

ECOFECTIVE

Transparency, Diagnostics and Optimisation
of Building Energy Performance

Energy and cost savings in existing buildings Ecofective and the energy management system EE2

EcoSummit London
2013-10-14

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CEO Ecofective



About Ecofactive

- Founded in 2009 as a consulting firm, in 2012 expanded by Mats Pettersson and Dirk Uhlemann to a high-tech supplier of IT-based energy management and energy performance contracting.
- Customer and scientifically proven energy management system EE2, currently implemented in more than 120 large multi-tenant and office buildings with focus on Sweden and Germany.
- Highly skilled founder and management team, with more than 20 years of experience in the development and implementation of IT-based systems for energy efficiency in buildings.
- Product development based on leading research from Swedish Royal Technical Institute. Certified by Fraunhofer (IBP) confirming energy efficiency targets, IBP report 152.
- Two approved patents (EPO) and two more pending, offices in Stockholm and München
Financially supported by the Swedish Energy Agency as a growth portfolio company

Today's context

Energy and cost savings in existing buildings

Global view



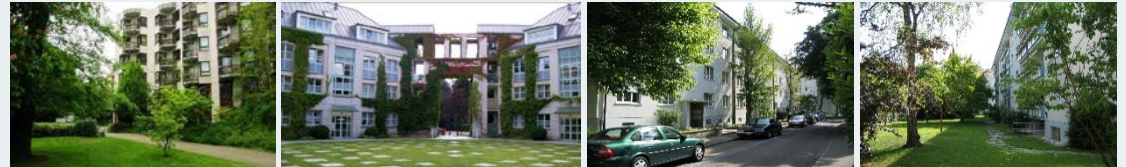
- World
- EU

Regional view



- Country
- Region
- City

Existing buildings

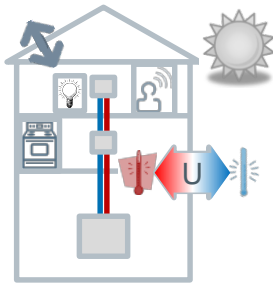


- IT-based energy-efficiency-management solution
- Reduces purchased heating energy by 13-25%
- At 1% of the cost of a classical refurbishment
- Easy installation ad-on to any/all existing HVAC
- Constantly updated energy footprint of the building
- Individual building, cluster areas and nation wide.
- Transparency, diagnostics and optimization included

Thermodynamic optimization (TDO) with EE2

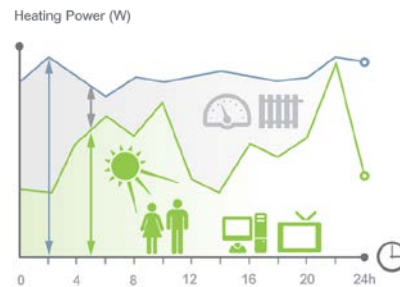
Free heating power is used to reduce the amount of purchased energy

1. Building thermal behavior



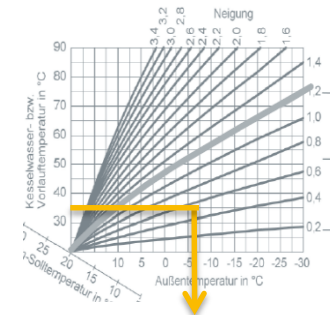
- Building's heat-loss coefficient
- Heating system
- Radiator
- Ventilation
- Occupants' energy consumption
- Façade characteristics
- Climate factors

2. Continuous calculation of P free



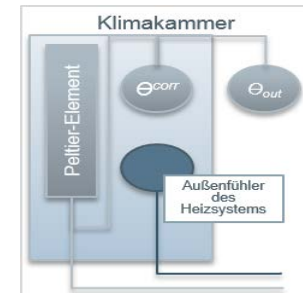
$$P_{total} = P_{radiator} + P_{free}$$

3. Setting the flow temperature



- Flow temperature as a function of P radiator
- Heating curve of HVAC is mirrored in EE2
- Setting the outdoor temperature to match the desired flow temperature

4. Contin. adjustment and monitoring



- Continuous adjustment of the temperature in the climate chamber
- Continuous monitoring of results
- Adaptation to the thermodynamic model if necessary

Scientific proof*

Fraunhofer Institute for Building Physics IBP

- **Location:** Holzkirchen near Munich – outdoor testing site with two identical buildings
- **Project design:** Comparative measurements in two identical buildings, one equipped with the Ecofective system EE2, one without
- **Test time:** Mid-January until the end of April 2013
- **Test result:** 13 percent less gas consumption using Ecofectives system EE2. Extrapolated on a year, the results show 20 percent energy savings based on thermodynamic optimization with EE2

Energy savings: 13%



* IBP Mitteilung 523, Juli 2013, <http://www.ecofective.com/images/downloads/in-the-media/2013-07-30-IBP-Report-de>.

