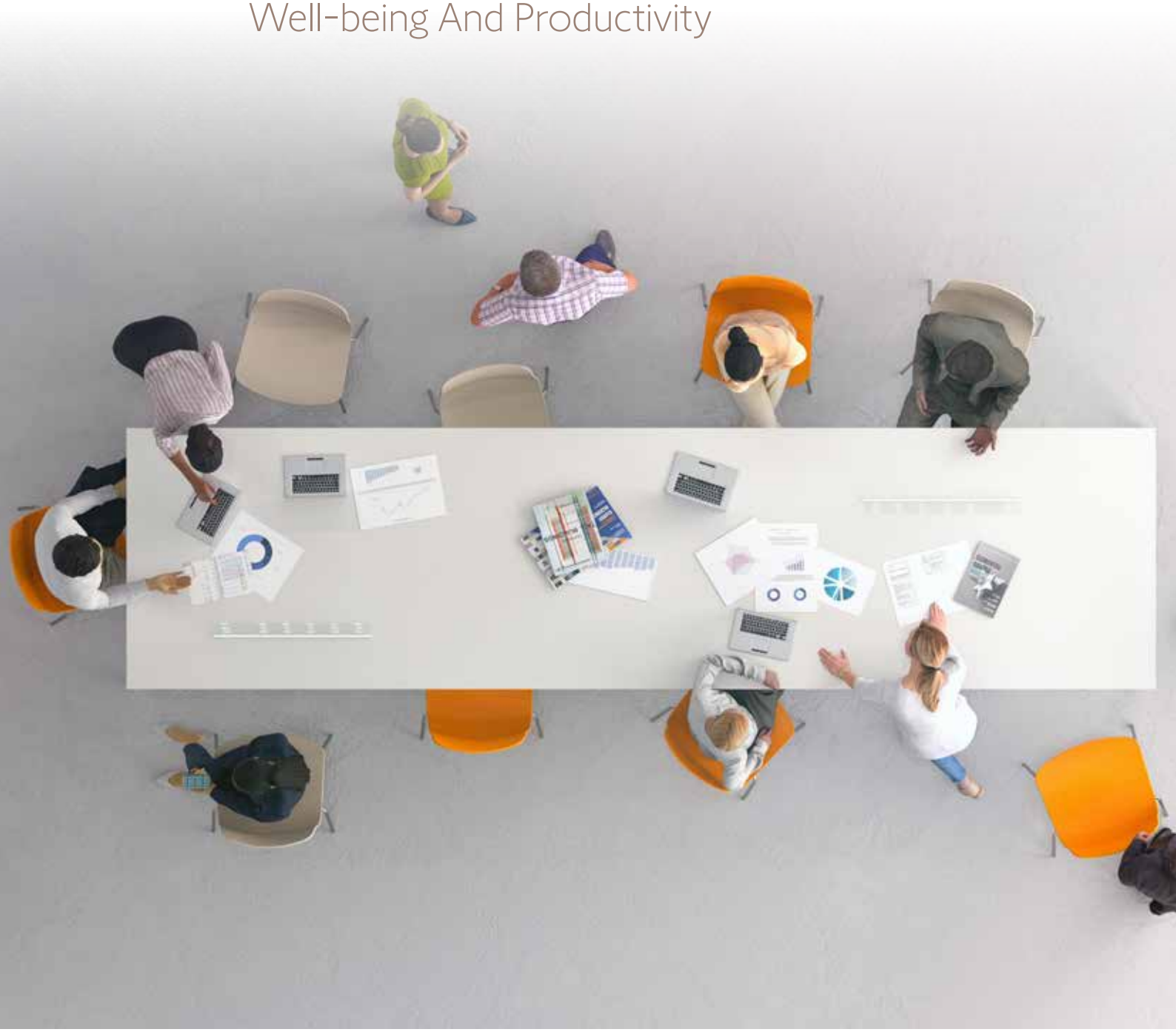
See shade in a new light

Managing Daylight: Automation For Health, Well-being And Productivity



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Daylight's role in enhancing occupant well-being

On average, we spend more than 90% of our lives indoors. It's where we seek shelter and comfort, it's where we tend to eat and sleep, and it's where an overwhelming majority of us choose to work. New architectural designs and renovations are constantly adapting to make our indoor experiences as perfect as they can be, from purpose-built meeting rooms to open-plan office spaces. But there's one thing architects and developers are starting to consider more and more; how can the design, shape and features of a building enhance our relationship with nature?

