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Tallest Church Building on Earth Will Green Up

Chicago, Ill. – One of the city's oldest skyscrapers is about to get a new lease on life.

The historic Chicago Temple building, home to the oldest church congregation in Chicago and a signature feature of the nighttime skyline, will undergo a top-to-bottom systems upgrade on the weekend of May 29. A year of planning and preparation for the radical overhaul will culminate in a complex and delicately timed logistical maneuver involving a massive mobile crane whose parts must be trucked in on thirteen tractor-trailers. Sixteen additional tractor-trailers will carry 30 air handling modules, which will be hauled onto the top of the Temple and assembled into a single two-story air handling unit over the course of the weekend. The maneuver will shut down the Chicago Loop for 48 hours of heavy lifting that will “green up” the building's mechanical systems – all without leaving a single visible trace on the venerable 23-story structure.

The maneuver has been rescheduled several times due to poor weather, but this weekend promises peak safety conditions for a lift of this magnitude.

“Here we have a building that is nearly 100 years old, whose structure is sound, and whose significance is undeniable,” said José Ronchetta, commercial engineer at Temperature Equipment Corporation. “The building's *systems* were not sound, though. This is an innovative solution that preserves the building's beauty and integrity while turning it green – just on the inside, of course.” TEC, based in Lansing, is Chicagoland's largest distributor of HVAC equipment and specializes in high-efficiency Carrier brands for residential, commercial and industrial applications.

At the core of the green reconstruction project is the total replacement of the Temple's air handling and distribution systems, which will now include the custom air handling unit as well as a 19-story-high series of ducts. The enormous system, custom-designed by Quebec-based air handling specialist Racan-Carrier, will circulate 235,000 cubic feet of air per minute – making it comparable to the combined HVAC systems of 200 large homes. And yet, working with TEC and Racan, the team of designers, architects and engineers has customized the new system to completely hide it from view.

“The equipment on the roof will be 20 or more feet high,” said Jim Peterson, architect and engineer at the firm Hasbrouck Peterson Zimoch Sirirattumrong. “But because of the tower on the north end of the building, we were able to design this so that only the barest slivers will show.” The entire air distribution system will also be camouflaged on the exterior. “The duct coming down from the roof to the fourth floor level is very large,” Peterson said. “On a lot of buildings, that would be pretty hard to hide!”

Peterson's firm has helped preserve the architectural integrity of many historic buildings, including three significant Frank Lloyd Wright homes, and his admiration for the Temple is obvious. "No one builds buildings like this anymore," he lamented. "They have so much character." The Temple's neo-gothic carved limestone tower and spire, Peterson said, have made the Temple a Chicago landmark.

When the Temple is lit up on the night after work is completed, passersby won't notice a thing. But thanks to the new, efficient air handling system, the building will dramatically cut its energy usage. "This is a very unique project that happens over a weekend," said Guy Valcour, founding principal of engineering firm dbHMS. "And it knocks out half the energy costs of running the building." Valcour's firm, a leader in creative engineering solutions for building systems, has worked with Peterson's company to modernize every part of the Temple that involves energy usage, right down to the bulbs in the exit signs. The new air handling system is at the core of the Temple's new, green outlook on life.

Because of the changes, Valcour said, the building owners will not only save money on energy bills, but also will be eligible for large tax rebates and other incentives. Between the cost cuts and the incentives, the project will pay for itself quickly. Additionally, Valcour pointed out, "Illinois is a terrible carbon user; we have so many coal-burning power plants. This project will save 4 million pounds of carbon emissions per year."

In a city of giants, the Chicago Temple building may look unassuming. But in the heyday of competition over which city could represent its economic power with the highest structure, the Chicago Temple was the giant. It was the tallest building in Chicago from 1924 until 1930 – and it remains the tallest church building in the world. And, after this massive logistical maneuver, it will also be one of the greenest.

The Chicago Temple green reconstruction project is being managed by Hill Mechanical Services, an affiliate of Hill Mechanical Group, Chicago's largest trade contractor. Hill has brought together a diverse team of industry innovators in order to arrive at a creative solution that preserves the architectural heritage of this historic structure while bringing the Temple's mechanical systems into the 21st century.

Though the project team is diverse – comprised of dbHMS designers and engineers, HPZS architects, Racan-Carrier air handling specialists and TEC equipment distributors as well as sustainability consulting firm Full Circle – its members all agree on one thing: in order to respond effectively to the threat of global climate change, the world is going to need a lot more projects like this one. Perhaps it is fitting that Chicago, the "birthplace of the skyscraper," could also turn out to be a pioneer in the next phase of global competition: who can become the greenest the fastest.

"This project proves that even the most beautiful old buildings in Chicago can be modernized from the inside out, without harming the city's architectural heritage," said Stan Grossman, commercial engineer at TEC. "It saves the owners money, and cuts dangerous carbon emissions dramatically. I hope every historic structure in Chicago will follow suit."