Helvar

Revolutionize your working rhythm

A **HELVAR** WHITEPAPER

MAY **2021**

the office revolution is now

It's a bold statement - let us explain what we mean...

At the beginning of Spring 2020, life as we knew was flipped upside down, offices around the world were left empty and the rise of working from home (WFH) became a feature in the majority of our lives.

Country by country, we were forced into a new way of working. Businesses had no choice but to evaluate and roll out new working models, which went against the grain of many existing rigid working practices.

Working from home was now the first-time option for many of us, and a year down the line, we find ourselves questioning our new working rhythms.

The office has always been one of the most valuable tools available for businesses. Its primary purpose has been to support us in performing our job roles to the best of our ability. The office also reinforces a "feeling of belonging" by providing a "home" for the company. It provides access to fine-tuned, comfortable working and social spaces, which encourage peak performance and are equipped with everything we need to get the job done.

In the past year however, it seems that more people have found themselves working more efficiently from home, which begs the question...

...what purpose will physical offices serve in the future?

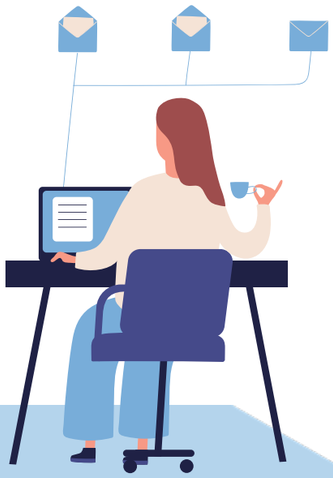
before we begin our journey...

check out these stats

2%*

of employees on average felt that they were **more efficient when working from home...**

Survey by **VOXEU - Jan-Feb 2021*



73%*

of employees **want flexible remote-work options to stay**

**Work Trend Index by Microsoft - Mar 2021*

the top two reasons

people say they want to be back in the office are:

1. to connect with colleagues
2. to feel a sense of shared purpose

66%*

of leaders say their company is **actively considering redesigning** office space for hybrid work

**Work Trend Index by Microsoft - Mar 2021*

So, what's your opinion... Do you agree with the above?

what's the hybrid working model?

Over the last year, companies worldwide have been grappling with the evolving circumstances around the workforce.

Despite, arguably, higher productivity levels and the removal of time-consuming commutes, WFH also brought specific remote work issues to the forefront. Feelings of isolation, the blurring of work-life boundaries and a lack of collaboration have been some of the common concerns raised since the global office departure.

In the recent 'Work Experience Diagnostic Study' conducted in September 2020 by Steelcase Research, the top two reasons people gave for wanting to be back in the office were:

- To connect with colleagues, and,

- To feel a sense of shared purpose with the organisation.

Disconnected from the previous structure and routines of going into the office, the pandemic shone a light on **new working rhythms**. It gave birth to alternative work conditions and opened new expectations of flexibility. So, with working from the office removed, it extended the possibility to work from home or work from a café or work from a hub - effectively taking personal working styles with you as you travel.

Now that the world is familiar with video communications tools, it removes the need for physical presence in the office. It enables local working hubs to thrive and allows the option of a hybrid working model for those that want the benefits of both WFH and the office.

What are the driving factors behind the office return?

Since the dawn of the "Social Office", we've seen a growing development in collaborative, multi-functional spaces that are dynamic and promote collaboration. This kind of working environment shapes the entire employee experience, providing a sense of belonging and greatly influencing teamwork and productivity.

Of course, WFH has reduced commuting time and costs for many whilst supporting a better work-life balance for some; however, celebrating a team win together can't be truly experienced whilst you sit at home, alone. Larger discussions, events, and team-based activities are just a few examples where face-to-face interactions trump remote working. The ease of sitting beside a colleague to bounce ideas between one another can enhance creativity when completing complex tasks or projects. The most successful offices are those which provide resources and support to users in a comfortable, ergonomic space. The office's value in enabling these social interactions and collaborative moments suggests that transformative office spaces will endure for decades to come.

There is also the concern for business leaders that without a physical office, instilling and crystallising brand values, beliefs and working practices will become difficult, if not be impossible to achieve, remotely. With no central hub, the question is whether there is a fixed abode for the company to truly call home?

