

For Details, Contact:
Bridget Palitz, The McRae Agency
(619) 291-1234, bridget@mcraeagency.com
Or visit the pressroom at www.solatube.com

NEWS RELEASE

BEYOND THE BULB: A CASE STUDY IN SCHOOL DAYLIGHTING

*How Technology and Innovative Programs Have Helped Set a
New Standard for the Modern Classroom*

(Vista, Calif.): The squeeze is on for schools. Pressure to boost student test scores is up. Budgets have been slashed. Energy prices have gone through the roof. Many facilities are aging and overcrowded. More than ever before, school administrators are facing tough choices in order to provide the best learning environment for students.

The strategic use of natural lighting techniques – known as “daylighting” – has become a key component of school modernization projects. More than just the latest design fad, effective daylighting allows school districts to achieve significant energy savings, increase student attendance and test scores, be environmentally responsible and provide better overall facilities for students to learn and educators to work. There are now a variety of programs in place to make it more affordable for school districts to reap the benefits of daylighting. Additionally, the entire process can become a great environmental lesson for kids about the importance of saving energy.

“In recent years, we’ve learned from a variety of studies that daylighting helps children do better in school,” said Neall Digert, Ph.D., MIES, Solatube International Inc.’s vice president, commercial market development. “But, even the best ideas in the world won’t go anywhere if they aren’t affordable and practical to implement, particularly in cash-strapped districts. Daylighting needs to make financial sense to become a reality.”

Solatube International Inc., the worldwide leading manufacturer and marketer of Tubular Daylighting Devices (TDDs), has experienced a surge in demand for its products in schools across the nation in recent years. The compact, modular design of the Solatube Daylighting System, combined with dimming capabilities and lighting controls, make them an ideal choice for school environments. The Solatube Daylighting System has been installed everywhere from elementary classrooms to school libraries to university campuses, from sunny California to snowy New York, demonstrating that educational facilities in all climates can benefit from smart daylighting.

“People don’t realize how expensive it is to operate an inefficient school facility,” said Forrest Bell, superintendent of Central School District 13J in Monmouth-Independence, Ore., referring to a comparison of Ash Creek Intermediate School, a new “high performance” daylit school featuring Solatube [Daylighting Systems], with a similar-sized facility in his district with an outdated design. Ash Creek’s annual energy costs are expected to be half of that of the other school.

“We wanted a building that gets us the most value for our dollar and gives our kids an advantage,” added Bell. “At Ash Creek, we use nature as our ally. We want people to recognize that the features in this building are ones they should expect and demand.”

The Cost of Modernization

Energy Cost Savings. Most schools spend more money on energy than on books and supplies. In fact, the cost of energy is second only to salaries. It is well documented that effective daylighting can significantly lower this energy consumption in school buildings. According to the National Center for Educational Statistics, 72 percent of the cost of energy in educational buildings goes towards electricity, with the majority (56 percent) going toward electric lighting. By utilizing effective daylighting strategies, in combination with lighting controls and dimming systems, schools can reduce or eliminate the need for heat-producing electric lights during the school day. Additionally, this cooler, more energy-efficient daylighting reduces the demand on cooling systems, boosting the potential energy savings even further. According to the Collaborative for High Performing Schools (CHPS), school energy costs average \$100 per student per year, while effective design solutions can save up to \$50 per student per year. By reducing these operational costs, the savings can be redirected to improving education.

Increased Student Funding. In addition to reducing energy expenditures, daylighting can provide an unexpected revenue source. Studies have shown that improved school design, including the use of natural light, can reduce student absenteeism by several days per calendar year. With school revenue limit rates directly dependent on Average Daily Attendance (ADA), even small increases in attendance can significantly impact school funding.

Consider this example from CHPS: Assume that a 500-student elementary school invests \$4 per square foot on lighting and air conditioning improvements. Based on the \$4,300 revenue limit, an increase in average daily attendance of 1.75 percent would pay back all of the investments in only two years. This doesn't even take into account all of the utility savings from these energy-efficient improvements.

