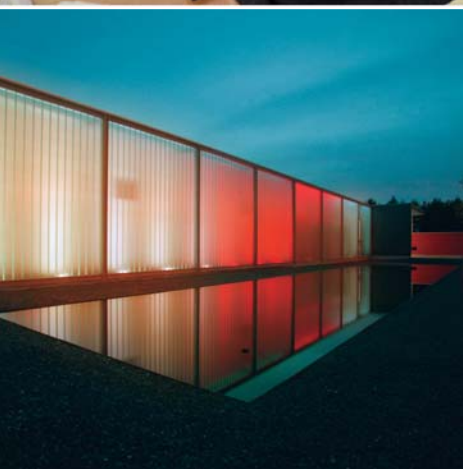
Dynamic light

ETAP



The application of dynamics in the intensity, colour and distribution of (artificial) light has many applications.

Undoubtedly you know what the effects are of extra lighting dynamics when you go to the theatre, watch television or go to a disco. The effects of light on how people function are now being studied all over the world. And it appears that light dynamics have an important biological effect. These understandings are at the basis of new applications such as:
- improving the health of people who have little or no daylight at their workplace;
- medical applications, e.g., synchronising the biological clock;
- creating stimulating effects by varying light colours

Until recently these lighting installations were expensive and exclusive. But thanks to mass production of light control components, a large number of applications for dynamic light are made possible.

Building blocks of dynamic light

ETAP offers a consistent set of building blocks for an easy dynamic light installation.
- Dynamic light luminaires
- Programmable light control system
- Dynamic light control programs

Dynamic light luminaires
Dynamic light requires luminaires that allow you to vary the intensity, colour and distribution of the light. That is why these luminaires have been fitted with several lamps of different colours and connected to digital control gear (DALI). Which gives full dimming control.
Dynamic light sometimes requires high light levels. ETAP's clever design of these luminaires means they cannot cause any glare or interference in any direction of view.
ETAP has dynamic luminaires for every environment: linear or square and recessed, surface mounted or suspended.

Programmable light control system

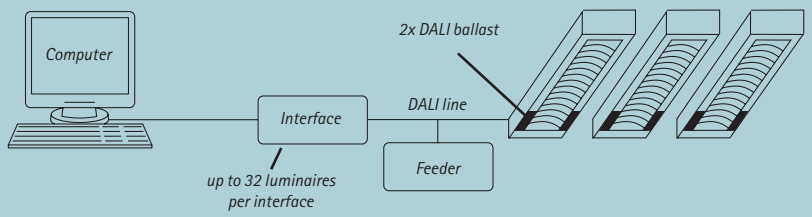
To change the intensity, distribution and colour of the light to time, a programmable lighting control system is required. Here you can opt for a programmable touch screen or driver for a PC.

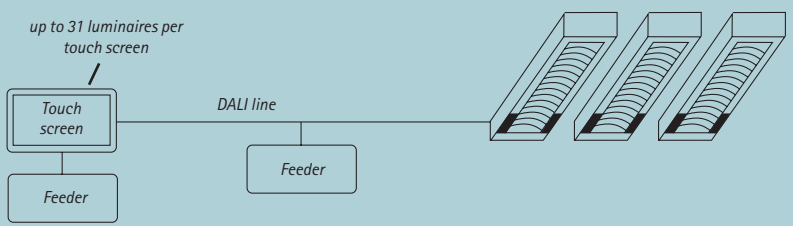
Dynamic light control programs

And finally you need to determine how you want to change the intensity, distribution and colour of the light in time.

In certain applications manual control is necessary. In that case you can program your light control system or let ETAP do it for you. For other applications such as light stimulation it is necessary to use the application of scientific research. ETAP has ready-made control programs to do just that.

