



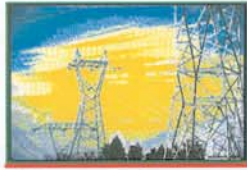
# Special Front Porch Project

ENERGY CONSERVATION ASSISTANCE PROGRAM

# ECAAP

## REPORT

Prepared by  
Alexander E. Othmer CEA



Saving Energy Saves Everything



Funded by your



FLORIDA ENERGY OFFICE

Preserving the Past      Protecting the Present      Preparing for the Future

**FE**    

The State of Florida Department of Community Affairs / Energy Office

**ENERGY CONSERVATION ASSISTANCE PROGRAM**

A cost free service of the USF Small Business Development Center

4202 East Fowler Avenue, Tampa, Florida USA 33620  
Phone ( 813 ) 974-4378 / Fax ( 813 ) 974-5020  
E-mail aothmer@coba.usf.edu

**FIELD TEST RESULTS**

**SUPERTHERM**



On February 10<sup>th</sup> & 11<sup>th</sup>, 2003 a survey was conducted on the above product, applied to a residential home roofing system located in Dade County, Florida in accordance with the State of Florida Energy Office / **ENERGY CONSERVATION ASSISTANCE PROGRAMS Designation: ECAP-CUL-1-99**

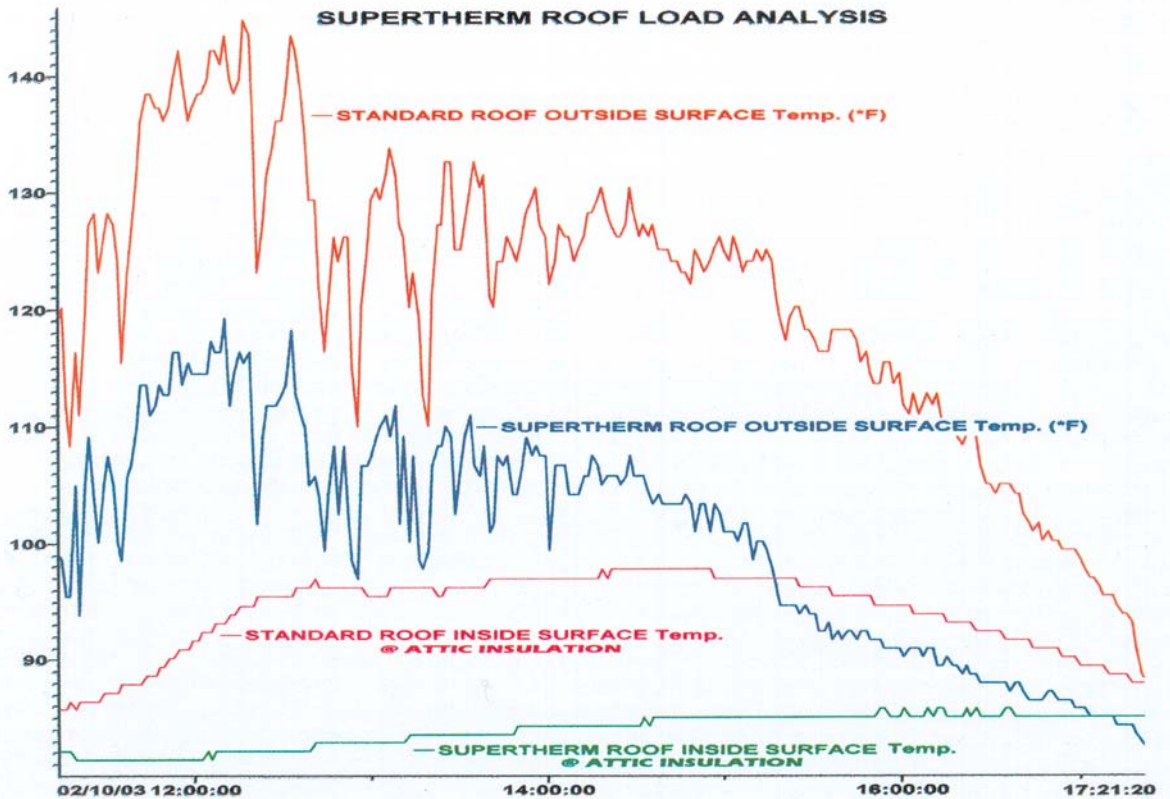
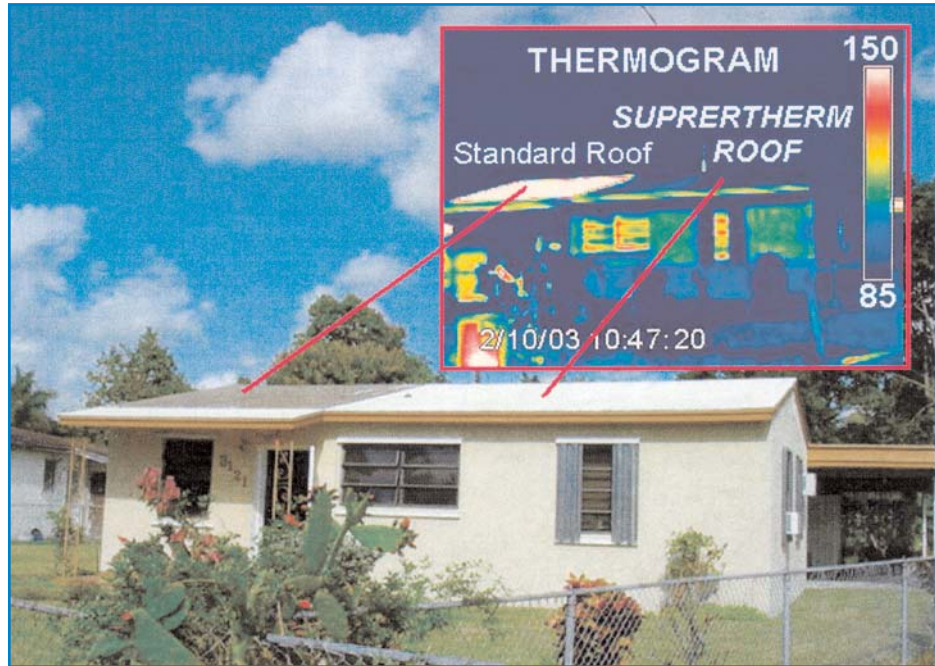
**Test Method for Comparing Utility Loads in Standard Constructed Buildings.**

