



The Benefits of **Daylighting**



The importance of daylighting

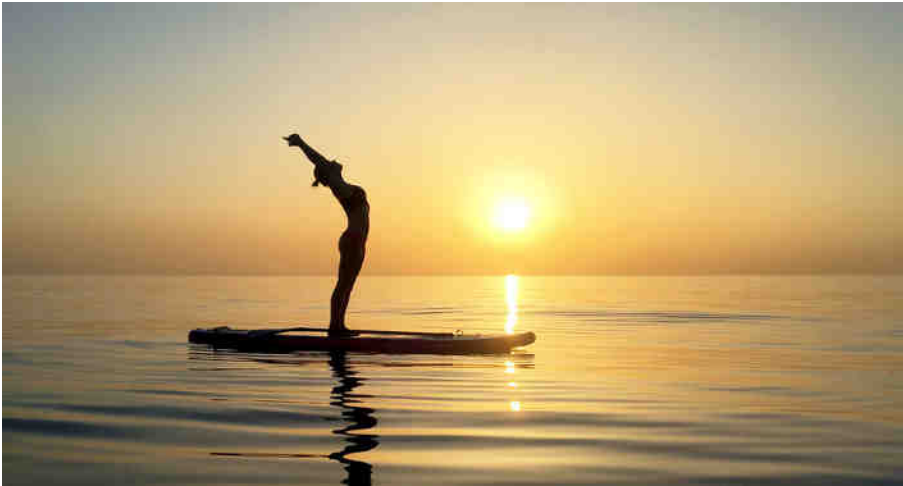
Daylighting refers to the deliberate placement of windows, skylights, and other openings in buildings to let in as much natural light as possible.

There are any number of reasons why daylighting should be factored into building design, not least of which being that research points to measurable benefits among people living, studying, or working in environments with greater natural light and less reliance on artificial lighting.

As you will see in this short guide, daylighting impacts positively on:

- * Wellbeing
- * Productivity
- * Energy efficiency and sustainability
- * Health
- * Learning

With all these advantages and positive outcomes making a compelling case for incorporating more natural light in building design, we will look at the benefits of daylighting and also how it can be incorporated into the design of any building.



Lighting the way to wellbeing

People thrive on natural daylight, and yet we have constructed a world in which we spend much of our time – whether at home, the workplace, or school – in spaces where our access to it is restricted.

However, being inside does not mean having to lose out on daylight, with this point increasingly reflected in building designs and daylighting products seeking to enhance natural light indoors.

This is about more than the experience of daylight being merely pleasant. Research has found that natural light is vital for our wellbeing and can make us feel happier and more content, but this is just the tip of the iceberg.

Wellbeing is not just about feeling good, it is also about functioning well, and evidence shows that these elements overlap.

Happier people are more energetic, more creative, better problem-solvers, and interact with others more effectively. Exposure to natural daylight can help facilitate these outcomes.

Humans are drawn to nature and the outdoors. Whilst we spend more and more time indoors in the busy, modern world; deep down our fundamental nature is unchanged. We do not just enjoy natural light, we need it. We are inextricably linked to the natural environment, and experiencing daylight is a fundamental expression of that connection.



The daylighting-productivity connection

A firm link has been established between daylighting and productivity, across a range of spheres, from the workplace to the classroom.

Exposure to natural daylight has been linked to greater concentration, superior short-term memory, and improved all-round cognitive performance, with this combination lending itself to obvious benefits in work and study.

Research shows that productivity can increase by up to 20% when companies move to buildings with improved natural light and this is further supported by additional studies placing 'access to natural light & views' as the number one desire for employees. Adding to this, absenteeism tends to fall in organisations that understand and act on the importance of daylighting.

There are many possible reasons for the connection between natural light and performance, but one may be that exposure to light and dark regulates the human body clock, with this helping mood and attention at key points of the day. In other words, bright, natural light triggers alertness and primes us to perform, whereas dimmer light or darkness can have the opposite effect.





More daylighting means lower energy costs

We are living in an age where concerns about the environment are high on the agenda. Against that backdrop, daylighting – as an energy efficient and sustainable lighting solution – stands ready to emerge as a go-to option among environmentally aware households and businesses.

While natural light is the most sustainable lighting option available, it is also a free renewable resource, which offers numerous incentives beyond knowing

you are behaving in an environmentally responsible way.

One of the largest single expenses that any company incurs in terms of energy use relates to artificial lighting, and as such investigating how to optimise free, natural light makes good business sense.

Even setting aside the fact that artificial lighting can impact negatively on productivity and consequently

output and revenues, they are expensive to operate. Companies grappling with high energy costs would benefit from implementing more effective lighting strategies, embracing natural light and also innovative daylighting products.