Government-Sponsored Programs. California, which houses the largest school system in the nation, is leading the way in energy-efficient school design and programs to support its implementation. California schools spend \$700 million annually on energy, a figure which could be cut by 20 to 40 percent through increased energy efficiency measures, allowing desperately needed funds to be made available to educate students in a time of a state budget crisis.

The Bright Schools Program has been set up by the California Energy Commission to help new and existing schools identify, design and implement more cost-effective, energy-efficient lighting and HVAC systems. The program works closely with schools to secure low-interest loans to provide all or a portion of the funds needed for energy-related deferred maintenance projects or to match modernization funding from other state programs.

“Although our primary goal is to facilitate the installation and proper use of products and equipment that reduce the use of energy, we also recognize the importance of non-energy-related benefits that result from daylighting systems, including improved student performance,” said Randel Riedel, contract manager with the California Energy Commission. “We are pleased to be able to assist schools in realizing these significant public benefits.”

The U.S. Department of Energy's EnergySmart Schools campaign is another program that is helping schools get started with energy-saving tools like daylighting. The program offers free technical help and training to school districts as well as contacts in other communities who have already built or renovated using smart energy concepts.

School Bonds. School bonds have provided another valuable source of funding to integrate modern daylighting into classrooms.

In Sacramento, Calif., the Natomas Unified School District has experienced an unprecedented 18 percent growth rate (four percent would have been considered fast) and state funding has not been able to keep up with the pace. Students have been placed into portable classrooms, 25-foot-by-40-foot dark tunnels that lack the natural light the district recognizes as important for a productive learning environment. As a result, a \$300,000 bond was recently passed specifically to daylight the 121 portable classrooms with 267 Solatube Daylighting Systems, which are being installed prior to the beginning of the 2003-2004 school year.

“With the economic pressures placed on districts today, schools are moving not only toward energy *efficiency*, but toward energy *self sufficiency*,” said Mike Mormon, director of facilities and planning for the Natomas Unified School District. “The benefits of daylighting extend beyond just providing a better learning environment for students, but to impacting the bottom-line for districts.”

Other Financing Strategies. According to the EnergySmart Schools campaign, an innovative approach to financing energy improvements that is gaining popularity is to consider the energy efficiency of your school facilities as a ready source of cash. Like home equity, this “energy equity” can be used to leverage a loan or to directly finance both energy and other facility improvements.

Local and state utility companies may also provide rebates, incentives, partnership programs or grant opportunities to support energy-efficient projects. Some states, including California, New York and North Carolina, also offer tax credits to help offset the cost of upgrades. School districts can start researching opportunities in their area in the Database of State Incentives for Renewable Energy (DSIRE) at www.dsireusa.org.

Daylighting Technologies That Pass The Test

“Daylighting today’s classrooms is not as simple as throwing up a bank of windows or dropping a bunch of skylights into the ceiling and hoping for the best,” said Digert. “Too much sunlight can be worse than no natural light at all.”

The daylighting effort needs to be thoughtfully designed to provide the appropriate quantity of light needed to avoid glare, shadows, heat gain and other distractions, and should work in unison with the electric lighting system as an overall lighting strategy. Lighting controls should automatically shut-off electric lights when adequate daylight is available in order to maximize the energy savings. Additionally, the level of lighting needs to be controllable to meet the changing needs of the room’s occupants.

Daylighting products like the Solatube Daylighting System provide an attractive option for schools applications. Their compact, modular design provides great installation flexibility – from traditional classrooms to portables, from restrooms to gymnasiums – and integrates cohesively with traditional lighting fixtures. Additionally, dimming capabilities allow the level of natural lighting to be adjusted on demand from 100 percent down to two percent to accommodate activities such as watching movies, presentations or nap time.

