

A GUIDE TO:

LIGHT, LIFE & AIR

How to bring more
natural light in your
home.



LIFE AND LIGHT

Everybody loves light, and the best source - natural daylight - is completely free. But why is daylight so important to our wellbeing? How can we get enough – and could too much daylight be bad for us?

This ebook looks at the different ways we can increase levels of natural light in our homes. We consider different forms of light, the impact of light on our body and mind, and also the benefits of darkness.

At VELFAC we want to bring life, light and air into everyone's lives. If you are planning to replace your windows, undertake refurbishments or even build your new dream home, remember the important role played by windows and doors in maximising natural light.

Even if you have no plans to remodel your home, there are some simple steps you can take to bring more daylight into every room, and make better use of it, as we discover in the next four sections:

- #1** What is daylight?
- #2** Why do we need light?
- #3** How to bring more natural light into your home
- #4** Can you control the sun?

We hope our guide to daylight will help brighten up your house – happy reading!



A photograph of a grassy field with several trees in the background. The sky is a clear, pale blue. The overall scene is bright and natural, with sunlight filtering through the trees, creating a soft, dappled light effect on the grass.

WHAT IS DAYLIGHT? #1



→ Find out more ...

WHAT IS DAYLIGHT?

Light is not just light

We all understand the concept of daylight, but probably not what this concept really means. We know that natural light is vital to our health and wellbeing, and a lack of natural light, even indoors, can not only affect our safety and comfort but also our health, influencing our mood and our sleep patterns.

And although daylight is not a requirement of any specific UK Building Regulation, daylight calculations are becoming increasingly important in planning applications, helping homeowners understand the real impact of window placement and façade design.

What is 'daylight'?

The term 'daylight' describes the different types of light that come through a window, either as direct sunlight or as diffuse skylight.

Direct sunlight is the visible part of the electromagnetic radiation (solar radiation) given off by the sun and is the light that reaches the furthest into a room. Sunlight also brings warmth and is a clear light which generates shadows.

Diffuse skylight is solar radiation that is diffused, as it travels through the atmosphere, by molecules or particulates (water vapour or pollution, for example). It's also the light reflected from outdoor surfaces such as walls, roofs or windows. Diffuse skylight is the type of light most homeowners like best.

Daylight is therefore complex, extremely dynamic, and difficult to measure, not only throughout the day, or across the seasons, but also from moment to moment as conditions such as weather,

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#1

humidity, or levels of dust particles continuously fluctuate.

What is the real value of daylight?

The many intangible benefits of daylight make it difficult to calculate its real value. However, there is no doubt that daylight makes a positive contribution to reducing our energy consumption.

Globally, buildings are responsible for around 30 per cent of final energy consumption and more

than 55 per cent of global electricity demand. By increasing daylight within the home, we can reduce the amount of energy used for artificial lighting and heat.

Solar heat through glass is free, and not only reduces the length of time that artificial heating is required, but it can also reduce our longer-term dependency on a heating system. So as light levels increase, the number of kilowatt-hours decreases – benefiting both the environment and your finances. ■



Daylight makes a positive contribution to reducing our energy consumption.

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WHY DO WE NEED LIGHT #2

#2

→ Find out more ...

WHY DO WE NEED LIGHT?



Light is essential for our health and wellbeing

Hormones, vitamins and white blood cells – when you switch on the daylight, you also switch on a host of biological processes within your body. Light has a huge impact on both our physical and mental wellbeing, when it's on and when it's off.

Light is good ...

Daylight has an impact on our minds and our bodies because it stimulates the production of vitamin D and the hormones serotonin and melatonin. When we absorb daylight, our bodies begin to develop vitamin D which in turn helps us absorb calcium from our diet – vital for a wide range of physical processes and especially the health of our teeth, bones and muscles.

Daylight also stimulates the production of T-cells which play an essential role in our immune system,

including fighting cancer (but remember that too much sunlight can also cause skin cancer – so daylight exposure is always a balance).

As well as our physical wellbeing daylight can affect our mood as it causes the body to produce serotonin, also called the 'happiness hormone'. It's estimated that one in 15 people in the UK suffer from 'winter depression' (or SAD - seasonal affective disorder) between September and April when daylight levels are low.

