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Breaking the Net Zero Energy Barrier: The "31 Tannery Project"

There is no disputing that energy is one of the most important issues of our time. Everywhere, peopl energy – its skyrocketing costs that impact our economy; the political implications of our dependence sources; growing pollution, greenhouse gas emissions, climate change; the need to provide more en increasing demand.

In our quest for energy solutions, one thing is certain: if we are going to make an impact on energy use we have to address our buildings, which use 76% of all electricity generated. There is a common public misconception that cars and trucks are the largest contributors of greenhouse gas emissions. The fact is that buildings account for nearly half (48%) of all greenhouse gas emissions, which is far more than transportation (27%) and industry (25%).

Imagine the potential for global energy change if it were possible to have commercial buildings that are not only energy efficient, but are actually producing more energy annually than they consume. The "31 Tannery Project" is receiving international attention for accomplishing just that. 31 Tannery is a 42,000 square foot office and shop building located in Branchburg, New Jersey. It is the first Net Zero Electric Commercial Building in the United States to produce more electricity, on an annual basis, than it con excess energy that is generated goes back into the utility grid for others to use.

This project has "raised the bar" on energy standards. 31 Tannery received an Energy Star® certifica previously unheard of perfect rating of 100. Energy Star®, a joint program of the U.S. Department of U.S. Environmental Protection Agency, ranks buildings against other buildings in the country on a 1 t scale. A perfect 100 score means that 31 Tannery is the valedictorian, at the top of its class. The Sta Executive Order No. 54 calls for an 80% reduction of greenhouse gas emissions by the year 2050. 3 already achieved an 83% reduction in greenhouse gas emissions, decades ahead of New Jersey's d recognition, Governor Jon Corzine and the NJ Board of Public Utilities President, Jeanne Fox, visited present a NJ Clean Energy Award.

Three key areas were addressed to achieve Net Zero Electric results: energy efficiency, renewable e time energy monitoring – or, to use a simple analogy, "Diet, Exercise, and a Personal Trainer".

"Diet" - Energy Efficiency: The 31 Tannery Project incorporates a radiant heating system that cons approximately 9 miles of PEX tubing embedded in the concrete slabs. The concrete slabs act as a th system to provide comfortable efficient heating. There are 146 loops with 80 zones to control the hea temperature in the system only needs to be heated between 80°F and 100°F. Heated water is provid loop by a 14,000 BTU/h gas-fired, low nitrogen oxide, and full modulation condensing boiler operatin High-efficiency Energy Star® rooftop units with premium efficiency motors, enthalpy economizers, ar network control units provide ventilation and air conditioning. Digital controls and monitoring modulat 31 Tannery Project won the Radiant Flooring Association's *Commercial Project of the Year Award* fo efficient heating application.

"Exercise" - Renewable Energy: The building has a utility grid tied 223kW dc photovoltaic system t 1,276 solar panels on the roof that feed two 100kW ac 277/480V three-phase inverters to produce re energy from the sun. A solar thermal system with rooftop panels, a heat exchanger, and storage tank need for fossil fuels to provide potable hot water also with renewable energy from the sun.

"Personal Trainer" – Real-Time Monitoring: A key ingredient behind the success of the 31 Tanner real-time energy and building systems monitoring, visualization, and diagnostic system by Noveda T system monitors the building's utility supplied energy, the solar photovoltaic and solar thermal renew systems, and the buildings HVAC systems. The system allows 31 Tannery to maintain comfort, enlis occupant participation, exceed energy savings goals, and accelerate ROI. Because the system is We

viewed anywhere, at any time. Visitors to the facility are fascinated by viewing dynamic, real-time vis kiosk display in the lobby. The system also provides educational value and is an excellent way to der responsibility.

Independent studies from the U.S. Department of Energy (DOE), the National Renewable Energy La and several Universities have shown that just monitoring can reduce energy use 5% to 15%. The res Tannery Project reinforce these findings.

Just as the microscope and the telescope opened new worlds of discovery and scientific advanceme energy monitoring system allows us to visualize energy and opens new horizons in energy efficiency technology is very appealing in the real estate community because it can monitor one building or hur from any location, in real time.

The 31 Tannery project has set a new benchmark and opened new horizons in solving energy issues to break the Net Zero Electric barrier with commercial buildings. It was accomplished in a commercia with low-maintenance, easy-to-manage systems and a projected payback of 5 to 7 years. The projec captured the attention of the business community and was awarded the New Jersey Business and In Associations' Award for Environmental Project of the Year. One of the big benefits of the real time m visualization is the occupant behavioral change. Noveda Technologies was also recently awarded a by Realcomm for Best Use of Technology.

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Advisory Topic #2

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If you are a real estate owner, technology manager, or solution provider who would like to contribute consideration, please submit your proposed topic and article description to **Sandra Alcantar**. Articles informative and educational nature only (no product marketing) and be on a topic relevant to technolo real estate. Perhaps you have a success story about your new portfolio-wide software implementatio a wireless communications solution... We want to hear from you!

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Sept. 5 - WEBINAR: Intelligent NextGen Buildings
Sept. 10 - Automated Business Solutions Seminar - Hosted by Vornado Realty Trust - New York, NY
Sept. 16 - Automated Business Solutions Seminar - Hosted by BOMA Chicago - Chicago, IL
Oct. 2 - Automated Business Solutions Seminar - Houston, TX
Oct. 3 - WEBINAR: Automated Business Solutions
Oct. 22- Automated Business Solutions Seminar - Washington, D.C.
Nov. 7 - WEBINAR: Intelligent NextGen Buildings