
FLORIDA ENERGY CONSERVATION ASSISTANCE PROGRAM
ENERGY MEASUREMENT SERVICES DIVISION
EMS
FEMP
Rebuild America
SPECIAL REPORT
SUPERIOR PRODUCTS
INTERNATIONAL SOUTHWEST
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Intermodal Facility & Maintenance, Inc.
TYPICAL STANDARD UNITS AS TESTED
TYPICAL SUPERTHERM UNITS AS TESTED
152 DEG./F
152 DEG./F
105 DEG./F
PREPAIRED BY
CERTIFIED INSPECTOR
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SUPERIOR PRODUCTS
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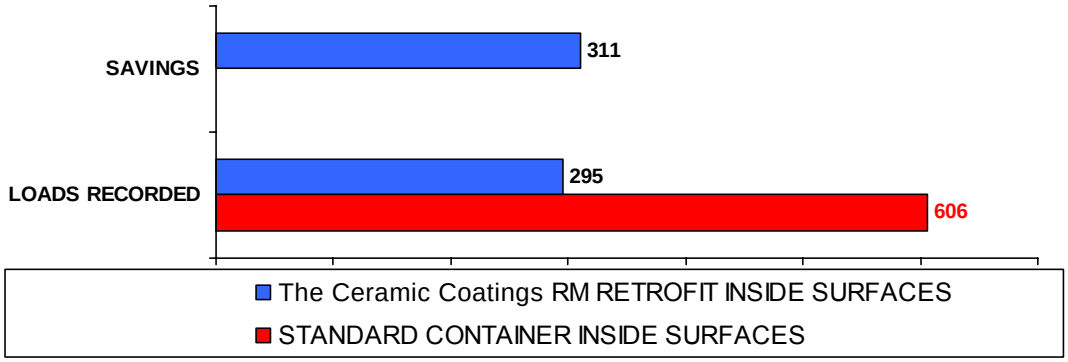
SUPER THERM FIELD TEST RESULTS RETROFITTED SHIPPING CONTAINERS AUGUST 2006

On August 23rd & 24th 2006 at the request of Mr. Bill Dwyer, in a cooperative effort instituted by Mr. Gordon Ginzel Intermodal Facility & Maintenance, Inc. a Measurement and Verification Analysis was conducted at the above facility in accordance with the **F**lorida **ENERGY CONSERVATION ASSISTANCE PROGRAMS Designation: ECAP-CUL-1-03 Method for Comparing Utility Loads in Structures and Buildings.** The objective of this analysis is to determine the impact of the ***"As Built Conditions and As Installed Components / Equipment"*** on the energy producing loads on occupied residential, commercial, government building and other structures. The focus of this procedure is to provide ***a comparison*** to known standards for all parties interested in using ***alternative and conventional conservation products and devices*** to ***displaced energy loads***. This report reflects the performance characteristics of the CERAMIC Coating, as applied to the structures external surfaces, as a possible passive ***E***nergy ***C***onservation ***M***easure ***(ECM)*** to reduce internal Energy Loads and reduce the Heat Island Effects caused by exposed surfaces in urban areas.

- Our data indicated that at the time of this survey the test specimen container inside surface ***conduction related energy loads*** were reduced approximately ***46 to 52%*** by applying the Ceramic Coating as an ***E***nergy ***C***onservation ***M***easure (***ECM)*** to outside surfaces. The chart below shows a synopsis of our findings;

AVERAGE THERMAL LOADS OF INSIDE CONTAINER ENVELOPE SURFACES /
BTU PER SQUARE FOOT PER HOUR



EXECUTIVE SUMMARY

In all over 4,320 data points that were collected simultaneously over a 24 hour test period were analyzed.

