

# Waldmann **W**

ENGINEER OF LIGHT.

MONITORING ENERGY



# MONITORING ENERGY

HOW MUCH ENERGY CAN REALLY BE SAVED WHEN USING LIGHT?



## PROJECT DESCRIPTION

Comparative field study about energy savings of an artificial light environment in office spaces of one of the ThyssenKrupp Real Estate GmbH office buildings in Essen/Germany.

## BASIC CONDITIONS

In this study, two different lighting solutions within a same room setting have been compared. For this purpose, a conventional surface-mounted luminaire has been evaluated in comparison to a free-standing luminaire, whereas only the floor lamp was presence and daylight detection controlled. The time of presence, as well as the switching and dimming status, has been captured by using an appropriate measurement technique.

## DURATION

For capturing an entire annual cycle, a study period of 12 months was chosen.

## SCHEDULE

The project began in April 2008 and ended in April 2009. The reading of data stored in data logger on site took place every 35 days.

## TARGET

To capture actual data of a real environment and to demonstrate neutral proof of energy effectiveness of the two different lighting systems.

# RESULTS

**TWIN-C REDUCES CO<sub>2</sub> EMISSION AND POWER CONSUMPTION OF ABOUT 44%**



## **MEASUREMENT PERIOD**

The shown results are based on the measured data that have been captured within the time period of Apr. 2008 – Apr. 2009.

## **USER CONDUCT**

The user's individual requirement of light has great impact on the actual consumption with both lighting solutions. It is clear to see, that considerable fluctuation exists within each lighting solution.

## **DAYLIGHT AND PRESENCE**

Furthermore, the evaluation of the presence and daylight detection control with modern lights shows great results.

## **ENERGY SAVINGS POTENTIAL**

When using a state-of-the art lighting system in comparison to a conventional solution, the study confirms an actual savings of 44%.

## **DETAILS**

[www.waldmann.com](http://www.waldmann.com)

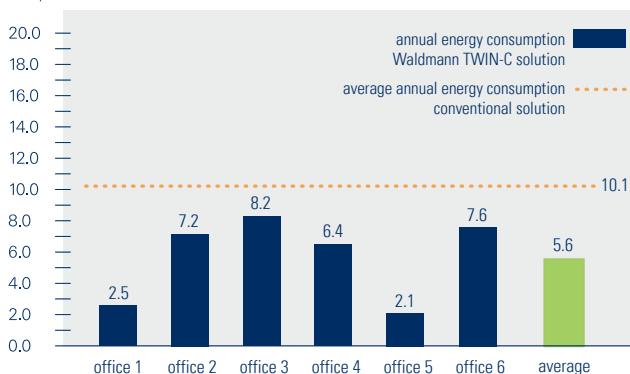
# WALDMANN TWIN-C SOLUTION

USING A FREE-STANDING LUMINAIRE



## FIELD STUDY AT THYSSEN KRUPP REAL ESTATE

kWh/m<sup>2</sup>a



**Office space**

20 m<sup>2</sup>



**1 free-standing luminaire**

4 x 55 W

Presence and daylight detection controlled

**Installed power**

11.75 W/m<sup>2</sup>

**Average annual energy consumption**

5.6 kWh/m<sup>2</sup>

(Projection of measured data from Apr. 2008 – Apr. 2009)

**CO<sub>2</sub> Emission**

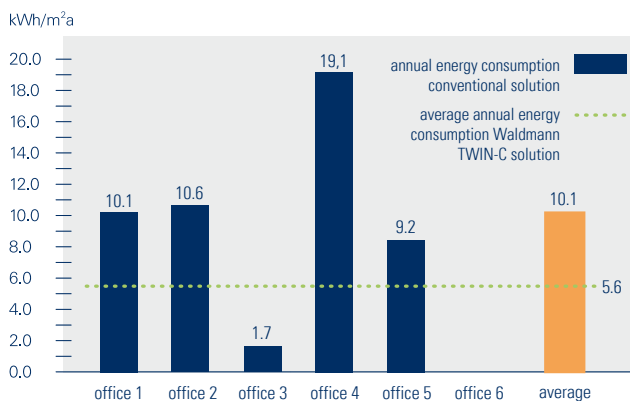
0.7 tons in 10 years

# CONVENTIONAL SOLUTION

## USING SURFACE-MOUNTED LUMINAIRES



## FIELD STUDY AT THYSSEN KRUPP REAL ESTATE



### Office space

20 m<sup>2</sup>

### 4 surface-mounted luminaire

58 W per light

Light-bands individual switchable

### Installed power

12.2 W/m<sup>2</sup>

### Average annual energy consumption

10.1 kWh/m<sup>2</sup>

(Projection of measured data from Apr. 2008 – Apr. 2009 data logger in office 6 failed)

### CO<sub>2</sub> Emission

1.2 tons in 10 years

# PROJECT PARTNERS

**ThyssenKrupp  
Real Estate**



**ThyssenKrupp**

**Hochschule Rosenheim**  
University of Applied Sciences



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