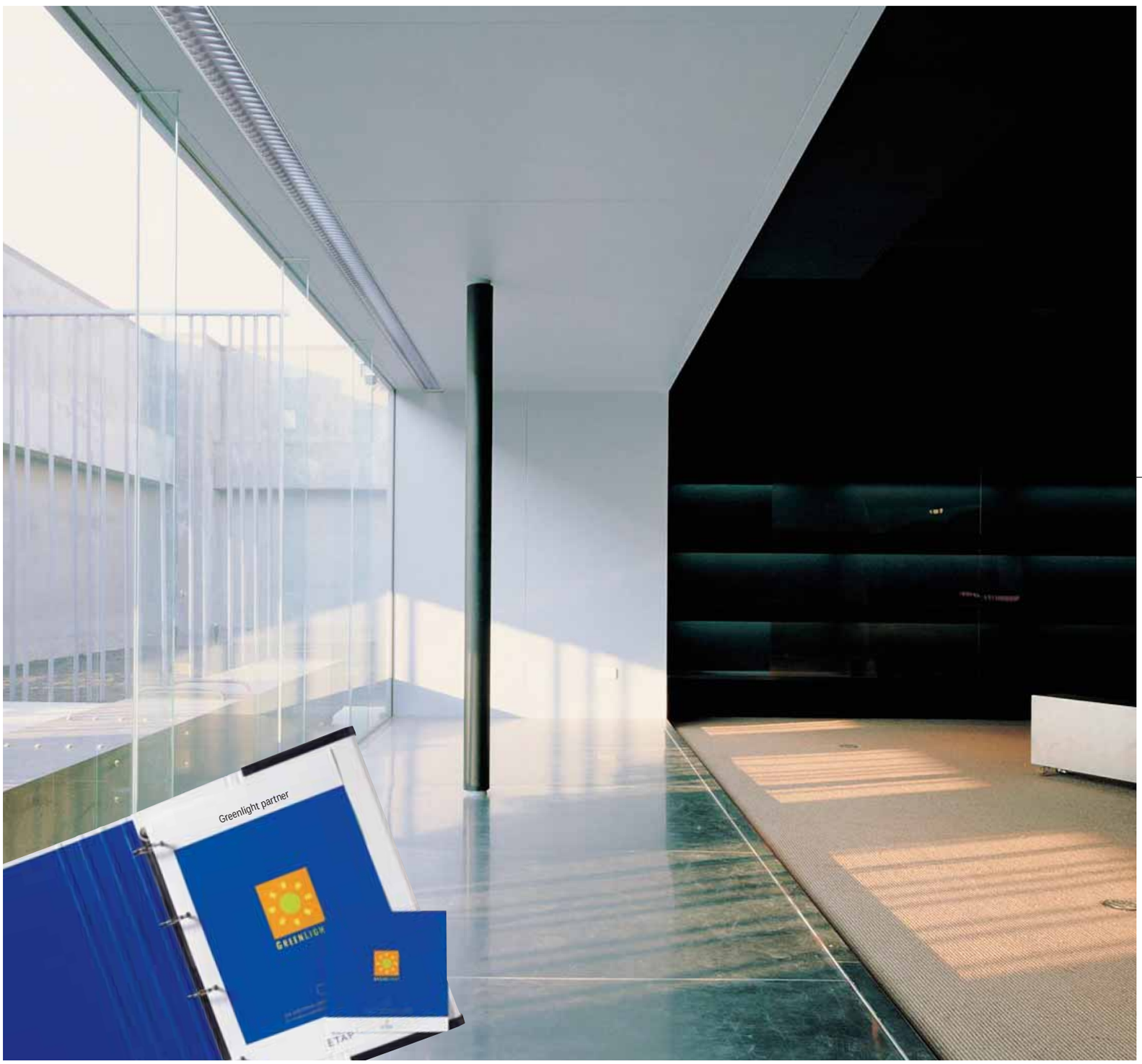
Excellent lighting, saving energy



ETAP

EXCELLENT LIGHTING, SAVING ENERGY

ETAP optics provide comfortable lighting, while minimising energy consumption.

Excellent lighting, saving energy

How can you provide a building with first-rate lighting yet at the same time consume less energy? At ETAP we have been answering this question for nearly 60 years.

We are specialised in the development of luminaires with the finest optics while striving for optimal user comfort combined with low energy consumption, since one feature should never be improved to the detriment of another.

