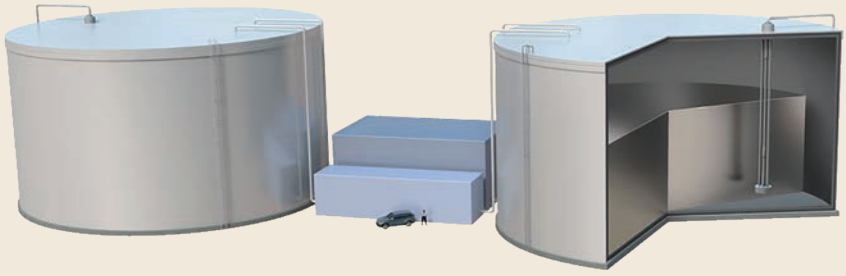

CREDIT: DUNCAN MACGRUE

MIT researchers propose a concept for a renewable storage system, pictured here, that would store solar and wind energy in the form of white-hot liquid silicon in heavily insulated tanks.

Conceptual 'Sun in a Box' Stores Renewable Energy for Grid

CAMBRIDGE, MASS.–Engineering researchers at MIT have developed a conceptual design for a system to store renewable energy and deliver that energy back into an electric grid on demand. The new design stores heat generated by excess electricity from solar or wind power in large tanks of white-hot molten silicon, and then converts the light from the glowing metal back into electricity when it's needed.

The researchers estimate that such a system would be vastly more affordable than lithium-ion batteries, which have been proposed as a viable, though expensive, method to store renewable energy. They also estimate that the system would cost about half as much as pumped hydroelectric storage—the cheapest form of grid-scale energy storage to date.

"Even if we wanted to run the grid on renewables right now we couldn't, because you'd need fossil-fueled turbines to make up for the fact that the renewable supply cannot be dispatched on demand," says Asegun Henry, the Robert N. Noyce Career Development Associate Professor in the Department of Mechanical Engineering. "We're developing a new technology that, if successful, would solve this most important and critical problem in energy and climate change, namely, the storage problem."

Henry and his colleagues have published their design in the journal *Energy and Environmental Science*. ■

State-of-the-Art 'Living Lab' for Sustainable Technologies

CAMBRIDGE, MASS.–Harvard University officially launched a program on Dec. 3 to retrofit a campus building and create a living laboratory for energy-efficient architecture, aiming to develop techniques and technologies to promote sustainability.

The goal of the HouseZero project is to create a building that produces more energy over its lifetime than it uses. To accomplish this, the renovated building was designed by Harvard's Center for Green Building and Cities (CGBC) with strict performance targets: nearly zero energy for heating and cooling, zero electric lighting during the day, operating with 100% natural ventilation, and producing zero carbon emissions. CGBC will use millions of data points from hundreds of sensors embedded within each component of HouseZero to continually monitor its performance.

This data will also provide Harvard's researchers with an unprecedented understanding of complex building behavior. This data will, in turn, fuel research involving computational simulation, helping the CGBC develop new systems and data-driven learning algorithms that promote energy-efficiency, health, and sustainability.

CREDIT: HARVARD CGBC

HouseZero.

"HouseZero's flexible, data-driven infrastructure will allow us to conduct further research that demystifies building behavior, and design the next generation of ultra-efficient structures," said Ali Malkawi, founding director of CGBC and the creator and leader of the HouseZero project. ■

Record Number of 'Supertall' Buildings Completed in 2018

CHICAGO–The Council on Tall Buildings and Urban Habitat (CTBUH) has released its annual report, the "2018 Tall Building Year in Review," part of the Tall Buildings in Numbers data analysis series. The report shows that 143 buildings of 200 m (656 ft) height or greater were completed in 2018, including 18 "supertall" buildings of at least 300 m (984 ft) height, a new record. The total number of supertall buildings worldwide is now 144. In 2000, there were only 26.

The 528 m (1,732 ft) Citic Tower in Beijing was the tallest building completed in 2018. China maintained its reign in constructing tall buildings, with 88 completions in 2018, for 61.5% of the total. This is a record for China, exceeding its 86 buildings of 200 m (656 ft) or higher in 2016. Second place was again held by the U.S., with 13 completions, up from 10 in 2017.

"Given the rate of urbanization seen in the world—and that we must build the equivalent of a new city of 1 million people every week to accommodate this growth—it is not surprising that the pace of tall building construction continues," said CTBUH chief executive officer Antony Wood.

View the full interactive report at http://www.skyscrapercenter.com/year-in-review/2018. ■

CREDIT: RUSKIN

Ruskin is doubling the size of its research and development center in Grandview, Mo., to support new product innovation, testing standards and cost-saving improvements for louvers, control dampers, life safety dampers, sound control and air measurement technologies. Pictured are Ruskin leaders breaking ground on the expansion.

Ruskin Doubles Size of R&D Center

GRANDVIEW, MO.–Ruskin is doubling the size of its research and development center. The expansion will focus on new product innovation, testing standards and cost-saving improvements for louvers, control dampers, life-safety dampers, sound control and air measurement technologies. "Our goal is to accelerate speed to market with improved testing capabilities and resources in a certified AMCA/UL facility," said Brian Poe, director, engineering and product development for Ruskin. "The additional testing equipment will help Ruskin drive its future with the best product designs and innovations, offering the greatest value to customers around the world." Additionally, Ruskin will enhance its technology to test the more stringent Miami-Dade testing standards for hurricane conditions in areas where FEMA protection is required. The expansion includes critical laboratory equipment for AMCA 500-L protocols, including wind-driven rain, water penetration, pressure drop, thermal shock and impact. ■

INDUSTRY TRANSACTIONS

REHAU Acquires Trading Company MBT

MURI B. BERN AND STEINHAUSEN, SWITZERLAND–REHAU Verwaltungszentrale AG, the holding company of the REHAU Group, announced it has successfully completed the acquisition of MB Barter & Trading AG (MBT). The combination of REHAU's expertise in materials, process engineering and applications combined with MBT's global trading, logistics and distribution expertise creates new opportunities through expanded business models, the companies said. ■

Alfa Laval Sells Parts of Air Heat Exchanger Business

LUND, SWEDEN–Alfa Laval has signed an umbrella agreement with the LU-VE Group to sell parts of its air heat exchanger business, related to commercial/industrial air heat exchangers, currently placed in the Greenhouse division. The closing of the agreement is expected during the first half of 2019. ■

HARDI Distributor Sales Up 21.7% in October

COLUMBUS, OHIO–Heating, Air-conditioning & Refrigeration Distributors International (HARDI) released its monthly TRENDS report, showing average sales for HARDI distributor members increased by 21.7% in October 2018. The average annualized growth for the 12 months through October 2018 is 10.9%. "October was another exceptional month for HARDI distributors," said HARDI Market Research & Benchmarking Analyst Brian Loftus. ■