TYPICAL STANDARD CONTAINER AS TESTED

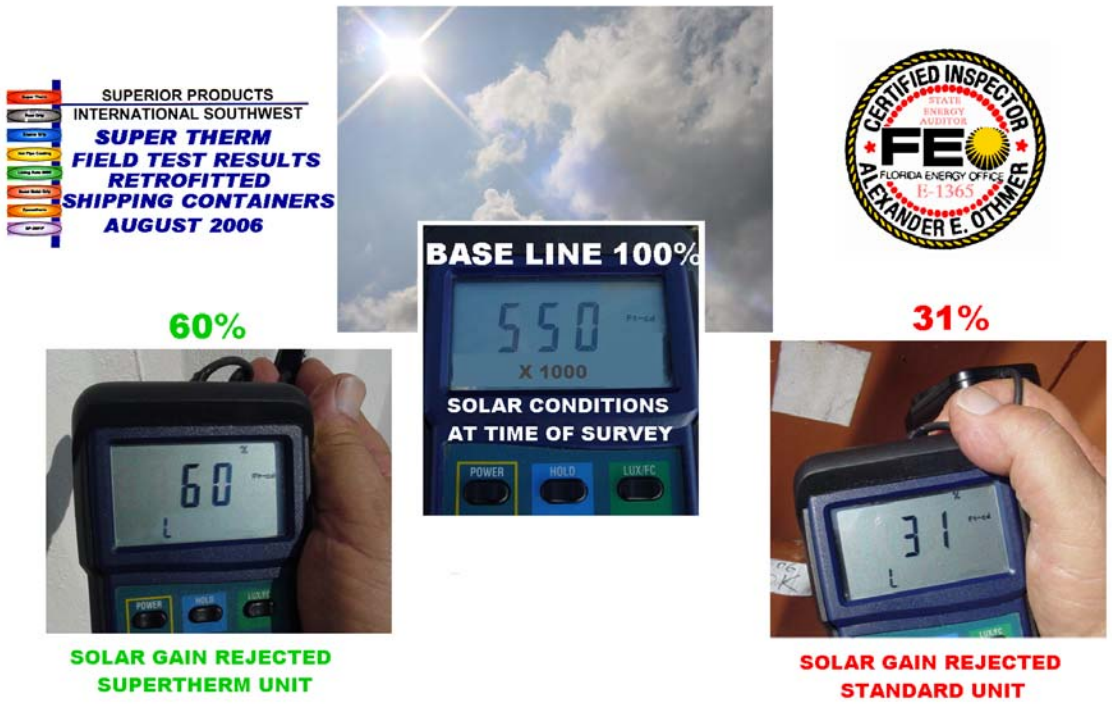
The container retrofitted with the ***the Ceramic Coating PRODUCT*** demonstrated reduced loads normally associated with Energy Consumption and Coating Maintenance as follows;

TYPICAL RETROFITTED *the Ceramic Coating* CONTAINER

- INSIDE CONTAINER AMBIENT TEMPERATURE ***22 DEGREES COOLER***
- THERMAL CONDUCTANCE TO OUTSIDE ENVIRONMENT ***50% LESS***
- EXTERNAL SURFACE TEMPERATURE ***47 DEGREES COOLER***
- INTERNAL SURFACE TEMPERATURES ***37 DEGREES COOLER***
- OUTSIDE SURFACE REFLECTIVITY ***50% HIGHER***
- ULTRAVIOLET ABSORPTION RATE ***92% LESS***
- INTERNAL MOISTURE LEVELS ***28.5% DRYER***

Average SITE Weather conditions during the analysis period were as follows:

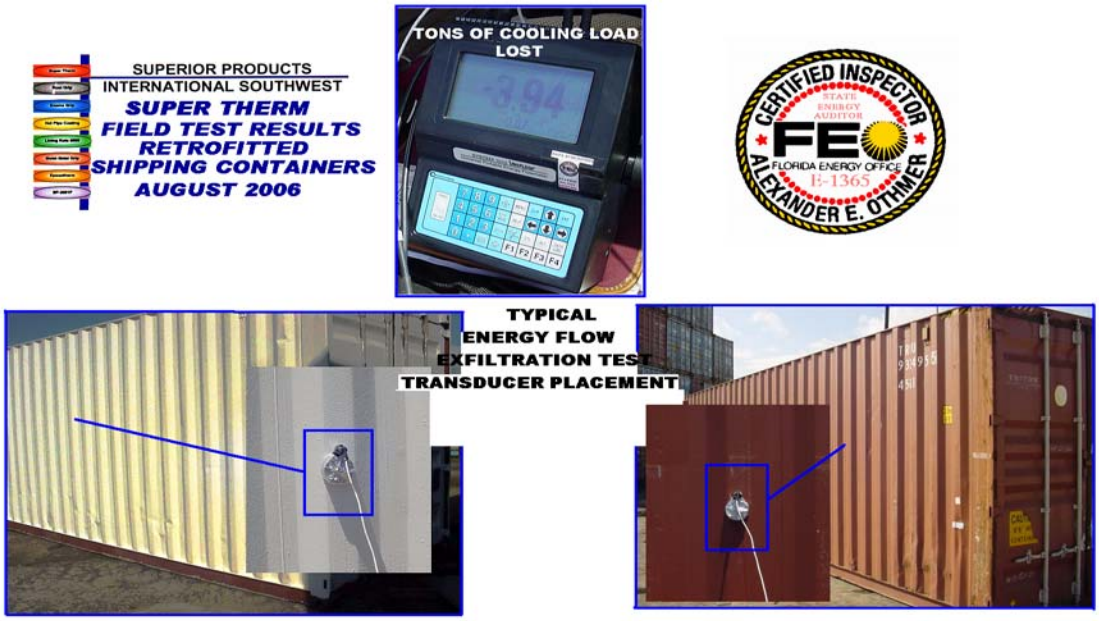
High Temperature	97 Deg. F.
Low Temperature	74 Deg. F
Average Wind Speed	3 to 5.5 MPH
Average *UV* intensity	99 A+B