Customer references

Wallenstam 

HEMSÖ


FÖRVALTAREN
 HYRESRÄTTER I SUNDBYBERG SEDAN 1947

rikshem 

IKANO
 Bostad

Studentenwerk
 Frankfurt am
MAIN S WERK



FÖRTIFIKATIONSVERKET
 FORTIFIKATIONSVERKET

 **degewo**
 Mehr Stadt. Mehr Leben.

WSL 
 Wohnen & Service Leipzig GmbH



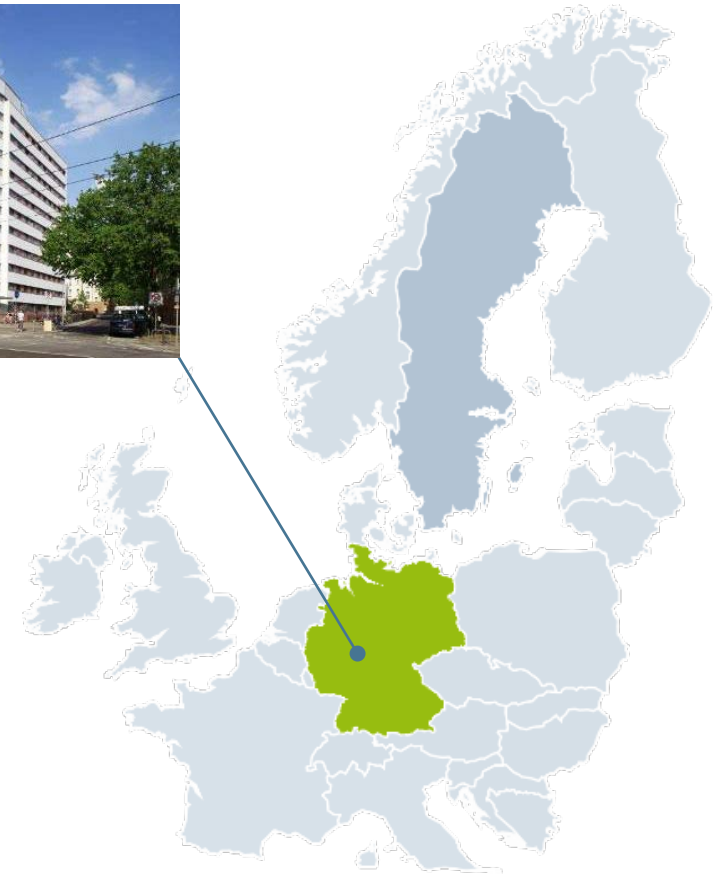
Stockholms
 Kooperativa
 Bostadsförening

Success stories

Student residence hall

- **Location:** Frankfurt, Germany
- **Type of building:** Multi-tenant residential building for students
- **Dwelling space:** 4,500 m²
- **Investment:** 9,000 €, 2 €/m²
- **Installation:** Less than one day
- **Measurements:** Since Q4 2012
- **Energy consumption:** 110 kWh/m²/a without Ecofective system EE2, 90 kWh/m²/a with
- **Results:** Savings of 6,000 € per year, repayment in 18 months

Energy savings: 18.2%



Success stories

Student residence hall

- **Location:** Frankfurt, Germany
- **Type of building:** Multi-tenant residential building for students
- **Dwelling space:** 9,270 m²
- **Investment:** 9,000 €, <1 €/m²
- **Installation:** Less than one day
- **Measurements:** Since Q4 2012
- **Energy consumption:** 125 kWh/m²/a without Ecofective system EE2, 108 kWh/m²/a with
- **Results:** Savings of 7,000 € per year, repayment in 16 months

Energy savings: 13.6%



Success stories

Multi-tenant building

- **Location:** Berlin/Marzahn
- **Type of building:** Multi-tenant building
- **Dwelling space:** 8,728 m²
- **Investment:** 12,600 €, <1.45 €/m²
- **Installation:** Less than one day
- **Measurements:** Since Q1 2013
- **Energy consumption:** 96 kWh/m²/a without Ecofective system EE2, 74 kWh/m²/a with
- **Results:** Savings of 9,600 € per year, repayment in 16 months

Energy savings: 22.9%



Success stories

Multi-tenant building

- **Location:** South of Stockholm, Sweden
- **Type of building:** Residential building with 80 apartments, 8 floors
- **Dwelling space:** 6,200 m²
- **Investment:** 12,500 €, 2 €/m²
- **Installation:** Less than one day
- **Measurements:** Since end of 2010
- **Energy consumption:** 127 kWh/m²/a without Ecofective system EE2, 111 kWh/m²/a with
- **Results:** Repayment in 1.7 years, energy savings amounting to 14% per year

Energy savings: 14.6%



Challenges & burning issues

Let's talk about them

“How can we refinance our investment in an energy management system as quickly as possible?”

“How can we organize the best way that our tenants can benefit from the achieved energy savings?”

“How do we solve classical conflicts of interest, e.g. that our district heating partner wants to sell as much as possible and we want to continuously reduce the amount of purchased energy?”

“How can we motivate the government and the EU to optimize the framework for energy efficiency projects that are not only focusing on traditional refurbishment?”

Contact

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