

PROCOGNITIVE LIGHTING IN THE DEFENSE AND SECURITY SECTOR? ABSOLUTELY! ALL USERS AGREE.

Do your eyes sometimes hurt at work, do you feel that there is not enough light, do you feel tired, and do you need coffee often? Sure, it could be a long shift, stress or lack of rest ...or „just“ bad lighting. The ability to focus, react quickly and maintain attention for long periods of time is crucial, especially in the security and defense sector. This is the reason so many organizations in this sector have already chosen Spectrasol's procognitive LED lighting.

For example, impaired vigilance really can cost a lot in a monitoring center, control room, or offices where people are engaged in demanding activities. And so more and more institutions and companies are beginning to use procognitive full-spectrum lighting in their interiors, whose properties are very close to natural light and which has an irreplaceable positive effect on users' bodies. We asked organizations from the security and defense industry which already use this solution for their practical experience. They observe not only greater visual comfort, but also a positive effect on co-ordination, fatigue and the atmosphere in the workplace.

The light-dependent brain

Perhaps you are one of those lucky individuals who are in as good a mood on a dark November day as they are on a sunny spring day. But believe me when I say that such people are rare. Light plays a key role in physical and mental health and vitality. Even though modern man spends 90% of his time indoors and

under artificial light, our body is still set to the prehistoric rhythm of sunrise and sunset, and it regulates its internal clock accordingly.

During the day, we should receive sunlight with a balanced spectrum containing all wavelengths. During the day, our alertness, performance and mood are supported by the azure spectral component of light, which, among other things, promotes the production of the hormone serotonin. Evening light without the blue component and the subsequent darkness conditions the production of melatonin, which helps us fall asleep and activates regeneration in all tissues and organs, thus also contributing to the quality of cognitive functions, acting as an antioxidant, ridding the body of dangerous free radicals, and having anti-inflammatory and anti-cancer effects and other functions.

If we came out of the cave at dawn every morning, hunted mammoths and spent our evenings around the fire chewing skins, it would work fine. But most of us spend most of the day indoors under unnatural, poor-

quality lighting. We don't regenerate enough, we are notoriously sleep-deprived and tired, maintaining our concentration and thought process is increasingly difficult...

"Conventional artificial light does not respect natural biorhythms, the so-called circadian rhythms, and negatively affects our ability to regenerate, contributing to persistent fatigue," explains **Daniel Jesenský, CEO of Spectrasol**, adding: "The solution can be high-quality procognitive lighting that is as close to natural light as possible. People who work, learn, or perform any mental or physical activity in daylight or under procognitive lighting achieve better results and are more resilient to stress, among other things."

For forces and organizations that need high-performing, resilient and balanced staff and teams, the quality and characteristics of lighting offer enormous potential.

All contacted customers who use Spectrasol light agreed that they would recommend the use of a similar solution to all organizations

in the defense, security and emergency services sector, and not only to them.

The evaluation of **RNDr. Jiří Hynek, President of the Defense and Security Industry Association**, speaks for all: "Procognitive lighting in our offices has an effect on the ability to concentrate, I personally feel less fatigue at work. Since I use Spectrasol at home too, I can also evaluate evening and night light: while the evening light helps you fall asleep, the night light is so dim that even if you wake up, it doesn't stimulate your brain enough to prevent you from falling asleep." Positive experiences are also shared by **Ing. Pavel Čuda, Director of the Military Research Institute**:

"We have had opportunities to test Spectrasol solutions on a smaller scale for several years. Our experience has been so good that this year we have decided to install cognitive lighting in all areas of the Institute." According to Čuda, cognitive lighting has an impact not only on visual comfort, but also on workplace relationships. "We haven't measured it, but I myself feel that after the installation of the new type of lighting, the previously tense relations in one workplace have calmed down."

Procognitive/biodynamic lighting

Procognitive

lighting is close to natural light and stimulates the users' brain and body in a desirable, natural way. It differs from conventional artificial lighting:

- It is full-spectrum: as in daylight, all colors and wavelengths are equally represented.
- It contains a natural proportion of stimulating azure components: it contributes to the production of serotonin, which helps us to stay alert and focused during the day, speeds up reactions, and increases efficiency, speed, and quality of thought. It also significantly affects mood, motivation, and resilience in stressful situations. A lack of serotonin during the day also affects the production of melatonin, the "sleep hormone", which is produced exclusively in the dark.
- It is distributed completely evenly and thus provides the highest visual comfort
- It has almost the same biological effectiveness as the sun.

- When used over a long period of time, procognitive lighting improves sleep quality, cognitive abilities and overall physical and mental health, and relationships in teams.
- Compared to traditional light sources, procognitive LED lighting is 30-60% more energy efficient.

Challenging work requires the right conditions

No matter how well-trained a person is, they cannot escape the long-term effects of bad light. It is even harder for people working on night shifts, which poses an enormous and unnatural burden and, according to the World Health Organization, is also a potential carcinogen. Poor sleep quality and chronic sleep debt are often responsible for a higher frequency of errors, lower concentration, and poorer ability to cope with emotional strain and stress.