Prior to the pandemic, many companies allowed restricted remote working, but will we see a return to such a regimented structure? Staff surveys by some of the UK's largest employers highlight that UK staff prefer a hybrid working rhythm, whereby they can work from both home and the office at their choosing as opposed to reverting to full-time office work (Financial Times, 28 February 2021). In a 2021 employee survey conducted by Lloyds Banking Group, it was established that nearly 80% of its workforce wanted to WFH for at least three days a week, leading the company to reduce its office space by 20% over two years. HSBC has also announced a 40% cut in its office footprint.

However, this approach does not fit all businesses. In March 2021, Google announced that it will "keep growing our offices across the US" as they expect demand for office presence to increase, whilst capping remote working. But it's not just the likes of Google who are encouraging a return to the office - Amazon, Wells Fargo and Goldman Sachs have told their employees that they expect a staggered return as the regions ease out of lockdowns and return to normality.

From recent findings, it seems apparent that the hybrid working model is here to stay.

returning to a safe workspace

‘Social distancing’ — this recently coined phrase is now ever-present in today’s society.

For office working, this has meant a limit to the numbers of people allowed in an office at any one time. With fewer people in an office, social distancing is somewhat easier to abide by. The pandemic has taught us to get used to social distancing. Seeing people shake hands or even hug, can be perceived by some as odd or even careless. We’ve adapted to stay clear of other people. However, offices need to be regarded a safe place, that is, if we are to successfully return to some sort of ‘normality’.

We want to avoid touching the same surfaces as everybody else. The most obvious surfaces include switches and door handles. Luckily, intelligent lighting can support our new requirement.

It comes as no surprise that technology is evolving at an ever-increasing pace. It impacts every touchpoint of our lives today — our homes, daily routines, health, and workplaces. Smart technology has enabled the creation of intelligent offices that are sustainable, cognitive and adaptable. We now have spaces which actively work to enhance our wellbeing whilst aiding concentration and removing unnecessary distractions. Automated smart lighting controls and automatic HVAC systems, for example, remove the need to think about changing the temperature or light levels, providing us with a responsive and automatic experience.

Lighting related sensors can be used to monitor occupancy and spaces can be adapted to accommodate the numbers of people attending certain areas in an office. To understand the number of occupants in a space compared to the maximum occupant capacity requires the collection and analysis of data. Having data means we can build the intelligence of the system. Occupancy data enables you to monitor, alert and predict. This provides possibilities for guidance on how spaces can be adjusted. HR and Facility managers can benefit from “space utilisation” data. By better understanding occupancy levels over a period, decision-makers can easily see if there is a challenge with the available space for safe working.

Being able to see the problem areas and times of high occupancy can also help instruct people on when the best time to attend the office might be to avoid busier periods.

Occupancy data can also be used to help with activities such as cleaning. Cleaners can be dispatched to focus areas that have been in use rather than cleaning unoccupied spaces. This not only saves time but is a proactive way of working in a time when

hygiene is of such critical importance. Occupancy data can also support using UV-C at the right time, and at the right place. UV-C light inactivates viruses and bacteria through damaging molecules like nucleic acids and proteins. This makes the germ incapable of performing the processes that it needs to survive. Using UV-C light for killing pathogens has become more and more commonplace in recent months. Since UV-C (depending on dose and frequency) can be harmful for people, typical solutions either aim UV-C light to upper parts of a room or take care that the space is empty when UV-C is used.

Normal office lighting does not strictly require any user interfaces. However, there are situations where users want to tailor the settings or select different lighting scenes to their own preferences. One option is to use user interfaces which are designed to be easy to clean. The alternative is touchless UI, whereby lighting is controlled by voice or gesture control.

Voice control is already being used in home environments with the likes of Alexa, Cortana and Google. However, in a professional office, it might not be the right solution for a number of reasons – these systems are designed for homes, and do not consider commercial data protection.

Gesture control has been tested for years; however, it hasn't been fully adapted for proper use. For when personal lighting control is needed, logical user interfaces include mobile devices and computers. As office users typically have both computers and mobile phones, no two users need to operate the same interface. Mobile phones provide the ability to control lighting via Bluetooth. Control for specific luminaires can also be managed by scanning a QR code or placing a phone over an NFC tag. However, if we are working in the same place for long periods of time, a computer/laptop may be a more logical user interface for lighting.