Why choose energy-saving lighting?

Worldwide about 20 % of overall energy consumption is related to lighting applications. Depending on the type of building and activity it can be as high as 35 % or more. Therefore lighting has a very high saving potential. At the same time, with energy efficient lighting, you will save on the cooling installation, due to a decrease in heat burden. The reduction of greenhouse gases* is a must, as in the Kyoto protocol EU countries have agreed to bring CO_2 emissions to 8 % below the 1990 level between 2008 and 2012.

** 0.43 kg CO_2/kWh estimated in accordance with http://www.carbontrust.co.uk/resource/measuring_co2*

An important method for energy friendly lighting

The important means to energy-friendly lighting is to use daylight intelligently. It is obviously primarily the building's design that determines how much daylight penetrates. Secondly, an energy-saving lighting installation is critical to control your energy bill. In order to make the lighting installation as energy efficient as possible, we follow four steps. By following these steps, you van save up to 75 % on the energy consumption of your lighting.

STEP 1: Energy-friendly luminaires

STEP 2: Intelligent lighting design for your project

Distinctive quantities

Both the installed power and the actual energy consumption are major criteria in the evaluation of lighting solutions.

- The installed power (symbol P, expressed in watts (W)) is most often used. The lower the required power to achieve the desired result, the better. This is also often expressed in W/m² or W/m²/100 lx. The latter, for example, is used in combination with lighting studies so that savings are not made at the expense of the lighting result.gaan.
- Energy consumption is expressed in kilowatt-hours (kWh). The European EN15193 standard uses a simplified calculation model in order to estimate actual energy consumption. To this end the standard introduced the LENI factor (Lighting Energy Numeric Indicator, in kWh/m²/year). LENI is applied for calculating a building's overall annual lighting energy consumption and makes it possible to draw comparisons between similar buildings. The LENI factor takes into account, among others, daylight control, movement detection and the actual number of burning hours. ETAP is even able to exceed this standard since our building management systems for example save even more as a result of the application of additional control strategies (see pages 10-11).

ETAP, active GreenLight Endorser

ETAP has been actively taking part in GreenLight for many years. GreenLight is an ongoing voluntary programme whereby private and public organisations commit towards the European Commission to light their buildings in an energy efficient way.

As a Main GreenLight Endorser, ETAP has helped dozens of companies to become GreenLight Partners. As a Partner you will save on energy costs, whilst providing good lighting quality as well as pleasant working conditions.

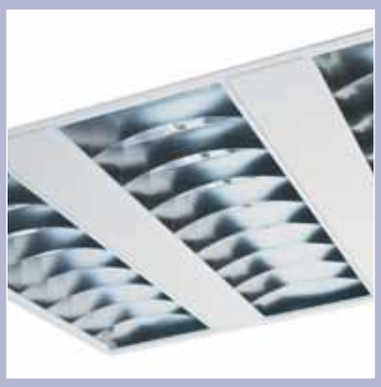
The first two steps will enable you to install less power. Steps 3 and 4 will help you to use your lighting installation as energy efficiently as possible. With each step it is important to reduce energy consumption without affecting users' lighting comfort. ETAP is your obvious partner in all these steps. We produce luminaires with the highest output. Our staff is trained to develop the most energy-friendly lighting solutions together with you. And we can apply a whole arsenal of lighting control systems.

STEP 3: Light control per luminaire or per room

STEP 4: Light control at the building level

1

Softlight: output to 84 %



Reflectors: output to 100 %

Diffusers: output to 92 %

STEP 1

Energy-friendly luminaires

ETAP luminaires always have the highest luminaire output in their category. We continue to innovate as we always select the most efficient light sources and ballasts and develop the best optical systems (reflectors, diffusers and softlights). As a result energy consumption for our luminaires has dropped by more than 70 % between 1975 and 2005 for the same light quantity. Regardless of the lighting treatment we employ, we are always in search of the highest output, combined with the best lighting quality.

In luminaires with aluminium reflectors, we optimise the shape of the reflector and only use aluminium of the very best quality. The lacquers in our softlight luminaires have the highest reflection coefficient. Our diffuser luminaires are a technological tour de force, which combine high output with attractive and clear illumination.

