieving this?

Consumption of drinking water can be reduced considerably by a number of methods, for example the usage of rain water. In one building, for example, Züblin installed a water tank with a capacity of 30 000 litres. The rainwater collected from the roof is used for flushing the toilets, the largest consumer of water in an office block, and for watering the surrounding grounds. The annual saving of drinking water is shown in the chart below. Saving of 30% or 170 260 litres of water.



Practical example: Economic efficiency

The investment in an energy monitoring system is also intended to have a positive financial impact. What has the experience been so far?

In one case, for example, a not unusual fault in a cooling unit was identified with the help of the EMS. Such faults are sometimes not spotted for years. In this case the efficiency of this unit was below the normal level by a factor of 4. This meant that only one unit of cooling instead of four was being produced per unit of electricity. The financial losses for the tenant and owner were very considerable. As this fault was due to the advanced age of the unit, in this case it was replaced it with a new one. Thanks to this investment annual savings of 92 000 kWh or € 18 000 (assuming € 0.20 per kWh) in energy and costs were achieved. The investment costs for the EMS have already been more than paid back.