We know that light is integral to our well-being. Having access to enough light is as essential as getting the right nutrients from the food and water we consume. Our metabolism depends on it. But our relationship with light doesn't stop there.

Anybody that's worked in an office knows how important light, ventilation and humidity are when it comes to staying comfortable, productive and on-task. It's one of the reasons we're content to spend huge amounts of financial and environmental resources on running things like air conditioning and central heating systems. We seek shade when we need it, we invest in screen filters to reduce glare, and we close the blinds when heat and light become too distracting.

We live in an age of big data, automation and machine learning. The prefix 'smart' has become synonymous with technology that makes our lives more comfortable and convenient. From smartphones to smart heating, we're always looking for ways to make things more efficient, effective and affordable. What if we approached daylight in the same way?

What if we could intelligently control our exposure to natural light, harnessing it in a way that took advantage of all of the benefits without the inconveniences?

Light influences so many of the day-to-day distractions and annoyances that impact our productivity, but what if we could eliminate those inconveniences or, better yet, turn them to our advantage?

An automated, intelligently controlled solar shading system could do just that, optimising the amount of daylight that we allow into our buildings minute-by-minute, hour-by-hour. That technology is already here, and the possibilities are endless.

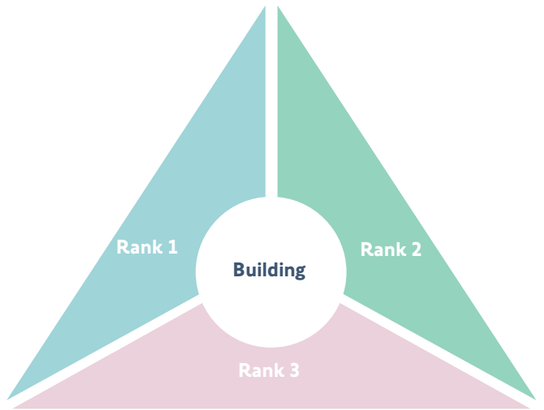
‘Solar Gain’ Embracing daylight for a more sustainable environment

Our world is getting warmer. According to NASA, two-thirds of all of the global warming we’ve experienced in the last 200 years has occurred since 1975. While our modern lives might leave us feeling detached from nature, we’ve never been more dependent on it for powering our day-to-day existence. It’s why government policy has started to shift toward more environmentally-friendly initiatives, creating greener ways of doing things.

In 2018, the world generated enough wind power to avoid more than 637 million tonnes of CO_2 emissions spilling into our atmosphere. It’s encouraging to see our environmental footprint so high on the agenda of countries around the world, but as individuals who spend most of their time in homes, offices and other workplaces, it can be difficult to think about on such a grand scale. That’s where building owners, architects and developers come in. One of the best ways we can save money and limit our impact on the natural environment is to focus on our own miniature environments; our buildings and structures.

The Trias Energetica

The ‘Trias Energetica’ is a model devised by the European Insulation Manufacturers Association (EURIMA) to challenge our thinking around sustainability. The model outlines the three key steps we can take in pursuit of sustainability and ranks them in terms of importance and attainability.



Rank 3 - See fossil energy as a last resort
In some instances, the use of fossil fuels is still essential, but we should be seeking to use fossil energy as efficiently as possible while also gradually lowering our dependence on it.

