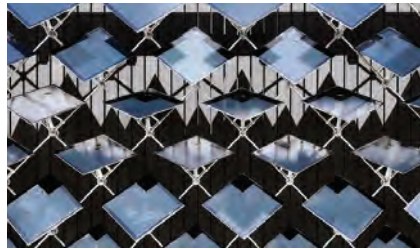


## RENEWABLE ENERGY UPDATE

### Study: Movable Solar Panels Generate 50% More Energy

**ZURICH, SWITZERLAND**—A research team at a university in Switzerland, ETH Zurich, has developed a building façade with a system of movable solar panels. These new solar panels produce more energy than the building uses in a year and also allow the right amount of sunshine into the building for more efficient internal heating and cooling. The panels are mounted to lightweight

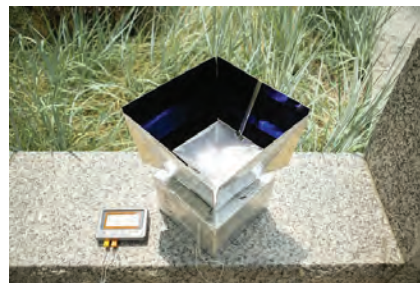


Solar panel movements are controlled by an adaptive learning algorithm.

steel cables and are controlled by robotics to individually move horizontally and vertically. The researchers also studied energy savings potential using the panels in different climates and building types. ■

### Electricity-Free Systems Could Cool Buildings

**BUFFALO, N.Y.**—A new radiative cooling system—one that does not require electricity—could cool buildings in urban areas during the daytime. The cooling system is made up of a polymer/aluminum film, which is installed inside a box that sits at the bottom of a solar “shelter.” Unlike normal thermal radiation, which emits heat in different directions, this innovative system is able to



The film absorbs heat from the air inside the box and directs it into the atmosphere.

beam the heat emissions in a specific, narrow direction. This setup would function well in a city where buildings are close together because the heat could be emitted away from other buildings. ■

### B&G Reopens Training Center

**MORTON GROVE, ILL.**—Xylem Bell & Gossett recently reopened its Little Red Schoolhouse training center for professionals in the hydronic heating and cooling and plumbing industries.

An extensive remodeling project transformed the facility into an interactive learning environment

where professionals receive hands-on training to better understand how HVAC systems work.

New technology figures prominently into the redesigned training center, including a redesigned mechanical room with various pieces of equipment to simulate system design and installation, providing attendees ways to gain knowledge about hydronic and steam systems. ■



Lutron's new Commercial Experience Center showcases lighting and control products in different settings.

### Lutron Opens Commercial Experience Center

**NEW YORK CITY**—Lutron's new Commercial Experience Center spotlights the company's lighting controls and new technology.

Architects, designers, contractors, developers and building owners can see Lutron's inclusive lighting and control capabilities in the new center in Manhattan's NoMad neighborhood just south of Midtown. The center, which opened Tuesday, showcases the company's HXL approach—a broad human-centric lighting philosophy that uses natural light, quality light, connection to the outdoors and adaptive and personalized control.

The 5,500 ft<sup>2</sup> (510.9 m<sup>2</sup>) center highlights Lutron's projects for a variety of building types such as offices, residence, educational institutions and hotel rooms. The space includes a complete model hotel suite that uses Lutron's guestroom control system.

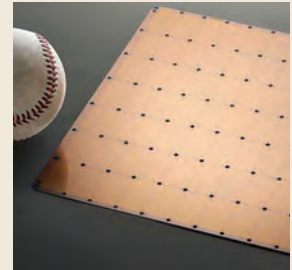
Lutron Executive Vice President Scott Hanna said the center's immersive experience shows how lighting and controls affect different space types and people's sense of well-being. ■

DATA CENTERS INNOVATIONS

**AI Chips Reshape Data Center Design, Cooling**

**LOS ALTOS, CALIF.**—Innovative developments for artificial intelligence (AI) hardware come with the challenge of increased heat loads, which will require changes in how data centers are designed and cooled. A new AI chip, called the Cerebras Wafer-Scale Engine (WSE), is the largest chip ever designed at 9 in. (229

mm) wide. It uses 15 kW of power and puts out an enormous amount of heat, so engineers came up with a different approach to cooling. The WSE will include a liquid cooling system with a cold plate fed by a series of pipes, and the chip will be positioned vertically to cool the whole surface of the chip.



