

**Ferreira Construction and Ferreira Group's 31 Tannery Project,  
the first Net Zero Electric Commercial Building in the United States**

The "31 Tannery Project" serves as the corporate headquarters for Ferreira Construction and Ferreira Group located in Branchburg, NJ. Amidst global concern about future energy shortages, Ferreira Construction offers some hope. Its NJ headquarters is the first commercial building in the U.S. that generates more electricity from a renewable energy source than it consumes, earning it the title of First Net Zero Electric Commercial Building in the U.S.

What appears at a glance to be an ordinary pre-fabricated building is actually the first commercial building to produce all of its electricity from renewable energy. The approximately 42,000 square foot commercial facility is powered by a 250-kilowatt solar generation system and can run for a full year on renewable energy alone. Ferreira didn't stop there; in fact, it actually produced a surplus of energy equivalent to a full month of electricity that was sold to the grid so others could also use this "green" energy.

The building has incorporated solar electric (for all electric needs), solar thermal (for all domestic hot water needs), nine miles of radiant flooring (for all heating needs), as well as energy efficient systems, and a patent pending real time energy and building systems monitoring solution.

The secret to Ferreira's success is real time monitoring and visualization. Ferreira's team designed and built its own patent pending system now known as Noveda Technologies™. This was the key component that enabled the "31 Tannery Project" to get the information critical to becoming a Net Zero Electric Commercial building and then surpassing that goal. The dynamic graphics and real time energy and building systems monitoring, diagnostics, and tracking system was the key component needed to reach net zero status. It has been so successful that it has been used by the Ferreira team in its commissioning work and is now being marketed commercially.

"Being able to see a building's system run in various stages at various times is an integral part of commissioning and continuous commissioning," according to Ed Brzezowski, P.E., LEEDS AP. "What used to take days or weeks of field time, and may have taken a team of people can now be done in real time on an ongoing basis in an automated system."

An unexpected benefit of displaying the energy use and building information was the "human factor." A social dynamic began the day the kiosk system was put in the front lobby. From construction workers to the CEO, as well as employees and visitors, all made a personal decision to do their part to participate in making the building more efficient. People actively turn off lights if a room is vacant more than a few seconds, turn off computers during lunch and before leaving for the day, doors are closed quickly in the summer and winter to conserve cooling and heating. All of this change occurred without any instruction from management. No one was told to be more efficient, people *WANTED* to participate because they could see the results of their actions on the lobby monitor.

But not only were building occupants affected by the lobby kiosk, visitors to the building also become engaged by the dynamic visualization of the energy being produced by the solar electric system and the efficiency of the building. Some people actually return to the building not to visit someone, but just to check the lobby kiosk to see how it is doing on a particularly sunny or snowy day. Many of these visits have resulted in other business owners becoming interested in investing in renewable energy and energy efficiency for their buildings. The Noveda Technologies system allows people to see an overall picture of energy use on a computer screen and pinpoints where energy can be saved by taking simple measures such as turning off a light in an unoccupied room.