Automatic





Work more comfortably under artificial light

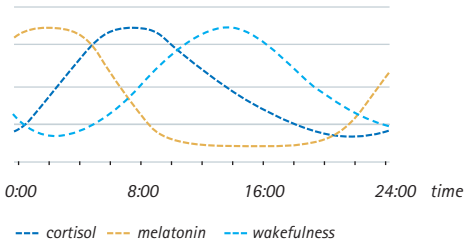
Our biological clock monitors our alertness, sleep, hormone production, body temperature and organ functions. It does this over a 24-hour cycle. To keep this so-called circadian rhythm going, a sufficiently high light level is required. Daylight is ideal. To approach daylight with classic artificial light (e.g., lamps with colour 830 or 840), a light level of between 1,500 and 2,000 lux is required. Standard artificial lighting is only 400 to 500 lux and that keeps our body in a state of "biological night". With artificial light the concentration of the sleep hormone melatonin is therefore higher than with daylight, which means we do not have the same level of alertness and we do not feel as awake as we could.

To remedy this, a continuous light level of 2,000 lux is required. But that is unaffordable, both in terms of infrastructure and power consumption.

The ETAP program "Stimulating light" provides a clever low-energy solution for this problem. This is based on recent studies (*). It shows:

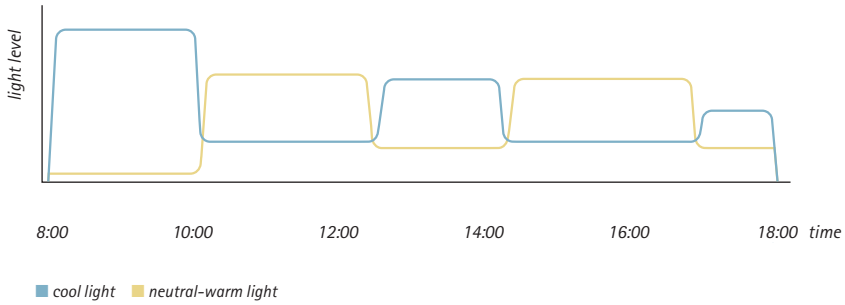
- That the light level required to programme our biological clock does not have to be as high provided the light is blue enough.
- That dynamics in the quantity and/or colour of the light have a favourable effect on people (daylight is not the same all through the day either).
- That a strong light stimulus in the morning and a light stimulus just after noon have the same positive effect as a high level throughout the day (in the winter especially, small extra light stimuli in the evening makes sense).

Daily rhythm of melatonin (sleep hormone) and cortisol (stress hormone)



The stress and sleep hormones play an important role in the regulation of wakefulness and sleep. When the receptors in our eyes absorb warm light of 3,000 Kelvins, this light does not sufficiently holds back the production of the sleep hormone melatonin, whereas cooler, blue light of 6,500 Kelvins does sufficiently restrict it.

Varying light level and colour throughout the day.