Rank 2 - Moving 100% to renewables
Wherever we can, we should be striving to use wind, solar and other forms of renewable energy. We likely won’t achieve 100% for many decades, but we’re already well on our way.

Rank 1 - Energy Saving & Demand
We need to do whatever we can to save energy and reduce our consumption.

This model is interesting, because while renewable energy infrastructure is hugely important, it is beyond the reach of most building owners, developers and architects. Such infrastructure requires sweeping governmental policies and huge investments over the course of many years. This puts ranks 2 and 3 largely out of reach. Rank 1, however, which is concerned with limiting our consumption of energy, is something every builder, developer and architect can have a great deal of control over.

In other words, one of the most immediate and effective ways for us to be more sustainable is simply to use less energy. The better insulated our homes and offices, the less energy we need to heat them. The more efficient our cars, the less fuel we need to power them. Lowering our consumption should be our number one focus in the pursuit of sustainability.

So where does daylight fit in?

Our attitude toward daylight has generally always been a passive one, something we enjoy or endure depending on our mood and levels of comfort. But what if our relationship with light could be so much more? What if we harnessed everything we'd learned about artificial intelligence and automation and applied it to light?

Solar Gain

By harnessing daylight with dynamic solar shading, we can leverage it to our advantage. Using automated solar shading technology can significantly reduce our dependence on cooling and substantially reduce energy costs for both heating and cooling. This potential has always been there, but until relatively recently we haven't had the technology to unlock it. Now that this technology is available, it's becoming a key consideration for building owners and designers who want to reduce costs and shrink their environmental footprint.

Shining a light on WELL certification

WELL certification has become sought after by many building owners in recent years. It was devised in 2014 following years of research into how the design, construction and management of our buildings can impact our health, productivity, and general well-being. The WELL standard has been subject to a rigorous peer-review process and is extremely well regarded, so it's little wonder that architects and developers are now embracing it as a way of making their buildings more desirable.

According to CBRE's 2020 survey, 41% of business occupiers in the UK reported an increased interest in buildings with WELL or sustainable features.

Two of the core criteria for WELL certification are **LIGHT** and **THERMAL COMFORT**.

The **LIGHT** standard aims to promote a natural light environment that promotes visual, mental and biological health.

The **THERMAL COMFORT** standard aims to set room temperatures that best suit individuals, promoting productivity and comfort.

In both instances, dynamic daylight management can have a profound and cost-effective impact, helping businesses on their way to WELL certification.

Balancing technology with nature

Using design and technology to enhance the human experience is at the very core of WELL certification. It's a broad and flexible framework, but light management is playing an increasingly prominent role in how our buildings are designed and maintained. Not only can daylight management reduce energy costs and make our buildings more efficient, it can also greatly increase the comfort and productivity of its occupants; so much so that WELL is beginning to recognise it too.

For instance, dynamic shade technology can be automated to reduce an entire office's dependence on artificial light, which we know can strain our eyes and leave us feeling tired and worn out. As the earth turns and the sun pans across the sky, dynamic shading can react accordingly and help to modulate the temperature in every room of the building, reducing our reliance on air conditioning. Personal controls can even be applied, allowing individuals to minimise glare, moderate temperature, control light levels and ensure privacy at any time of day according to their preference. All of this contributes toward comfort and adds to the human experience, helping builders and developers on their journey toward achieving WELL certification.

The role of smart technology and automation

Intelligent daylight management plays a huge role in energy efficiency and sustainability, but it has an important functional role too. Each and every advancement in technology seeks to solve a problem we have or make a certain task easier to do, however small that task may seem. It's one of the reasons automation is so prevalent today across all of our industries.

> "Automation doesn't just make things easier, it makes them more efficient, and daylight management is no different."

To truly maximise the energy-saving potential of dynamic shading technology, we must trust in automated technology. Our days aren't static; they're in a constant cycle of getting longer and shorter, with different weather and cloud patterns that can influence the amount of daylight available to us.