Shining a natural light on health

Natural light offers measurable benefits to human health, ranging from better sleep to greater alertness, and a range of positive mood outcomes.

On a basic level, increased exposure to natural light boosts vitamin D and melatonin levels, with these linked respectively to reduced heart disease risk and healthier sleeping patterns. In addition, workers in offices with natural daylight suffer less eyestrain, headaches, and drowsiness than those more reliant on artificial light. In another example, hospital patients with greater access to sunlight were found to require less pain medication.

Daylight has also been used to treat Seasonal Affective Disorder (SAD), the condition whereby some people are vulnerable to feelings of sadness and hopelessness at those times of year when there are more hours of darkness and poor weather keeps us indoors. The net effect is that we experience less natural light during those periods, and for some, the negative effects of this 'winter

depression' can be serious. When treating such patients, doctors have found that exposure to natural light can make a difference. In fact, it has proven so effective, some professionals have referred to 'bright light therapy'. Part of what is happening here is that serotonin production in the brain tends to be higher when we are exposed to blue skies and sunlight, irrespective of whether it is hot or cold outdoors, with this chemical, in turn, linked with human mood.

Earlier we highlighted wellbeing and productivity gains associated with exposure to natural daylight, and now we can add to that a range of other health-related benefits that can manifest in our lives.



Natural light makes for brighter sparks

Research findings are highlighting the connection between natural light and improved academic performance among young people. This is consequently focusing attention on school design, with a view towards making these spaces as learning-friendly as possible.

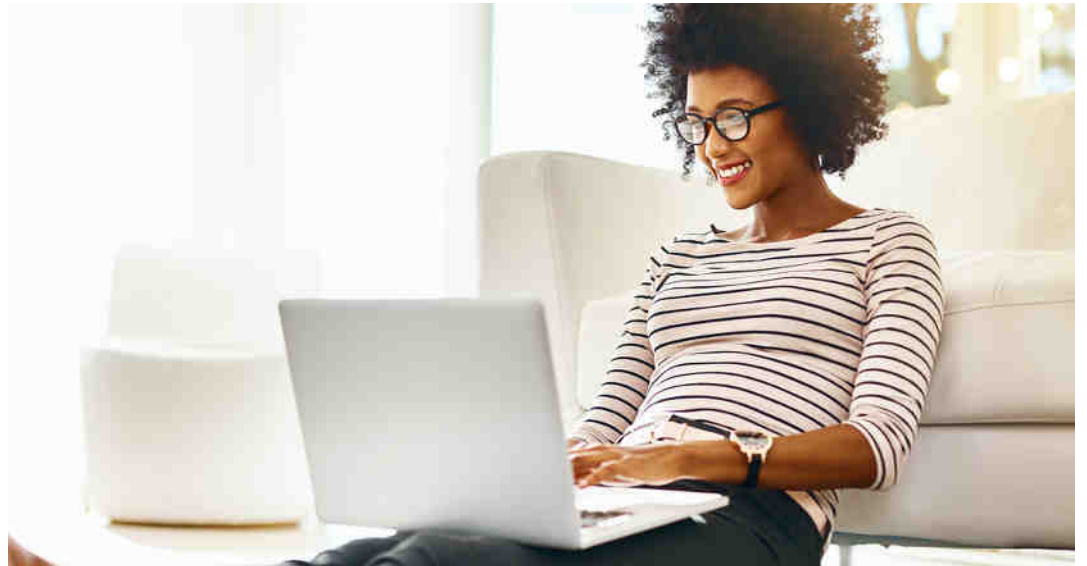
A 2015 study published in the UK drew attention to the importance of school design when reporting that differences in the physical characteristics of classrooms accounted for 16% of variation in learning progress over one year among 3,500+ students. The researchers reported that 'naturalness' (lighting, air quality, and temperature) was the most influential category, accounting for 50% of design-related learning impact, with light the most important individual factor.

They pointed to the sense of physical and mental comfort that natural light brings and stressed that the benefits go beyond merely aiding sight. They drew attention to how natural light will shift in value and colour

throughout any day and noted that this resonates more with humans than artificial lighting.

Similarly, a report by the US-based Eneref Institute made the connection between exposure to natural light and the human brain. More specifically, they noted that daylight is linked with reduced melatonin production, which in turn improves cognition, with this facilitating improvement on learning-related tasks.

As with the UK report, the US-based writers urged school planners to incorporate daylighting solutions that support alertness, mood, and cognitive function into their designs.