Step 1 illustrated: Renovation of Amsterdam City Hall

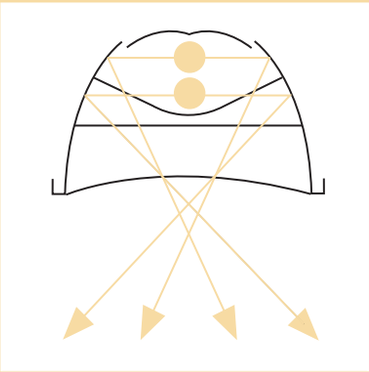
Relighting (replacing old luminaires with new ones) often leads to considerable savings in terms of energy. Contemporary luminaires perform a lot better with their modern optics and components. Your visual comfort increases and energy consumption decreases. Often you will quickly recover your investment.

In the Amsterdam City Hall, 4,650 old luminaires were replaced with ETAP luminaires. This resulted in City Hall saving 25 % in lighting energy consumption, whilst the lighting quality was considerably improved. In addition, the client went one step further and installed ETAP daylight control on each luminaire (see page 8), leading to a savings of 45 %.

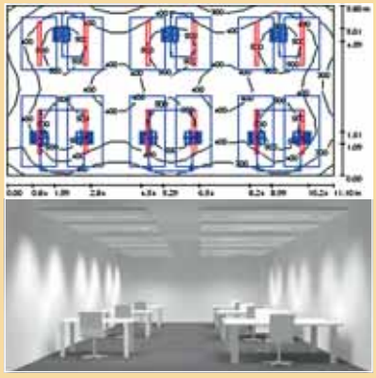
	Old scenario	ETAP solution (without daylight control)
Luminaires:	4650 36W luminaires with classic ballast	4650 28W luminaires with electronic ballast
Lighting level:	450 lux	550 lux
Installed power:	195 kW	148 kW
LENI:	30.7 kWh/m²/year	23.4 kWh/m²/year
Decrease in CO_2 emissions:		61 tons

Actual savings are even higher since daylight control (ELS) is applied. With ELS, LENI is 19.2 kWh/m²/year and the annual decrease in CO_2 emissions is 110 tons.

2



Several lamp positions allow for different light distribution. Like this, we optimise the position of the luminaires for each project.



Well-documented lighting studies with possible alternatives.

ETAP takes into account your project's specific requirements.

STEP 2

Intelligent lighting designs

Our staff is trained to develop the most comfortable and energy-friendly lighting solutions together with you. The use of high-output luminaires in itself is not sufficient; they must also be installed intelligently, taking into account the specific requirements for each project. That is why we always study the various alternatives: we select the most suitable luminaires, we suggest various positions, we select – through the lamp positions- the best light distributions for your project, we optimise lamp selection and we maximise interdistances. This is backed by the latest software packages and many years of experience on the part of our lighting designers. ETAP will provide you with well-documented lighting studies, clear AutoCad™ plans and, where necessary, a financial comparison between various alternatives.

Step 2 illustrated: Wälzholz

The Wälzholz project, a German manufacturer of cold- and warm-rolled steel, clearly shows the importance of a well-thought-out choice and of the position of the luminaires.

The company wanted to update the lighting in its industrial halls. For one specific hall, specifications called for 255 [2 x 80W] industrial luminaires. Our study department developed an alternative, with good results. ETAP proved that as few as 204 [2 x 80W] luminaires (industrial E52 line luminaires) would do to achieve the intended 350 lux on the work floor. Quite a pleasant surprise in terms of the energy bill: 22 % better than the specifications. Compared to the old configuration, savings of no less than 46 % were achieved. Furthermore Wälzholz had all luminaires fitted with daylight control.

	Old scenario	Specifications	ETAP solution (without daylight control)
Luminaires:	140 luminaires 1 x 465W	255 industrial luminaires 2 x 80W	204 E52 luminaires of 2 x 80W
Lighting level:	200 lux	350 lux	350 lux
Installed power:	65 kW	45 kW	35 kW
LENI:	51.7 kWh/m²/year	34.7 kWh/m²/year	27.7 kWh/m²/year
Decrease in CO_2 emissions:		34 tons	52 tons

Actual savings are even higher since daylight control (ELS) is applied. With ELS, LENI is 22.6 kWh/m²/year and the annual decrease in CO_2 emissions is 73 tons.

3

ELS, the ETAP daylight control system, locally dims artificial light depending on daylight quantity.

MDD (Movement Dependent Dimming) dims the light in locations where nobody is present.

MDS (Movement Dependent Switching) completely switches off the lights if no presence is detected.

EMD, a multisensor for DALI, combines daylight control and motion detection with an IR remote control.

