

# Passive Solar Lighting



The importance of regular access to natural lighting is now widely accepted. Powerful biological and psychological effects are dependent on the presence of natural light and many health benefits are derived from having access to the full spectrum of natural sunlight.

We tend to feel better, enjoy better health, have better physical and hormonal control in setting our body's internal rhythms. Sunlight also disinfects us by killing harmful germs and enables the production of Vitamin D, to build strong bones, suppressing osteoporosis whilst boosting the immune system helping us to fight a variety of disorders including some cancers and rickets.

Seasonal Affective Disorder (SAD) where people fall into a depression during the winter months is due to the pineal glands response to low light levels and the production of melatonin, a hormone that makes us sleepy, resulting in tiredness, loss of mental acuity, affects on blood pressure, heart rate, body rhythms and a host of other physical processes.

Companies conscious of the health of their occupants, as well as looking to reduce energy costs have looked to improve their lighting systems. Replacing existing light bulbs with 'full spectrum' bulbs is one solution although this is still an artificial light that requires electricity and with increasing pressure to find ways of reducing our electrical usage, for both cost and carbon emissions reasons, artificial electric lighting is not only expensive but unnecessary.

Maximizing the freely available, zero carbon sunlight resource by bringing daylight into the workplace has many benefits. Larger areas of glass is one method, although this has security risks and cleaning costs as well as heat loss and cooling implications, and for inner spaces this solution is not always practical.

A revolutionary answer is to consider solar ducting, or 'Sun-Tubes'. These products are designed to 'pipe' natural daylight, as if it were a fluid, from a roof or outer wall right into the building, thus enabling the natural dawn-to-dusk daylight cycle to be experienced throughout the building. The highly reflective internal mirror finish of the tube allows sunlight to be channeled round bends and corners, that intensifies and reflects natural outdoor daylight into a room or area that does not have access to an outside wall or a window. Being narrow they are more secure than windows and heat losses are significantly reduced too.

Increased productivity, less sick time and an improved working atmosphere, with the added benefits of lower maintenance, energy bills and CO<sub>2</sub> emission. Home owners, Schools, Care Homes, Offices and Institutions all report significant benefits where such passive solar lighting systems have been employed.



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