SAD occurs throughout the northern and southern hemispheres, with the incidence decreasing the closer you get to the equator. Typical symptoms of SAD include lethargy, depression and sleep problems – and treatment includes light therapy, because exposure to light increases serotonin levels in the brain.

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... but too much light can be bad for you

As well as reducing the risk of cancer, there are other reasons why we should carefully manage our exposure to light of all kinds.

For example, while light encourages serotonin, a drop in light levels is vital for the production of melatonin – also called the ‘sleep hormone’. The balance between these two hormones is crucial to our daily (circadian) rhythms, and especially to our sleep patterns.

Little or poor sleep, caused by a lack of melatonin, can have a number of impacts. In the short term, it can affect productivity – even your employability

– but over the longer-term its effects can be even more serious, with scientific studies showing a correlation between a lack of sleep (and poor sleep) and a huge range of conditions including diabetes, depression, obesity, heart attack and cancer. ■

How to get a good night's sleep

To sleep well you must be in a darkened room – but this is not always easy to achieve. One solution could be blackout curtains for your bedroom, an effective way to ensure your room is dark enough to encourage the melatonin required for sleep, and for a strengthened immune system



Light has a huge impact on both our physical and mental wellbeing.

A modern living room with large floor-to-ceiling windows on the left side, offering a view of a green landscape. The room features a grey sectional sofa with yellow and blue cushions on the right, a glass coffee table in the center, and a yellow armchair on the left. The floor is covered with a light-colored patterned rug. The text is overlaid in the center of the image.

HOW TO BRING MORE NATURAL LIGHT INTO YOUR HOME #3

#3

→ Find out more ...

HOW TO BRING MORE NATURAL LIGHT INTO YOUR HOME



How to take advantage of natural light

Daylight is an amazing, free, natural resource and essential for our health and wellbeing – but most of us spend around 90 per cent of our time indoors, or up to 22 hours a day. How can we increase our exposure to natural light? One solution is to bring more light into the home.

A refurbishment or new build project is real opportunity to consider how to place windows and doors to maximise natural light. But if you're not planning any major home improvements, you can still achieve some quick wins with small changes, especially if you are thinking of replacing some or all of your windows.

Size does matter – but also location

When it comes to windows, size matters. Large windows admit more light than small windows,

obviously, but window location is also important. Windows installed high up in the walls will increase light penetration, while windows installed at lower levels will result in a more variable light distribution throughout a room.

Don't forget the frame

Window style and design can significantly alter the amount of light entering your home. Narrow frames result in a larger area of glass, and therefore more light, but glazing bars and sub-divided window units will reduce light levels. So if you're keen to maximise natural light you may have to compromise on window design, or look for window systems with extra-narrow frames and thin glazing bars designed to minimise light reduction. Do your research before you buy – there are many different window systems available and you need to know how each design affects light levels.

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North, south, east or west?

When thinking about the size and design of your windows, also consider their position in relation to the sun. South facing windows will receive most sunlight, while sunlight entering east and west facing windows will be equally distributed between morning and afternoon. North-facing windows, on the other hand, will not receive any direct sunlight.

Think about walls as well as windows

It's not only windows that influence the amount of light in your home. Internal partition walls can have an important impact on light distribution – do all your walls have to be full height, for example, or could some be made of glass? And do you always need a wall to divide up space, or would a bookcase have the same effect, while also allowing more light into your home? By thinking of half

walls, glass sections or space dividers – instead of traditional partitions – you can encourage more light to move from room to room.

Light from above

Windows are not just for walls. Could you install skylights, roof windows, light tunnels or light domes, for example, to bring light into your home from above? This type of installation will depend on the construction of your roofs and ceilings, but these products can prove very successful especially if you need to bring daylight into darker areas of your home.

Think windows from the beginning

If you are planning a building project, rather than a refurbishment, then plan to maximise day light right from the start. And don't just think about 'standard' windows – consider floor to ceiling glaz-

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It's not only windows that influence the amount of light in your home.

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#3

ing, for example, or dropped partitions between rooms to encourage greater light distribution.