"The procognitive light from Spectrasol is far more visually pleasing than previous fluorescent lights, I also feel less eye fatigue," says **Col. Ing. Jiří Pelikán, Director of the Fire and Rescue Corps of the South Moravian Region**, and adds:

"You really look forward to the office." The benefits of the Spectrasol lighting are clearly appreciated by the **Chief Executive, Col. Mgr. Jiří Princ, Director of the Court Protection Department of the Prison service**: "At first, the new lighting was wholly appreciated by some of our colleagues in the surveillance workplace, as it was customary to work in an environment without lighting, especially at night. The only light source was the computer screen. Gradually, however, their opinion changed, in part with regard to the wide possibilities of changing the lighting intensity, which can be set individually. Colleagues working a twelve-hour shift, alternating between night and day, unanimously agreed that lighting has a positive effect on eye fatigue and concentration when dealing with day-to-day activities. So today the lighting is used during the day and at night, when it was previously customary to dim all lighting completely." **Col. Ing. Miroslav Kubík, Head of the Operations Centre of the General Directorate of the Customs Administration** also confirms the benefits of the procognitive solution: "Compared to fluores-

cent lamps, it is a bright light without flicker effect, which brings better visual comfort. Most of the year we use the lighting almost continuously."

What to prepare for

If you decide to "switch" to procognitive, full-spectrum, in short healthy light, there are several things to consider.

• Purchase price

Cognitive lighting requires a higher investment than conventional lighting. However, in the long run, not only will the customer save on energy consumption, but the effects will be returned in labor costs and better worker performance. In addition, it should be mentioned that now new types of light fittings are available at up to half the price.

"The purchase cost is higher, but the price-performance ratio is absolutely right", says **Ivo Uchytíl, Sales Director of Agados**, adding: "If you feel the lighting is insufficient, I recommend it. We also appreciated the ease of replacing the existing lighting fixtures. You get used to the intensity of the light - for us it took about two weeks, but then you don't want anything else."

In the words of Ing. Filip Engelsmann, owner of Aura, the benefit is undeniable: "Every time I come to the office, I turn on the lights automatically: my vision is sharper, I'm in a better mood, and it takes a lot longer before I get tired. To sum up, I look forward to the office."

• Higher light intensity

Following the pattern of nature, procognitive light is more intense, and some users initially describe it as "sharper".

"Most of the time it is because people have been working for a long time in a poorly lit environment which often does not even meet the light hygiene standards," explains **Hynek Medřický, technical director of Spectrasol**, and adds: "After a few days, most users get used to it. Alternatively, we can adjust the lights according to the specific requirements of the space and users. Another solution is a simple intensity controller that allows flexible adjustment according to individual needs and time of day.

The optimum light distribution is then also with regard to brightness caused by indirect reflection from the ceiling." A greater lighting intensity was also perceived by the employees of **the firm Kříž**, which supplies embroidery for uniforms or promotional clothing. However, after some time of use they got used to it and today they perceive the set illumination positively. "People can see better on the job, and we also appreciate the significantly higher quality color fidelity of the lighting, which is crucial for production given the nature of our products," says **Libor Kříž, owner of the firm.**

Know your supplier well

All of the respondents took the time to select the technology and the supplier. For example, **Filip Engelsmann (Aura)** was inspired by a podcast with Hynek Medřický, a promoter of procognitive lighting, and took the opportunity to test the lighting.

According to Colonel Mgr. Bc. Radek Horáček, head of the Operations Depart-

ment, the South Moravia Regional Police Headquarters was even more thorough: "We made the decision based on the information we found on social media, references from organizations that already had the lighting installed, and last but not least, a lecture by Spectrasol."

The test results are convincing

Experiments at CTU and the National Institute of Mental Health have repeatedly demonstrated the positive effects of procognitive lighting on physical and mental function and health in a variety of environments.

- A comparison of procognitive and conventional lighting in Prague grammar schools showed that under procognitive lighting students achieve significantly better grades and results in tests of attention and memory. Moreover, late arrivals in the early morning hours and the overall sickness level decreased.

- Improvements in cognitive abilities, day-time activity and sleep quality also occurred during an experimental installation in a senior home in Beroun...

Still hesitating?

If you're still not sure whether you need cognitive lighting, perhaps a short test would help.

1. Do you spend more than 50% of your time indoors?
2. Do you need to concentrate better at work and stay awake longer?
3. Are you sleeping badly?
4. Are you suffering from chronic fatigue and often drink coffee?
5. Do you often have tired eyes?

If you answer yes to at least two questions, the answer is obvious: YES.

Martina Kemrová

Photo: Anfas

INDOORS LIKE IN THE OUTDOORS!

LED procognitive lighting mimics sunlight for maximum natural support for both mental and physical activity and health

Our full spectrum lighting is especially appreciated wherever people are engaged in activities that require attention and diligence, such as:

- › supervisory and control rooms
- › administrative areas and production facilities
- › laboratories and development sites
- › medical facilities
- › educational and training facilities



Positive effects confirmed by independent institutions

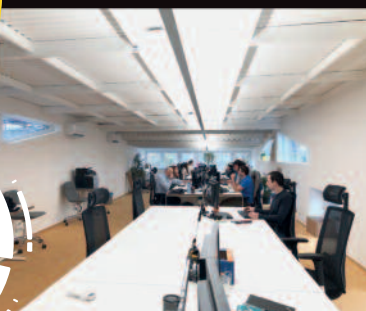


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BIOCEV

SPECTRASOL
BIODYNAMIC HUMAN SOLUTIONS



Spectrasol technology is fundamentally different from conventional lighting:

- › It provides natural biological effects like sunlight using the body's circadian rhythms
- › It positively affects physical and mental health
- › It promotes output — alertness, speed of thought, concentration and productivity
- › It dampens the likelihood of errors, improves visual comfort and recovery
- › It improves mood and work relationships and lowers stress



See more!

Spectrasol: the best investment in the workplace.