As technology continues to advance, we will continue to reap the benefits. Technology enables safety and comfort - ultimately creating a seamless user experience.

the vision of the future office

So, once the pre-requisites for returning to the office are met, what do we envision for the future office?

Whilst WFH during the pandemic, we've become accustomed to the conditions of homeworking. We are creatures of habit, so what will encourage us to return to the office since we are now used to these home comforts?

It's simple. The decision to return to the office will come down to whether the office can provide value on top of the homeworking conditions. A starting point for consideration could be whether the chosen working place is designed to support and boost our wellbeing. But how would someone know if their workplace is ticking the right boxes when it comes to human-centric design?

The WELL Building Standard is a globally recognised certification which tells us exactly that. It offers an excellent framework to design a people-focused workplace, ensuring that people are kept at the centre of office design and development.

WELL is grounded in a body of evidence-based research that explores the connection between our buildings and the health and wellness impacts on the people inside these buildings. To be awarded a WELL V2 Certification by the International

WELL Building Institute™ (IWBI), rigorous testing is required to ensure that the building meets all ten performance requirements: Air, Water, Nourishment, Light, Movement, Thermal Comfort, Sound, Materials, Mind and Community.

During this whitepaper, we delve deeper into the concept of light, going through the very basics of good lighting and touching upon how lighting can support wellbeing and optimal working rhythms. In addition to this, we'll also reflect on other aspects including air and movement.

In future buildings, we believe that systems will support perfect working conditions. They use data to seamlessly interact and work together, collecting insights from a wide variety of different building systems. The result of this is a people-centric place to work.

But wellbeing isn't the only factor that needs to be considered. Office spaces also need to be sustainable and cost-efficient to use and maintain. And this is clear from the presence of empty offices. What is the value of the office compared to its cost? Can an office with optimised conditions also be efficient where square meters are used efficiently? We believe that this is where smart technology provides the most benefits.

Smart technology helps to provide optimal conditions whilst encouraging energy efficiency and minimal wastage. Sensors continually monitor an environment and collect and collate data, which can then be processed into insights and predictions, such as

predictive occupancy. They can identify where and how to improve conditions even before any individual triggers the need. And when different solutions in a building interact with each other, wellbeing and energy benefits can be far greater than we can anticipate now.

We've spoken about people, wellbeing centricity, and how future offices can also be efficient at the same time, but there is also a third element which we envision that is crucial for future offices — adaptability.

We tend to design spaces based on what we have learned about them. But if the last twelve months have taught us anything, it's that it is so difficult to forecast the future in the world where speed of change accelerates.

Many companies would now love to adapt their spaces for varying personal preferences, for a new type of use, for less or more people, and for different sizes of teams, for both in offices and virtual use.

So, the priority in office development should be that the future offices need to be adaptable, and they need to adapt without hassle, increasingly aided and automatically by the intelligence provided by smart technology.

But before we jump into this, let's start from the basics of good lighting which can often be overlooked...

what is good lighting in office spaces?

It's easy to get caught up with new and exciting technology, but we shouldn't forget the basics of good lighting!

We need the right type of light at the right time to perform at our best. The light source defines both colour temperature (how "warm" or "cool" light is, measured in Kelvin) and colour rendering (how different colours are perceived based on light).

Colour temperature and colour rendering depend on the spectrum of the light. Some luminaires have two or more different light sources. By using a lighting control system, the characteristics of light can be changed. For example, Tunable White luminaires typically have two different LED types, and by varying the output of those, the characteristics of the light changes. Colour rendering is expressed as a rating between 1 – 100 against the Colour Rendering Index (CRI). The higher the CRI rating, the better the colour rendering ability. The CRI in an office needs to be scored at least 80 CRI. There is a strong focus placed on how highly red (R9) is rated, since it indicates how accurately we can see skin tones. The WELL Standard suggests that R9 should always score greater than 50.