Automated shading technology, including sun tracking and shadow management, allows us to take full advantage of the unique circumstances each day brings with it, ensuring that the delicate balance between energy efficiency and comfort is always struck, whatever the type or location of the building.

Case study: Mirvac's Gold Standard, Building Performance Champion 2019

Mirvac's 37-storey office building in Sydney, Australia is a sight to behold. Hundreds of timber blinds form a state-of-the-art light management system, creating a gold-like shimmering effect when viewed from a distance. The automated blinds, which the organisation refers to as its 'kinetic facade', can tilt to control glare and harness heat gains from natural light, ensuring optimum comfort for those working inside.

For this project, a 365-day sun-tracker model is used, with integrated web-based controls for manual override when needed. The entire system comprises 2,879 venetian blinds, powered by Somfy motors across 351 zones, with each zone containing between four and 18 blinds. This allows each zone - or in some cases, each office - to have its own natural 'climate'. The personal control also allows users to manually adjust the louvre angle, depending on where the sun is at a particular time, on a particular day of the year, if desired.

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Case study: Triodos Bank's transformation into a unique, sustainable office

The smooth contours of the new Triodos Bank office cut a very distinct shadow in Utrecht, Netherlands. It's the first large scale, 100% wood, reconstructable office building of its kind in the world, and will have a negligible CO_2 footprint.

Somfy helped Triodos Bank take better control of its indoor climate with a building control solution that automates solar shading. Our local Netherlands Project Team provided and commissioned an animeo KNX solution, guaranteeing optimum daylight management, glare protection, and better viewing comfort for the occupants of the new prestigious landmark.

The system is intelligently controlled and can track light and shadow, reducing the need for artificial lighting, heating and cooling, and uses data from weather stations in order to react to real-time environmental conditions.

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Touch-free technology in a post-pandemic world

In 2021 and beyond, offices and other professional settings will face a truly unique challenge as they adapt to the challenges brought about by the coronavirus pandemic. In May 2020, roughly three months into the pandemic, a CBRE flash survey found that 45% of business occupants were now expecting to adopt touch-free technology. That figure is likely to have increased, with pressure mounting on offices to create COVID-secure work environments as well as achieve WELL certification. Thankfully, intelligent daylight management can tick both boxes.

45% of business occupants were now expecting to adopt touch-free technology

Building Management System (BMS) integration

While manual blind systems are typically operated by chain mechanisms, automated shading is different, allowing blinds to be centrally orchestrated as part of a building management system (BMS) setup. Not only does this ensure optimal efficiency as the shades work dynamically and autonomously, it also provides a central control point for maximum convenience. With seamless BMS integration, a business will be able to control its blinds and shading apparatus in the same way it controls its alarms and smoke detectors. All building services will be interconnected, allowing lighting, shading, heating and cooling technology to work in tandem with one another for maximum efficiency and comfort.

Seeing the light: Opportunities and challenges for building owners

Intelligent daylight management can offer an impressive return on investment for building owners and occupants. Not only can it enhance the comfort, well-being and productivity of people inside, it can also significantly reduce energy usage and lower operational costs - all by harnessing the untapped potential of daylight. As the climate continues to get warmer and our resources become more scarce, it's high time we started working with nature instead of against it to keep our workplaces safe, comfortable and productive.

About Somfy

Somfy has been producing smart solutions to manage homes and buildings for over 50 years, making daily life easier for millions of users throughout the world. Our innovations focus on automation and connection of roller shutters, awnings and curtains,doors, gates and garage doors, heating, lighting, cameras and alarm systems. Every day, we work on developing reliable and environmentally-friendly solutions so that everyone can live more comfortably, safely and sustainably both today and tomorrow.

Somfy and environmental responsibility

ACT FOR GREEN

Every day, our teams are dedicated to creating a green and more sustainable environment worldwide.
WE ACT for more sustainable ecological products.

If you'd like to discuss more about the contribution that Somfy Solutions can make to your project please contact one of our local experts

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