The objective of this procedure is to determine the *actual impact on a facility, after the implementation of a Energy Conservation Retrofit* and verify the reduced utility loads, if any, in occupied residential, commercial and governmental buildings. The focus of this procedure is to provide *a comparison* to known standards for all parties interested in using *energy related products to displaced conventional utility loads*. This procedure addresses the energy consumption properties of the equipment and structural envelope tested and has no relationship to structural, electrical or fire code requirements.

- Our survey indicated that your application of *SuperTherm* reduced total Roof Solar Gain Loads by **20 to 30%**. This would qualify as an effective *Energy Conservation Measure (ECM)* fundable with Federal and State of Florida Energy Grant Dollars where applicable.

### Survey Results

As can be seen in the Photo, Thermogram and chart below, significant load reductions were taking place *on and under the section* of roofing treated with the *SuperTherm* coatings.



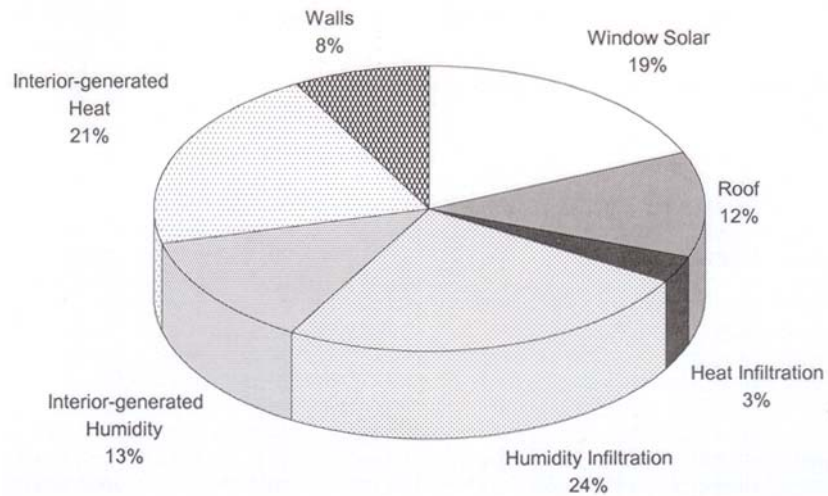
As aforementioned, the ***THERMAL LOAD REDUCTIONS in conduction, convection, and absorption were not restricted to the treated roofs outside surface.*** Over 5,780 data points were taken over a 24 hour period on a standard constructed concrete block home. Recordings were taken at:

- Outside roof surfaces.
- Inside roof surfaces.
- Inside attic insulation surfaces.
- And inside living area room temperatures.

The drawing below shows a synopsis of the data collected. Of particular interest was the effect on ***living area room temperatures*** during a period when we ***were not running either the heating or air conditioning system.***



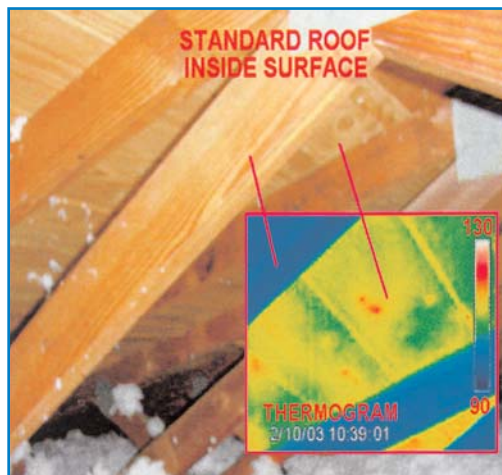
Predicated on historically accepted Florida Air Conditioning building component load data ( chart below ) and the square footage of the project surveyed, the estimated air conditioning load savings from the SuperTherm retrofit was approximately 11.09 tons of load per 24 hour period.



### ***PERCENT OF COOLING DOLLARS WASTED***

The ***THERMOGRAM ( heat image )*** show some of the **LOADS** encountered during this survey.

### ***INSIDE ROOF LOADS***



**WITHOUT SUPERTHERM**



**WITH SUPERTHERM**

Average Weather conditions during the test period were as follows:

High Temperature 85.5 Deg. F.  
 Low Temperature 58.8 Deg. F.  
 Average Wind Speed 4 to 8 MPH  
 Average UV intensity 99 A+B  
 Outside Humidity 88%

Mostly sunny conditions with light cloud activity ( See chart below )