The selected luminaire and its position will ultimately define where light is available. Selecting the correct type of luminaires and the luminaire locations are the key competence of a lighting designer. It's also essential to take care that there is a high-quality LED driver that doesn't flicker. Glare can be reduced by selecting the suitable optics and by using fully or partly indirect lighting. The uniformity of lighting should also be considered and there should be minimal lighting differences between adjacent surfaces.

These attributes are all measured as part of the WELL Standard, in addition to considerations around workstation positioning and minimising daylight glare.

Ultimately, we all appreciate the ability to tune our environments, and lighting is one of the easiest elements in an office that we can adjust to suit our ever-changing needs. Let's make it a daily conscious observation and demand better lighting conditions.

After all, we typically only truly appreciate good lighting when it isn't there...

good lighting meets circadian lighting

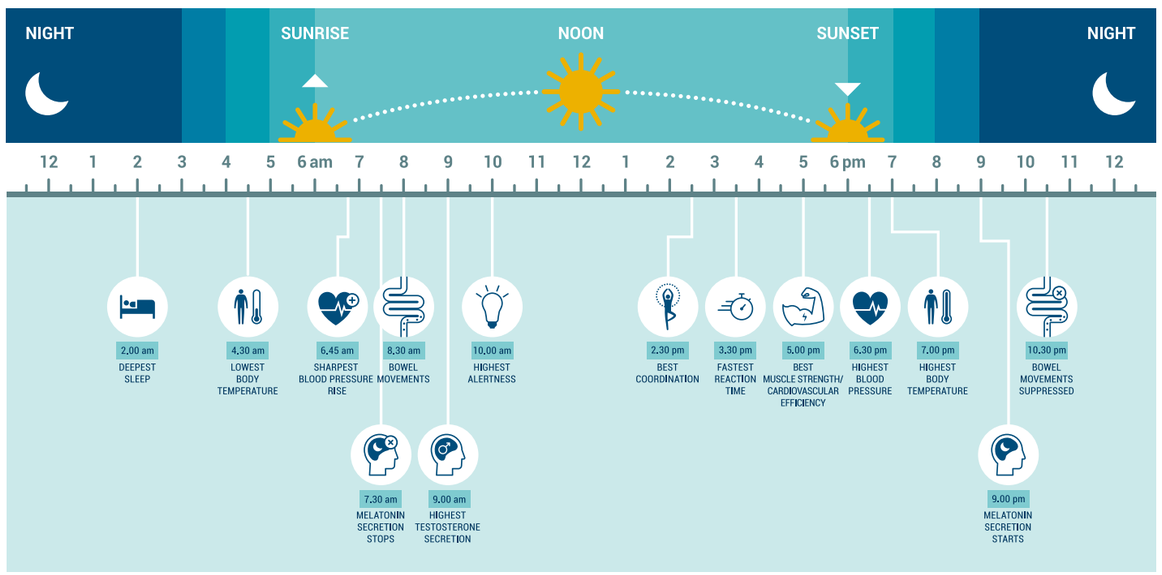
A term becoming rapidly more widespread is 'circadian lighting' - which means lighting specially tuned to support our natural body-clocks. But the question is, can office lighting truly have such a big part to play in our day-to-day body regulation?

Sleep is critical in terms of recharging your body. But did you know that the quality of your sleep might be influenced by the lighting in your workplace?

Our bodies operate on a body clock – **our circadian rhythm** - the natural, internal process that regulates the sleep–wake cycle and repeats roughly every 24 hours.

This circadian rhythm is extremely sensitive to light. Throughout human evolution, this process has relied solely on natural light, however as we've moved into the modern age, where typically we spend 80-90% of our time indoors often without access to natural light, it's common for our circadian rhythms to be disrupted. This can result in trouble sleeping and make it harder to stay alert.

Typically, lighting should be adjusted throughout the day according to our bodies to enhance an optimal circadian rhythm. For most people, this means a lot of light and/or cooler light during the morning hours and gradually shifting to lower lighting levels towards the evening. This would be true for both at home and in an office environment.
For diurnal individuals (those who truly get active after 6pm) it's wise to avoid strong lighting levels and/or cooler temperature light during the evening hours. Many studies have highlighted the negative impact on sleep when looking at mobile phones or watching television shortly before bedtime – this is because these screens emit cooler blue light that can make it harder for our bodies to sleep.