CEREBRAS SYSTEMS

The Wafer-Scale Engine (WSE) is the largest chip hardware in the world.

**Blue Energy Could Provide Cheap, Eco-Friendly Power**

**FRAMINGHAM, MASS.**—Edge data centers require an enormous amount of electricity to run, so research is finding better ways of producing this energy. Blue energy, also called osmotic power, is produced

by mixing freshwater and saltwater. A new battery that uses blue energy could produce enough energy to power data centers without using electricity from the grid.



DOC SEARLES/FLOKOR

Using ocean water to power and cool data centers could significantly cut costs.

INDUSTRY ROUNDUP

**Massachusetts Incentivizes Energy Storage Systems**

**BOSTON**—Massachusetts is the first state in the U.S. to incentivize behind-the-meter battery storage by providing new tools and resources for a program to offer customers pay-for-performance programs. The recent order by the Massachusetts Department of Public Utilities (DPU) allows utility companies to pay customers who agree to rely on energy storage systems and dispatch energy during peak events.

**Seattle Proposal Would Convert Homes From Oil to Electric Heat**

**SEATTLE**—The mayor of Seattle is proposing to convert thousands of oil-heated homes to electric heat as part of the city's goal to be carbon neutral by 2050. There are about 18,000 oil-heated homes in Seattle. Converting these to electricity is expected to reduce the

city's climate emissions by 433,000 metric tons over 10 years.

**Connecticut to Build World's Largest Indoor Fuel Microgrid**

**NEW BRITAIN, CONN.**—A Connecticut company intends to build a microgrid that spans 45,000 ft<sup>2</sup> (4 180.6 m<sup>2</sup>) on the site of a closed Stanley Black & Decker manufacturing plant. The 20-MW fuel cell microgrid is predicted to be the world's largest indoor-fuel cell system. It will be grid-connected and be able to run autonomously.

**Can the U.S. Reduce Its Building CO<sub>2</sub> Emissions 80% by 2050?**

**BERKELEY, CALIF.**—The U.S. Mid Century Strategy (MCS) set a 2050 goal to reduce the country's emissions by 80%, relative to 2005 levels. The building sector accounts for 36% of the country's carbon release. New research evaluates the feasibility of

reducing the volume of CO<sub>2</sub> emissions. Findings show that coupling efficiency with a low-carbon electricity supply and end use electrification are some strategies to come close to the goal.

**New Roadmap Shows How Cities Can Invest in Energy Savings**

**LAKEWOOD, COLO.**—American cities can use a new NREL report as a roadmap to target energy savings programs and investments. The "Preparing for a City-Scale Building Energy Upgrade Analysis: A Case Study for New York City" report outlines how New York City has planned a citywide building stock analysis to figure out where to invest in energy savings. The report acts as a case study for other cities on how to improve energy savings at the individual building and system level.

### **PNNL: Utilities Not Ready to Capitalize on Energy Storage**

**RICHLAND, WASH.**—Two primary factors keep utilities from accurately assessing the value of energy storage batteries: lack of reliable cost data and established industry modeling and planning practices. The Pacific Northwest National Laboratory assessed how and to what extent utilities included energy storage technologies when forecasting their future needs. The more utilities reviewed energy storage services, the more likely they are to use them, said the study.

### **Urban Heat Solutions Differ Between Wet, Dry Climates**

**PRINCETON, N.J.**—The urban heat island effect, where city temperatures are

higher than the temperatures in surrounding rural areas, can be dangerous to human health. Research has shown that the intensity of this effect is mostly caused by the population of the city and the precipitation it receives. Data from a new study suggest that cooling cities by planting vegetation, resulting in evapotranspiration, is much more effective in drier climates than in wet climates.

### **PNNL Develops, Tests Tech to Add Renewable Energy to Grid**

**RICHLAND, WASH.**—A new technology from PNNL, dubbed “Economic Dispatch,” connects a combined heating, cooling, and power system (CHP) to the power grid and to the operational

system of a building. The algorithm's purpose is to monitor factors such as weather, local energy use and electricity costs to optimize CHP power generation. Head researcher, Srinivas Katipamula, Ph.D., Fellow ASHRAE, noted that the end goal is to have a surplus of renewable energy to sell back to the grid, which would generate income. ■

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