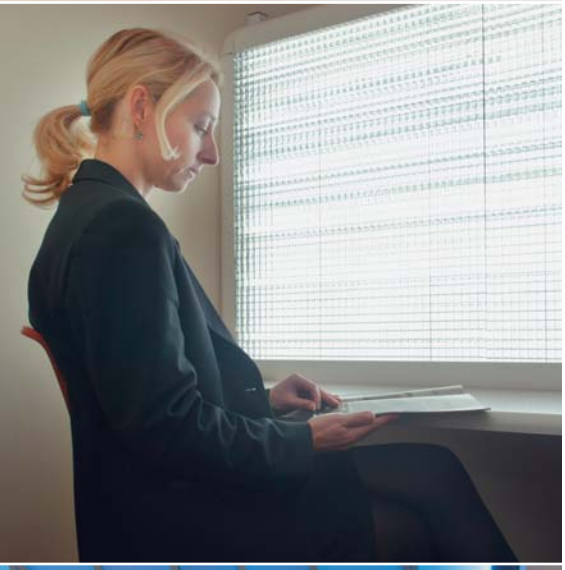


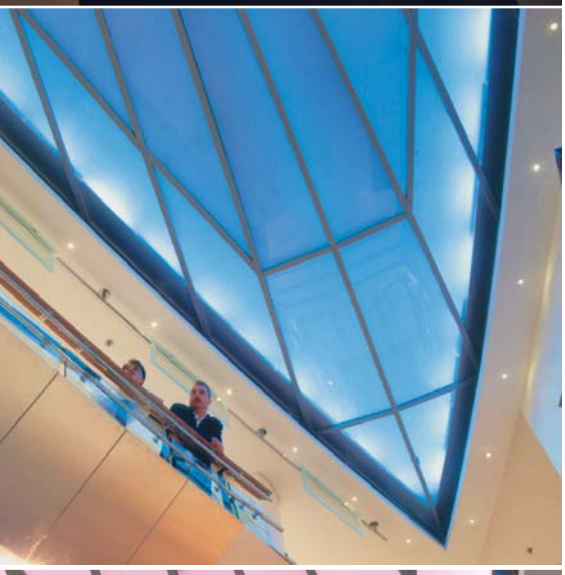
STIMULATING LIGHT

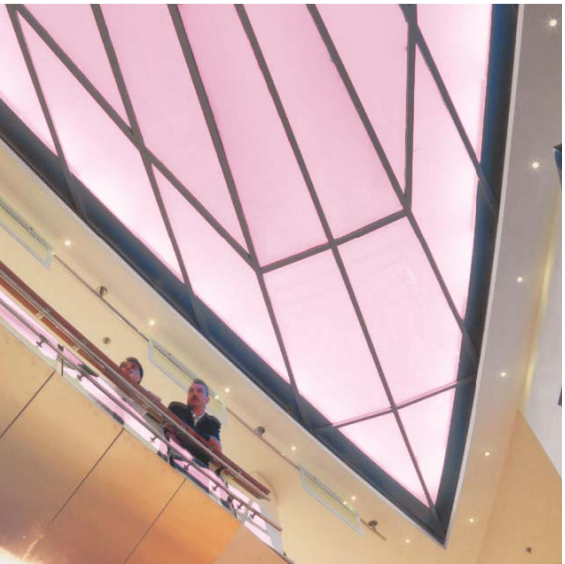
The ETAP "Stimulating light" software program provides dynamic lighting with two different white lamp colours: cool white (with a higher share of blue) and warm white. At the start of your working day, immediately after your lunch and just before you return home, you temporarily receive more light with a higher proportion of blue. The effect of the high dose of cool white light at the start of your working day can be compared to that of normal daylight. The light stimulus after noon prevents that well-known noon dip. And the third light stimulus wakes you up again before you have to face the traffic for the journey home. Between these light stimuli you get the standard lighting conditions with a neutral-warm colour and a light level that is adapted to your job.

"Stimulating light" has an effect on your biorhythm that can be compared to daylight. You feel more comfortable and alert. And the electricity bill is not excessive.

(*) scientific study
Lighting Research Center, Troy, USA
http://www.lrc.rpi.edu/researchTopics/humanFactors/lightHealth.asp







STIMULATING LIGHT

Biorhythm support

Dynamic light scenarios are also used in the medical and care sector as well.

It makes sense to give older people light stimuli (high level, blue) at certain times of the day. Toward the evening it is better to reduce the blue tint and/or to lower the level slowly.

Light stimuli have also proved useful in the treatment of SAD (Seasonal Affective Disorder or winter depression) and Alzheimer's. In both cases dynamic light is used to set the biological clock every day.
ETAP has no ready-made programs for these applications. Medical specialists have developed the special light scenarios for this.

Creating a mood with light

Playing around with light colour has a decorative and stimulating effect.
The applications are countless, and range from brightening up an employee restaurant to creating a specific company image using light dynamics.

Every application is different. You determine the light scenario. ETAP takes care of the programming.

Dynamic light inevitably uses more energy than conventional lighting solutions. It requires more lamps, more ballasts, higher light levels (for a time), etc.