Mobile devices now even have settings that can reduce the amount of bluish light entering the user's eye to combat these issues. It's even more important to take care that there is no light in our bedrooms when we are sleeping, as this can interfere with the natural process. For some of us, it might be wise to invest in black-out blinds which are designed to effectively reduce this impact.

So, how can office lighting support our circadian rhythm?

Since light is the main driver of the visual and circadian systems, and since all light - not just sunlight - can contribute to circadian photoentrainment, all spaces should take lighting strategies into account to effectively support the user's overall mood, mental and physical health and productivity levels.
Of the current nine WELL Standard Preconditions and Optimisations for Light, L03 relates to Circadian Lighting. This optimisation recommends that certain light levels are achieved for a minimum of four hours a day (by midday latest) at a height of 18 inches above the work-plane for all workstations in regularly occupied spaces (*see table below*).

Depending on the amount of EML (Equivalent Melanopic Luxes) or M-EDI(D65) (Melanopic Equivalent Daylight Illuminance), a workplace can get more points for their certification.

In practice, this means that spaces may require light sources which are capable of producing cooler light and/or brighter light at different times of the day.

Additionally, since this particular condition is measured by the light which reaches our eyes, designers should focus on other variables,

For workstations used during the daytime, electric lighting is used to achieve the following thresholds:

a. The following light levels are achieved for at least four hours (beginning by noon at the latest) at a height of 18 inches above the work place for all workstations in regularly occupied spaces:

Tier	Threshold			Points
1	At least 150 EML [136 M-EDI(D65)]	OR	The project achieves at least 120 EML [109 M-EDI(D65)] and L05 Part 1 or L06 Part 1	1
2	At least 240 EML [218 M-EDI(D65)]	OR	The project achieves at least 180 EML [163 M-EDI(D65)] and L05 Part 1 or L06 Part 1	3

b. The light levels are achieved on the vertical plane at eye level to simulate the light entering the eye of the occupant.

for additional information, click here to visit WELL

including lumen output, timing and the position of luminaires and surfaces of work planes.

As white surfaces reflect more light than darker surfaces, this should be taken into account when designing offices to maximise the level of available light. Even the colour of work surfaces can affect the spectrum of reflected light.

Circadian lighting design is an interesting topic when it comes to lighting controls. A common strategy employed by companies is to use occupancy/movement sensors to ensure that lighting is dimmed when a space is empty.

However, this typically won't help with light intensity or colour temperature adjustments. For instance, if the lighting is set to high intensity bright white light, this isn't beneficial to the circadian rhythm of users working in the late evening. It would also use excess energy when a dimmer light would be more than appropriate for the time of day and availability of daylight.

The best strategy to achieve optimal conditions day in, day out, would be to implement a lighting control solution that automatically sets the lighting to the appropriate intensity and colour temperature throughout the day. This can be a general solution if working hours in the space are regular. If employee working hours typically vary, a personalised solution might be more suitable. This would support every user's circadian rhythm, regardless of working hours, and reduce energy usage in an intelligent way.

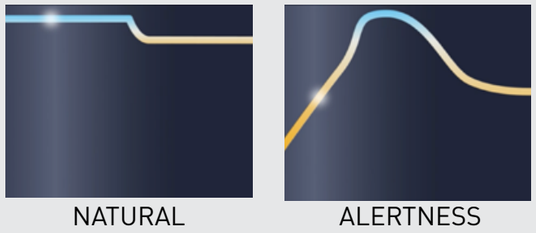
At Helvar, we have innovative tools to help implement the perfect circadian lighting for users of the space!

Helvar Light over Time®

Helvar's lighting profile creation and implementation tool, designed to balance the artificial lighting in our daily environment and provide a more natural lighting cycle.

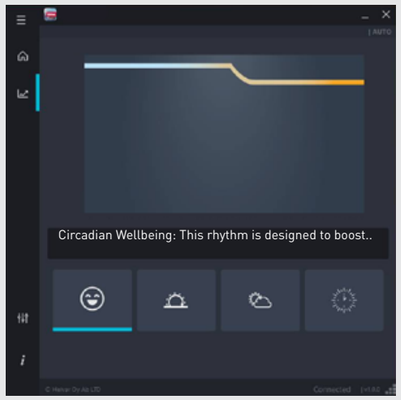
Click here to read more about **Light over Time**

Watch the video



Helvar ActiveAhead™ Personalised Solutions

Through our solutions, users have the ability to fine-tune and select the lighting rhythms to match their individual needs.