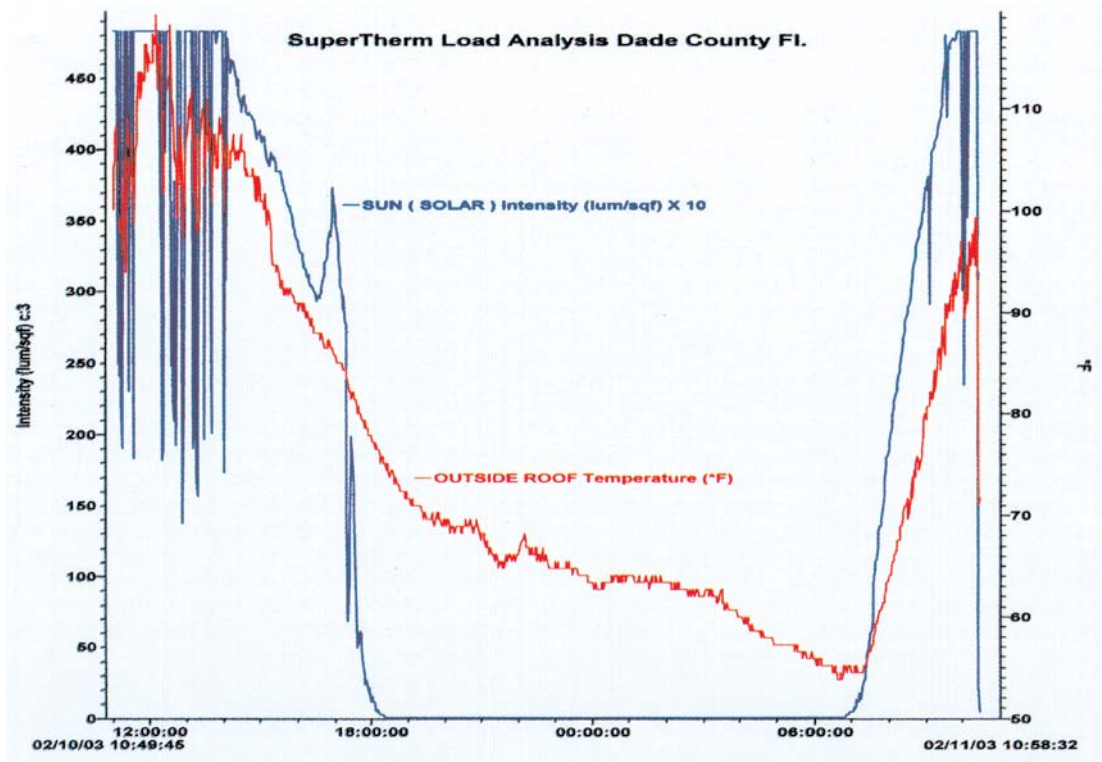
**SYSTEMS TESTED Table # 1**

The load producing components tested are as follows:

TYPE OF SYSTEM	BTU PER SQUARE FOOT PER HOUR SOLAR GAIN	INSIDE SURFACE TEMPERATURE RECORDED	APPROXIMATE R-VALUE	APPROXIMATE U-VALUE	TOTAL BTU/ THERMAL LOAD & UV ABSORPTION
STANDARD roof	206	145Max.	22.0	0.045	206 / 145 98.0
<i>SuperTherm ROOF</i>	85	118 Max.	19.0 <i>Reflectance Equivalent</i>	0.270	85 / 118 03.0

**SYSTEM LOADS AS TESTED**

TOTAL ROOF LOAD WITH NO RETROFIT 226,,600 BTU's /HOUR.  
 RETROFITTED ROOF LOAD 93,500 BTU's / HOUR.  
 SAVINGS FROM RETROFIT 133,100 BTU's / PER HOUR.  
 REDUCED ENVIRONMENTAL IMPACT 66 POUNDS OF POWER PLANT EMMISIONS / HR.



## Closing Comments

As installed, at the time of this survey, the *SuperTherm Roof Coating System* proved to be an effective *Energy Conservation Measure (ECM)* that produced a reasonable simple pay back of approximately 2.2 years on this particular project. This would indicate that it's application could be fundable with Federal and / or State of Florida Energy Grant Dollars where applicable.

On behalf of the United States Department of Energy, The State of Florida Energy Office and the United States Environmental Protection Agency, let me thank you for your efforts in developing an affordable product that obviously can be instrumental in Conserving Energy. We hope you will continue to consider *Florida as a valuable market for your products.*



*We would also like to thank Mr. J.R. Howell of Construction Services Group and South Beach Solar Solutions for their generosity and display of corporate responsibility for donating this Roof Retrofit to a **Front Porch Florida, Low Income Family**, giving us the opportunity to use their home as a field test site. **Superior Products International II, Inc. is the manufacturer of SUPER THERM and the entire line of insulation, high temperature, fire protection and corrosion control coatings.** The data collected is a valuable asset to our program in building a comprehensive profiling of *actual energy related loads* that occur in *occupied / operational buildings*. This type of data is critical to other Engineers and Home Owners facing similar decision making tasks, where published measurement and verification data is not yet available or inaccurate.*

This report is meant to be an educational guide to familiarize you *with the performance profiles of your chosen Energy Conservation Measure*, it *should not be construed as an endorsement of any product or service by name or specific design*. Please feel free to contact our offices if we can be of any assistance in helping you meet your future conservation goals.

**Alexander E. Othmer** CEA/CBA/NDEIII

*Mgr. Florida Department of Community Affairs Energy Office / E C A P  
University Of South Florida / Small Business Development Center*

