

# Brief Summary of the Noveda Technologies / Ferreira Group “31 Tannery Project”

Noveda Technologies’ provides a web based dynamic graphic visualization solution for real time monitoring, diagnostics, metrics, and historical tracking of renewable energy, conventional energy, and building mechanical / environmental systems.

The “31 Tannery Project”, new headquarters for Ferreira Construction, is the First Net Zero Electric Commercial building in the U.S. Ferreira partnered with Noveda Technologies to create a sustainable building incorporating high efficiency systems, renewable energy, and real time energy and building monitoring. The building is a simple pre-fabricated design using readily available materials and conventional systems, but was designed to optimize energy performance while maximizing occupant comfort. The additional investment in solar PV (electric), solar thermal (hot water), 9 miles of radiant flooring (heating), high efficiency rooftop HVAC units ( air conditioning, ventilation), condensing gas-fired boiler plant with low NOx ( 96% efficient / lowest rated emissions), and real time energy and building systems monitoring and dynamic graphic display solution. The building’s renewable energy and high efficiency systems will completely pay for themselves in energy savings in 5–7 years. The “31 Tannery Project” was the first of its kind in the U.S., and has been recognized internationally.



Ferreira 31 Tannery				41,508 SF "Best Available Information"			Utility Data shows synergistic effect from Energy Conservation and Renewable Energy			
ELECTRICITY (JCP&L/First Energy)				NATURAL GAS (PSE&G)			TOTAL			
Month	Year	"Base" KWH	"Hi-Perf" KWH	"Actual" KWH	"Base" Therms	"Hi-Perf" Therms	"Actual" Therms	"Base" BTU/SF	"Hi-Perf" BTU/SF	"Actual" BTU/SF
May	2006	36,470	8,111	19,680	866	123	159	5,084	963	2,001
June		39,450	11,440	17,200	66	-	268	3,402	940	2,059
July		39,610	10,428	(5,240)	58	-	26	3,396	857	(369)
Aug		43,340	14,344	(2,560)	42	-	-	3,664	1,179	(210)
Sept		37,040	11,465	(4,480)	157	-	7	3,423	942	(352)
Oct		35,330	11,670	640	1,516	269	143	6,556	1,607	397
Nov		34,570	16,725	7,280	4,588	1,093	563	13,895	4,008	1,954
Dec		37,250	21,218	8,640	8,028	2,275	1,369	22,403	7,225	4,008
Jan	2007	36,840	17,647	13,440	9,672	2,847	1,585	26,330	8,310	4,923
Feb		33,520	12,989	6,640	7,468	2,123	2,715	20,747	6,182	7,086
Mar		38,750	12,807	240	6,308	1,649	2,217	18,382	5,025	5,360
Apr		36,660	8,934	(11,760)	3,727	871	1,021	11,992	2,833	1,492
<b>Savings from BASE</b>		<b>448,830</b>	<b>157,778</b>	<b>49,720</b>	<b>42,496</b>	<b>11,250</b>	<b>10,071</b>	<b>139,275</b>	<b>40,073</b>	<b>28,350</b>
		<b>65%</b>	<b>291,052</b>	<b>399,110</b>	<b>31,246</b>	<b>32,425</b>		<b>99,202</b>	<b>110,925</b>	
			<b>89%</b>		<b>74%</b>	<b>76%</b>		<b>71%</b>	<b>80%</b>	

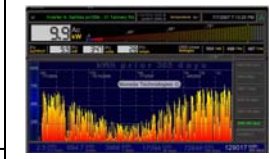

Notes: "BASE" represents standard construction, with no energy conservation or renewable energy features  
 "Hi-Perf" represents high performance and sustainable building target with energy conservation and renewable energy  
 "Actual" represents actual utility company usage during last 12 month period

**ENVIRONMENTAL IMPACT**  
 Annual Avoided Emissions (NJ Region 2)  
**Savings from BASE**  
 Electricity 670,106 Lb-CO2  
 Natural Gas 379,633 Lb-CO2  
 Total 1,049,739 Lb-CO2  
 476 Metric Tons CO2

**Energy Savings/Environmental Benefits (Annual):** See Above. Our original target was to reduce our annual energy use by 65%. In the last 12 months we have achieved an 80% reduction while reducing our carbon foot print by over 1 million pounds of CO2 per year.

<http://greenbuildingmonitoring.com/5.html>

The project started with “What if” computer modeling to determine what the building energy use and costs would be based on lowest first cost equipment versus high performance equipment and the use of renewable energy systems. The project also makes use of several energy technologies in the same buildings that are operated in an integrated control system. Special emphasis was made to provide additional sensors and displays to visualize and demonstrate the operation and effectiveness and interactions of the various systems. This visualization, performance indicator, and diagnostic development work completed led to patent pending technology now provided by Noveda Technologies. The technology allows for building operation to be constantly commissioned to maximize the effectiveness of the energy efficiency and renewable energy systems. **This system has allowed Ferreira Construction to have the 1<sup>st</sup> Net Zero Electric Energy Commercial Building in the United States.**

The project shows how building owners around the world can save energy, improve occupant comfort conditions and have a positive impact on the environment by maximizing the performance of renewable energy systems, and the energy efficiency of conventional energy systems. Noveda Technologies’ solution was the critical component allowing the “31 Tannery Project” to become net zero electric, maximize energy efficiency, and to score a perfect 100 point Energy Star rating.

Noveda Technologies’ energy and building systems monitoring provides a critical tool for dramatically improving energy efficiency, providing substantial cost savings, reducing systems maintenance, increasing ROI, and identifying / tracking / and significantly decreasing a building’s green house gas emissions and carbon foot print, and providing an exciting platform for communicating these efforts and achievements to your customers, clients, employees, and the general public. Noveda has become an educational tool as well and is being implemented in schools to not only increase energy efficiency and system performance, but to turn the building into a “living learning tool” from grade school to universities.

[www.energybandit.com](http://www.energybandit.com) has links to videos (both fun and factual) as well as newspaper, magazine, and TV news reports.