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intelligent sensing to support performance

As mentioned above, future office spaces should have a surprisingly notable impact on the wellbeing of occupants.

By combining data from various sensors, including occupancy data, real-time decisions and interventions can be made to optimise indoor conditions in a way that benefits the occupants of the space.

There are various possible interventions which the system can take, but the most valuable is one that occurs proactively.

This is where the system essentially makes a decision to optimise the space for user health and wellbeing - before the conditions even start to have an adverse impact.

Harmful indoor compounds, especially CO_2, are a great example of such an intervention. Prolonged exposure to dangerous levels of CO_2 can lead to fatigue, headaches, decreased productivity and other physiological issues.

Many HVAC systems are designed to react to worsening indoor conditions. They can, for example, trigger increased ventilation to reduce rising levels of CO_2. However, the problem with this approach is that it suffers from delayed reaction times. The air quality does not worsen in an instant. Instead, there is typically a slow build-up which ultimately triggers the HVAC system after crossing a certain threshold.

The goal of a primary intervention technique is to instead anticipate the build-up in advance and take appropriate action ahead of time. When executed correctly, the indoor air quality in the space should theoretically never worsen, since the system continues to spring into action proactively. Occupancy seems to be the most useful leading indicator of air quality. If a space is highly occupied and does not have adequate ventilation, it is almost certain that the air quality will degrade quite rapidly. Systems that measure occupancy in real-time can subsequently forecast the expected impact on air quality and direct the HVAC system accordingly.

It is also worth thinking about secondary interventions. If the air quality has unfortunately already degraded, the occupants must be informed as soon as possible in case the HVAC system cannot adequately improve the conditions. These alerts can be generated via handheld devices or through some common interface like a wall screen panel or emergency lighting. Pretty clever stuff, right?

the thought of the day from our data scientist

“The universality of IoT (Internet of Things) devices and the exponential increase in computational power in the last decade have made the conversation nuanced on how and where to deploy intelligence. It is a multi-dimensional trade-off between cost, complexity and latency.

Simple decision-making algorithms can easily reside on low-cost IoT chips, allowing the system to execute commands instantaneously. This comes at the expense of complexity. Significantly more complex and advanced algorithms can be deployed on the cloud. However, this usually incurs a running expenditure and has a higher latency as well, depending on the resources involved.

When planning the architecture of an intelligent system, it is important to consider the complexity of the system, the expected response times and whether existing tools and hardware can actually support the application. Often, a reasonable approach involves both edge IoT devices and the cloud to enable resource sharing, ease the complexity constraints, and improve decision-making speed.”

our closing remarks

It seems evident that the hybrid working model is here to stay. The way we use our offices is changing rapidly, and the aforementioned 'office revolution' seems to already be upon us.

The shift in our way of working has highlighted our desire for versatility. The consensus is that offices play an integral part in our society, providing a central hub for businesses to crystallise their core values and acting as ergonomic, dynamic spaces for people to collaborate, socialise, and concentrate. Importantly, offices can offer conditions designed holistically for employee wellbeing.

Of course, there is a prerequisite - offices need to be safe. This vital requirement will be actualised through use of smart building solutions, including intelligent lighting systems. Smart, connected lighting plays an integral role in the evolution of offices spaces and in maintaining healthy working rhythms. The development of innovative tools and methods mean that we're now better able to support our circadian rhythms than ever before.

At Helvar, we believe the best working experience happens when technologies integrate seamlessly, benefiting our wellbeing whilst optimising spaces - achieved by continuously harnessing data over time to generate valuable insights for years to come.

Helvar 100 YEARS

We're Turning Everyday Places into Brighter Spaces.

Throughout 2021, we're celebrating our centennial anniversary. Our journey of innovation and reinvention has enabled us to develop market-leading future-proof lighting solutions across office projects worldwide.

To learn more about how Helvar can help you create Brighter Spaces, speak to our team today!

visit www.helvar.com

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