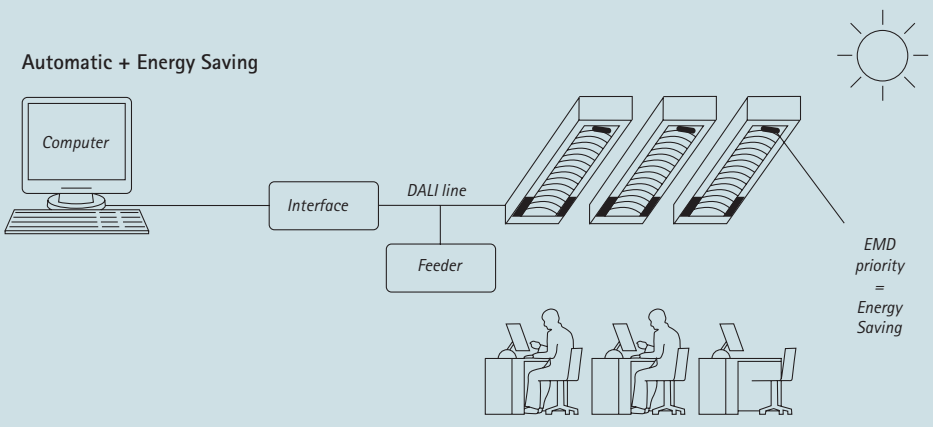
But true to itself ETAP ensures that its dynamic light systems use as little energy as possible.

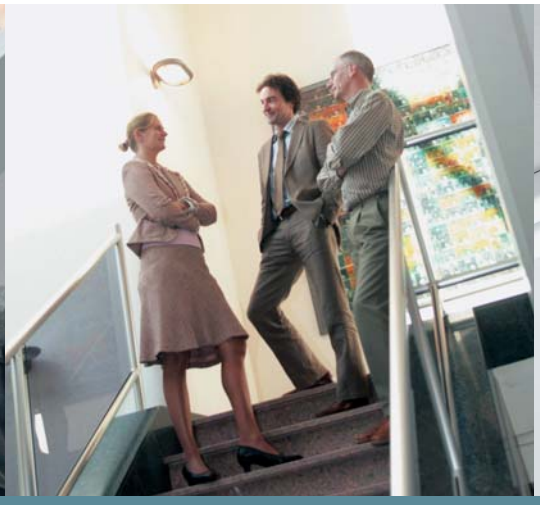
- We work with high efficiency luminaires (sophisticated aluminium reflectors, innovative diffusers with micro-structure, etc.).
- Our dynamic light software programs are designed to achieve the desired result with a minimum of energy.
- The EMD ETAP light sensor is easily integrated into your dynamic light installation. The lighting is automatically regulated depending on the available light, the incident daylight and movement.

Bespoke products and professional advice

You will only notice the considerable benefits of a dynamic lighting system if all parts are geared to the specific situation. That is why it makes sense to study every application separately and to work out the best solution on a project basis. Moreover, it is important to program the installation and to put it into operation correctly.

Skill and expertise are essential for a successful dynamic light application. We will gladly answer any questions and work out a bespoke solution. Our ETAP specialists will help you in any way required, from design to installation of the system.





Dynamic light

- Focus on people
- Good for the biological clock
- Reduced tiredness

ETAP dynamic light

- Automatic light controls
- Manual adjustment facility
- No glare
- Energy efficient
- Easy installation and operation

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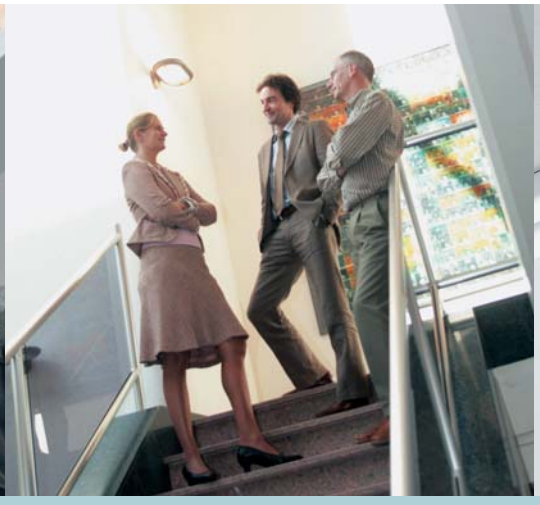


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