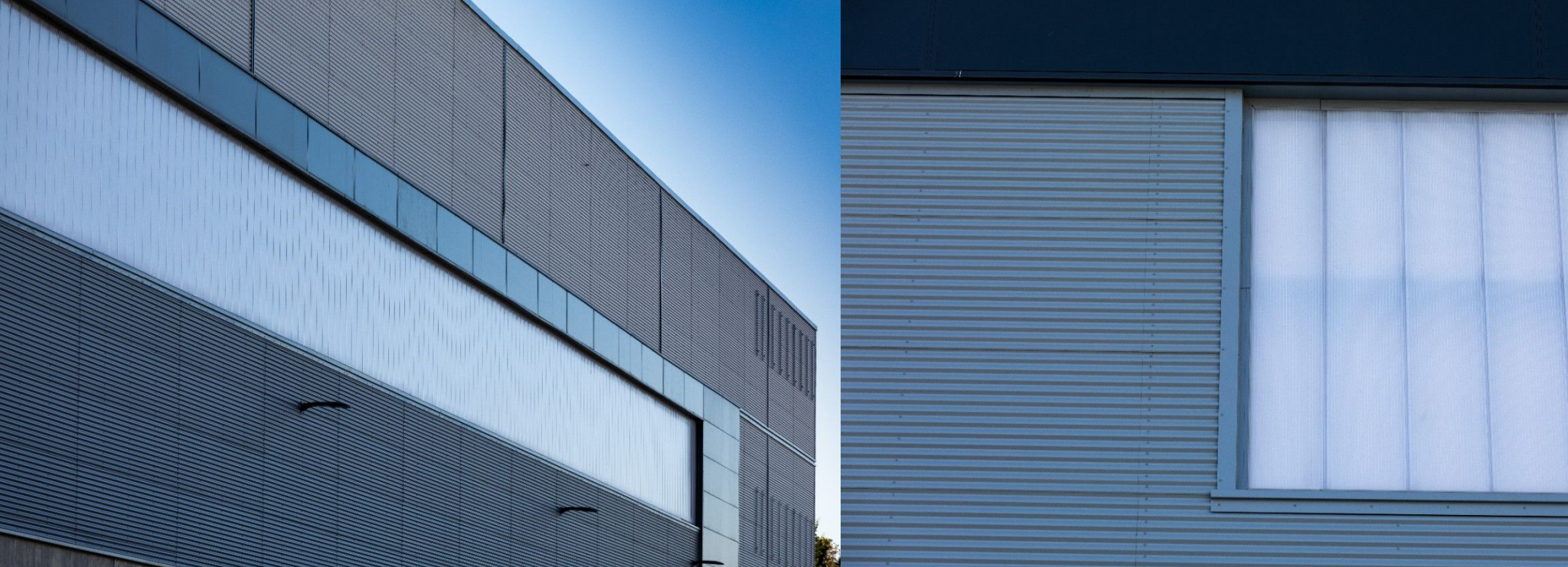


Design your way to a better building

When considering the potential for incorporating daylight into building design, it is important to recognise that these possibilities can be explored across the board. Daylight can be factored into the design of just about any physical space, e.g. homes, apartment complexes, schools, medical facilities, office buildings, warehouses, or factories.

Essentially, where there is natural light, it can be utilised to create a more productive working environment, a better learning space, a more effective therapeutic setting, or a pleasant place to live.

With the growing body of research, we know that tangible benefits can arise from building design that facilitates natural daylight. Knowing this to be so, why shouldn't we seek to maximise those benefits wherever possible?



Designing daylight into your building

So, we have highlighted the benefits of harnessing daylight in building design, but what about the specifics of how to actually go about doing it?

When seeking to maximise natural daylight, the solution will depend upon the project. Some designs/types lend themselves to one solution, while a different building might require another. The key is to identify what is best for a given project, and then examine the options.

Skylights and rooflights can be ideal for any building as, depending upon the scale, they can be

built into or form the entire roof space. Their primary function is to capture natural light from above and to disseminate it into any space. They are likely to become even more widely utilised, as future innovations will see solar power being captured via skylights and rooflights.

In addition, the building exterior or facade can also benefit from translucent daylighting products which

bring additional light into the building at all levels.

There are also regulatory and sustainability factors to consider in relation to daylighting when planning any project, and your project team should be able to help you here.

Who we are



Kingspan Light + Air

Our in-house experts work closely with clients across the globe, developing plans to maximise natural daylight in any building.

If you would like to discuss how to incorporate the optimum level of natural light into a new or existing space, GET IN TOUCH!

At Kingspan Light +Air, we are passionate about championing the benefits of daylight and how this natural element can intrinsically enhance the health, wellbeing and productivity for the occupants of any building.

The possibilities of daylight drive our passion for continuous innovation and is central to our commitment to manufacturing and supplying daylighting products which deliver increased natural light and simply, make buildings better places to work, rest, learn or play.

+44 (0) 29 2077

info@kingspanlightandair.co.uk

www.kingspanlightandair.co.uk

