EDITORIAL

Daylighting: A (Welcome) New Trend for Builders

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North American architects have a new mantra for the millennium that echoes what the window industry has been saying for years: Daylighting means good business. In what would prove awarding-winning work researchers from Lawrence Berkeley National Laboratory documented the successful use of daylighting techniques in the retrofit of a Palm Springs, California Chamber of Commerce.

The entire retrofit - which included a skylighting system, high-performance glazing and spectrally selective windows - reduced annual electricity consumption by an estimated 47 per cent and achieved favorable comments from occupants, who were often able to work with no electrical lighting at all. The anecdotal evidence in favor of more natural light was mounting even before LBNL won a national award for its daylight research from a prestigious architectural magazine.

According to Florida's Energy Conservation Assistance Program, which has helped small businesses by providing loans and assistance for energy efficiency upgrades, 29 Florida businesses that installed daylighting systems reduced daytime electric lighting consumption by an average of 93 per cent, without sacrificing light at work stations. In one facility, a passive solar daylighting system of tubular skylights supplemented existing fluorescent lights.

After the installation of the "sun tubes", light levels increased an average of 225 per cent with an effective lighting and air-conditioning savings of $2,500 per year. A more famous example is a series of schools built in Raleigh, North Carolina. By replacing much of the electric light with natural light from skylights and windows, the architects provided between 22 and 64 per cent energy savings over typical neighboring schools. And, according to a study by the architects, students who attended these schools outperformed students in comparable non-daylit schools by 5 to 14 per cent. A separate study conducted Alberta, Canada, showed that students in full spectrum light not only did better but actually grew taller and had less dental decay.As well, schools found that they could add natural light without a large increase in school budgets.

Now it is architects and developers of commercial buildings who are awakened to daylighting for both design and bottom-line benefits. Repeated studies have shown lower worker lost days, better morale and higher output for those employees in areas with better natural lighting. According to the U.S. Green Building Council's Sustainable Building Technical Manual, well designed daylighting can reduce lighting energy use by 50 to 80 per cent and increase worker productivity up to 15 per cent.

McDonald's restaurants, for instance, have begun installing UV-resistant glass in hundreds of outlets, because it found the glazing increased the comfort of customers and staff and reduced air conditioning costs. Fortunately, interest in daylighting is rising just as glazing technology

has the means to overcome the traditional problems of overheating in summer, heat loss in winter and a potential loss of privacy.

New research, such as roof-mounted moveable mirrors that track the sun and shaft more light into a building space, new skylights and light tubes that increase illumination, and advanced coatings that allow windows to automatically shade in direct sunlight are just a few examples of where the industry is heading.