



THE BENEFITS OF DAYLIGHTING IN ARCHITECTURAL DESIGN

Why Daylighting is a Wise Investment for Businesses A Look at Different Workplaces

It's widely recognized that poorly lit buildings create a subpar work environment, making daylighting – the strategic use of natural daylight in buildings – a smart investment for businesses, with both aesthetic and environmental benefits. From corporate offices to industrial spaces and warehouses, maximizing daylight can enhance productivity, reduce energy costs, and improve employee well-being.

In this blog, we explore the advantages of daylighting for these workplaces and outline the design strategies that can facilitate daylighting.



The Business Case for Daylighting

So, why is daylighting such a worthwhile investment? Of course, before the advent of electric lighting, businesses and industrial facilities relied almost entirely on natural daylight for interior illumination. Factory designs in the late 19th and early 20th centuries, influenced by the 'daylight factory' movement, featured large windows and **sawtooth roof designs** with clerestory windows to make the most of daylight.

Today, with increasing knowledge of the impact of biophilic design and a greater understanding of the scientific impact of lighting on occupants, architects have the opportunity to design for both health and productivity. By incorporating natural daylight into their buildings, businesses can expect to profit on several fronts:

- Reduced energy costs: lighting accounts for a significant portion of a building's energy use. Increasing natural daylight reduces electricity costs and lowers HVAC expenses by reducing heat emissions from electric lighting.
- Increased productivity: studies show that access to daylight improves concentration, reduces fatigue, and enhances overall work performance. Employees in well-daylit spaces tend to be more engaged and efficient.
- Improved Well-being and Health Benefits: natural daylight helps regulate circadian rhythms, improving sleep quality, mood, and overall health. These improvements support reduced absenteeism and higher job satisfaction. The World Green Building Council (WorldGBC) cites a study¹ that showed office workers who sat near a window with an outdoors view averaged an extra 46 minutes of sleep a night.
- Enhanced sustainability: with increasing environmental regulations and the push for greener buildings, daylighting can contribute to meeting sustainability goals and certifications such as LEED and BREEAM. Additionally, when considering the many energy-efficiency measures that can be applied to today's building, the use of daylight is the one sustainable measure that occupants can actually see and appreciate.
- **Higher property value:** buildings with effective daylighting strategies are more attractive to tenants and buyers, resulting in higher rental and resale values.



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¹Heschong Mahone Group (2003) Windows and Offices: a Study of Worker Performance and the Indoor Environment (Technical Report) for California Energy Commission, 2003, pp 2-4.

Daylighting in Office Spaces

Unsurprisingly, corporate offices are among the most studied environments for research into daylighting. Employees spend long hours indoors, often under electric lighting, which can cause negative effects such as eye strain, headaches, and decreased productivity. Daylighting supports:

- Improved focus and performance: natural daylight reduces drowsiness and enhances cognitive function.
- Reduced sick days: office employees with access to daylight have fewer health complaints such as stress and eye discomfort, leading to fewer sick days and lower healthcare costs.
- Employee satisfaction and retention: natural daylight is often cited as one of the most desirable workplace features. A well-lit environment can improve job satisfaction and help businesses retain top talent.

Daylighting Strategies for Offices

- Floor-to-ceiling windows maximize window surface area, especially on north – and south – facing facades, providing consistent light without excessive glare.
- Skylights and light shelves distribute natural daylight deeper into office interiors.
- Partitions and open layouts using translucent or transparent partitions instead of solid walls allows light to penetrate deeper into the office space, benefiting more employees.
- Automated lighting controls will dim or turn off electric lights when sufficient daylight is available.

Daylighting in Industrial Spaces

Factories, manufacturing plants, and other industrial facilities traditionally rely heavily on electric lighting, which contributes to high energy costs and operational expenses. Incorporating daylighting can significantly improve efficiency and working conditions by providing through:

- Lower energy costs: strategically placed skylights and translucent panels can reduce electric lighting costs by as much as 50% during daylight hours.
- Enhanced safety: natural daylight improves visibility, reducing accidents and errors in high-risk environments such as assembly lines and machine shops.
- Better worker morale: industrial workers often operate in enclosed spaces for long shifts. Daylight can improve their mood, reducing stress and burnout.



Strategic placement of daylighting systems can overcome the fenestration limitations of warehouses. Well-placed clerestory windows or light wells maximize daylight entry without compromising security.



Daylighting Strategies for Warehouses

- High-efficiency skylights and TDDs, when large and evenly spaced, can provide uniform daylight across warehouse floors without creating excessive glare.
- Translucent skylights **polycarbonate** or fiberglass panel systems allow diffused daylight to penetrate deep into the space, reducing reliance on electric lighting.
- Strategic placement of daylighting systems can overcome the fenestration limitations of warehouses. Well-placed clerestory windows or light wells maximize daylight entry without compromising security.
- Daylight-responsive lighting controls using sensors that adjust electric lighting based on daylight availability bring optimal energy efficiency.

Whatever the workplace, the multitude of advantages brought by thoughtful daylighting strategies contribute to creating healthy buildings. Designers who successfully incorporate daylighting strategies help their clients to significantly cut operational costs and enjoy a safer, greener, more efficient and, ultimately, more valuable work environment that boosts employee well-being and satisfaction.

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