Small changes – big impacts

If you don't have the budget, or the time, to renew or update your windows, walls or roofs, then a bucket of paint and some common sense can make a real and immediate difference. Choose light or bright colours for walls and ceilings, and also for sofas, chairs and other soft furnishings. Even replacing dark curtains with lighter alternatives, or moving potted plants away from window sills, can bring more light into the room relatively quickly. ■

If you are planning a building project then plan to maximise daylight right from the start.



**CAN YOU CONTROL
THE SUN? #4**



→ Find out more ...

CAN YOU CONTROL THE SUN?

Daylight – sometimes you can have too much

Despite the importance of sunlight in our lives, and in our homes, we also need effective shading to protect rooms from too much glare, and also from too much solar gain, leading to overheating. And shading is not just an issue in summer – low-level sunlight can also be a problem in the winter months.

The ideal shading solution allows plenty of light to enter a room but also reduces glare, so the room won't become uncomfortably bright on sunny days. The same rule applies when it comes to overheating. The sun is an invaluable source of warmth, but this can turn into a disadvantage if too much sunlight comes through a window, raising internal temperatures. This can be a particular problem in modern, low-energy houses which are so well insulated that the additional heat from the sun has little opportunity to escape.

The best way to control sunlight is to shade to your windows, either internally or externally, using

either permanent or adjustable solutions depending on your home and your needs. When deciding between shading options consider:

- Window orientation
- How the room is used, and if this might change in the future
- How the room is heated, and how shading would affect this
- Any architectural restrictions

If you want a permanent shading solution, perhaps install an opaque or slatted external screen which still allows light to pass through. Such screens are fixed – not adjustable – but would permanently solve any problems caused by excess light. If you wanted a longer term, more permanent fixed solution, then consider strategic planting.

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#4

A screen of deciduous trees (such as birch trees) could deliver the best of both worlds – leaves in summer to provide shade from the sun, and bare branches in winter to let more light through.

You can also specify windows which feature 'built in' sun screens designed to reduce the amount of light and heat entering your home, although this type of screen can affect the transparency of the window, distorting external colours and affecting the view.

If you're not planning to buy new windows, you could opt to cover the glass with a reflective film. This can be a good solution, but don't apply film to double-glazed windows as it may increase the tension across one pane of glass, causing it to break. Also check that the application of a reflective film doesn't affect your window warranty – your window supplier can confirm this.

Finally, you can of course install blinds or curtains which will also add character to your room. There are a multitude of colours and designs to choose from, so perhaps the biggest challenge is making the right decision? ■



Effective shading protects rooms from too much glare and solar gain.

→ Find out more ...

VELFAC – WINDOWS FOR LIFE

Designed to maximise light and air

VELFAC composite windows and doors combine low energy, low maintenance performance with elegant and contemporary design. The distinctive aluminium / timber slim frame design allows up to 15 per cent more light into the room than traditional alternatives, with a range of ventilation options to ensure easy access to fresh air.

Made to last

VELFAC windows and doors are designed and manufactured to exceptional levels of quality. Even though hundreds and thousands of customers use VELFAC windows every day, we still maintain a demanding testing programme to ensure our system continues to deliver the performance our customers expect.

Windows for life

Our windows have an operational lifetime of up to 40 years, with both aluminium and timber frame components also recyclable, improving sustainability.

12 year warranty

We are so sure about the quality and durability of our products that we offer a comprehensive warranty of 12 years for our windows, casement and sliding casement doors and five years for external doors and bi-fold doors. This covers all aspects of

the unit including the frame, glass, handle mechanism and seals – one of the best on offer from any window supplier.

VELFAC – Over 60 years' experience

VELFAC has been designing and manufacturing windows for over 60 years and is a subsidiary of VKR Holding, a worldwide group of companies which supplies materials to bring daylight, fresh air and a better environment into everyday life.

REFERENCES

This ebook is inspired by different sources, including 'What about daylight?' by Henning Larsen Architects, with support from Realdania, and:

- 'Lighting and Health', Building Research Establishment: <https://www.bre.co.uk>
- International Energy Agency: <https://www.iea.org/buildings/>
- 'Waking up to the health benefits of sleep', Royal Society for Public Health: <https://www.rsph.org.uk>
- 'Seasonal affective disorder (SAD)', Mental Health Foundation: <https://www.mentalhealth.org.uk/>
- 'Brits spend 90% of their time indoors', Opinium: <https://www.opinium.co.uk/>

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