STEP 3

Light control at luminaire and room level

The first goal is therefore always to achieve the intended lighting quality with the lowest possible installed power. But once this is accomplished, we can go even further. We can also save energy during working hours, without users being disrupted in any way. By integrating sensors into the luminaires the light can be dimmed locally or switched off whenever little or no artificial light is required.

ETAP has developed several systems that are able to control the light per luminaire. You save energy, whilst guaranteeing comfort. All the system components are integrated into the luminaire as inconspicuously as possible.

In addition, ETAP also provides solutions for individual rooms, such as a separate version of the MDS (Movement Dependent Switching) and CONTROL-it, a system that assesses the lighting conditions in a space and adjusts them.

Step 3 illustrated: CUD Dunkirk

HQE (Haute Qualité Environnementale) is a recent French regulation, which boosts the use of energy saving luminaires. The “Communauté Urbaine de Dunkerque” (CUD) wanted comfortable lighting that also complied with the HQE standard. That is why she chose to install ETAP luminaires, which are fitted with EMD, the ETAP multisensor for DALI. EMD takes care of the daylight regulation, the movement detection and the coupling with the infrared remote control.

By using high-output luminaires and multiple control options provided by the EMD, the project effortlessly acquired the European GreenLight label. An accomplishment to be proud of!

	Without EMD	With EMD
Luminaires (in offices):	300 luminaires	300 luminaires
Lighting level:	400 lux	400 lux
Installed power:	9.3 kW	9.3 kW
Energy consumption per year:	21.7 MWh	14.1 MWh
LENI:	19,6 kWh/m²/year	14,9 kWh/m²/year
Decrease in CO_2 emissions:		6.1 tons

4

up to 50 %

1. Intelligent time control

up to 20 %

2. Daylight linking system

up to 30 %

3. Task tuning

up to 35 %

4. Occupancy control

up to 35 %

5. Individual control

up to 10 %

6. Restriction of peak capacity

Six light control strategies

STEP 4

Light control at building level

By building sensors into your luminaires you will save considerably... but you can do even better. With advanced software and hardware you can further increase lighting energy savings. Even in a well-dimensioned lighting installation we are able to decrease consumption substantially. This requires an integrated system that is able to tackle various energy management strategies.

ELM (Energy & Light Manager), the light control system from ETAP's subsidiary Excellum, applies no fewer than six simultaneous strategies (intelligent time control, daylight linking system, task tuning, occupancy control, individual control, restriction of peak capacity). These strategies make sure the right quantity of light is always present in the right place and at the right time. By making each luminaire addressable, combined with user-friendly software, ELM is able to quickly react to ever-changing lighting needs in a building, thereby maximising your energy savings.

Step 4 illustrated: Ernst & Young, Diegem

Ernst & Young is building its new Belgian five-storey headquarters in Diegem near Brussels. Ernst & Young wanted a building that is both "green" and "intelligent". Not only does the overall energy consumption have to be minimal, the layout must be easily adjustable, for example without changing lighting wires.

Excellum's ELM provides the solution with no fewer than 2,200 luminaires, 700 motion sensors (which are used for both lighting and cooling) and 60 daylight sensors are integrated into ELM.
By applying ELM the already very low lighting energy consumption can be decreased by a further 36 %. And the user-friendly ELM software makes it simple to adjust the room layout, without having to move a single wire, since each luminaire is individually addressable by the software.
Therefore with ELM, Ernst & Young effortlessly achieves both goals.

"In the context of our CSR (Corporate Social Responsibility) strategy, three pillars support the plan of action: environment, work place and community. The new building gave us an opportunity to work towards this. As one of the market leaders in the services sector, it is our responsibility to make a positive contribution to society. The advances provided by a green and intelligent building with solar panels, energy-saving lighting, radiant cooling ceilings, rainwater recovery, an ELM light-control system, an illuminated advertisement that uses LEDs, HVAC adjusted by motion detectors and the purchase of 100 % green energy confirm our commitment."

Ghislain Vanfraechem, Senior Manager Facility, Ernst & Young

Excellent lighting, saving energy

STEP 1

STEP 2

STEP 3

STEP 4

ETAP helps you to save energy, whilst maintaining your lighting comfort.
By applying these four steps you can save up to 75 % on your lighting energy consumption.

1 Energy-friendly luminaires
2 Intelligent lighting designs
3 Light control per luminaire or per room
4 Light control at building level

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