A Light Assignment – Daylighting Teaches Kids Valuable Lesson

At least one school has taken advantage of this “green” design tool to teach its students about the importance of energy conservation. Del Mar Elementary School in Morro Bay, Calif., applied for and received a \$15,000 conservation grant from the California Consumer Services Education Department to retrofit five classrooms with natural lighting. Each classroom, approximately 920 square feet in size, was outfitted with six Solatube 21-C Daylighting Systems. Prior to the installation, a teacher followed a scientific approach to help the students measure the light levels in each room with the fluorescent lights on over the course of six days using a light meter. After the Solatube Daylighting Systems were installed, they turned all the lights off and used the light meter to measure the light levels of only the natural light provided by the Daylighting Systems. There was an overall sustained light increase of 25 percent.

“We are thrilled with the quality of the natural light. It’s unbelievable. Even on cloudy days, we still have enough light in the classroom,” said Cindy Vix, a Del Mar Elementary teacher who wrote the grant request. “The students have become very energy conscious. They don’t want the electric lights on and are adamant about turning them off. I wish every classroom could have these [Daylighting Systems].”

Classrooms of the Future

The Modular Building Institute estimates that more than 200,000 modular classrooms (also referred to as portable or relocatable classrooms) are currently in use by public schools in the United States. California has long been a leader in the use of modular classrooms, spurred by legislation that withholds state funding to local districts unless a significant portion of facility additions are capable of being moved, but many other states are following.

Faced with rapidly increasing student populations as well as mandates to reduce class size, school districts are more and more often turning to modular classrooms as a faster and less expensive way to meet their facility needs. Yet, the ugly, poorly constructed classroom “trailers” parked on a school’s recreation field or parking lot have received, and probably earned, a bad reputation over the years. These small, dark boxes have been cheaply constructed, are horribly energy-inefficient, and are unpopular with students, teachers and parents alike as less-than-desirable learning environments. But, the new generation of modular classrooms has come a long to make the modular classroom a viable and more appealing solution.

The trend towards daylighting traditional school buildings is also working its way into the modular realm. Tubular Daylighting Devices and other daylighting tools have historically been difficult to integrate into these prefabricated structures without excessive cost, time or hassle. However, the modular building community is now turning to TDDs, a product used for years in manufactured housing, as a an ideal daylighting solution for classrooms. With a compact, modular design, combined with sophisticated lighting controls and dimming capabilities, these Daylighting Systems allow portables to enjoy all of the benefits of their traditionally constructed counterparts, while still providing the overall cost savings for the school.

Danny Parker, senior researcher with the Florida Solar Energy Center, reported that the Daylighting Systems installed in experimental portable classrooms in Cornwall, N.Y., provided a significant improvement.

“A real accomplishment of the project has been to conclusively demonstrate that overhead daylighting of portable classrooms is both physically feasible and desirable for this rapidly expanding segment of the U.S. educational system,” Parker noted.

An Idea Whose Time Has Come

When one considers that nearly 55 million people – or 20 percent of the nation’s population – spend their days inside of a school building (either as students or staff), it is clear that these facilities have a major impact on the quality of life of our citizens.

“Ample, quality daylight is finally being looked at as a basic human necessity, rather than simply window dressing,” said Digert. “While we still have a long way to go in transforming our educational facilities to their full potential, we are making tremendous strides. We have gotten back to basics with natural lighting, combining it with today’s technology to improve upon Mother Nature’s design.”

Solatube International Inc., based in Vista, Calif. (northern San Diego County), is the worldwide leading manufacturer and marketer of Tubular Daylighting Devices (TDDs). The company’s flagship product, the Solatube Daylighting System, provides a revolutionary natural lighting solution for all types of residential and commercial applications. The maxim “Innovation in Daylighting™” reflects the company’s commitment to the development of breakthrough daylighting technologies, which has resulted in numerous patents dating back to the mid-1980s. Widely recognized as the industry innovator, Solatube International has earned acclaim around the globe for its unrivaled ability to transform interior spaces with the power of daylight. For more information on the Solatube Daylighting System or other products manufactured and marketed by Solatube International, including solar-powered attic ventilation fans, please visit the Solatube website at www.solatube.com or call 888-SOLATUBE (888-765-2882).

###