THE COMBINED DATA INDICATES THAT TH E THERMAL ENERGY NECESSARY TO COOL THE CONTAINER COATED WITH THE Ceramic Coating PRODUCT WOULD REQUIRE 46 to 52% LESS ENERGY at the time of this survey.

PRECISION & BIAS

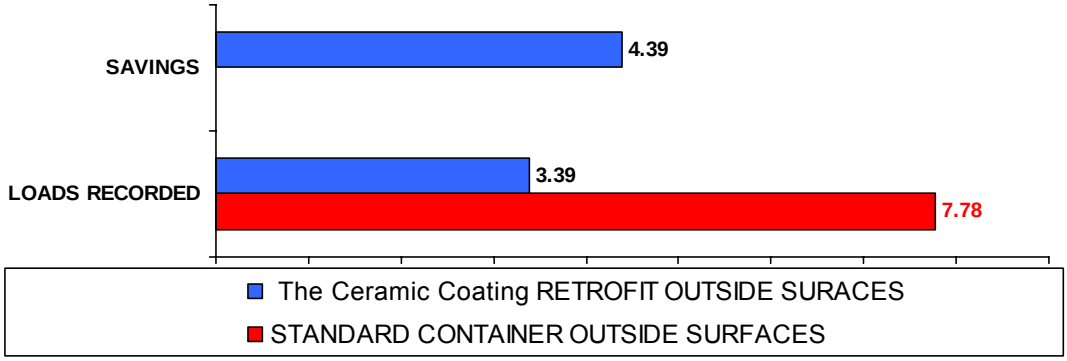
In an effort to insure repeatable results additional test were conducted as follows;



Infiltration factors around all door seals were equal (0 CFM & 0 PA) and had no adverse effect on the recorded data.

The ***EXTERNAL SURFACE Energy Flow Analysis*** also parallel the Internal Surface data as seen in the chart below;

TONS (12,000 BTU) OF COOLING LOAD*
BEING LOST THROUGH EXTERNAL SURFACES
FROM INSIDE THE CONTAINER



* Cooling source 43 Degree/F water at a 6.5 GPM flow rate supplied by a calibration flow tube.

Field Test Results

The location of the test specim ens was adequate. Both containers were of standard construction consisting of Carbon Steel side wall, roof and deck sheeting's with a standard wood flooring overlay. The calculate d R-Value of the existing Steel parent materials was found to be approximately an R-1.70. The only difference between the two containers consisting of approxim ately 2,690 Cubic Feet of ***Control Zone Area*** was the external ***the Ceramic Coating.***

As noted in the test results on the prior page s of this report the differences created by the ***SUPER THERM PRODUCT concerning load reductions produced by thermal conduction, convection and absorption WERE SIGNIFICANT.***

Additionally, ***significant reductions in internal moisture levels were also noted.*** In every instance the ***Field Test results concur with the manufacturers published data on the products anticipated performance curves*** obtained using in laboratory test methods. Our Energy Flow, Heat Flux and Therm ographic analysis indicated that the ***standard container*** would require **a minimum of 46% more BTU's of cooling energy** to maintain a comfort level **below 70 Degrees/ F** with the conditions present at the time of this survey.

In retrospect, the container coated with the ***Ceramic Coating PRODUCT*** **reduce these loads to manageable levels to maintain the same comfort level.** The ***Ultraviolet absorption test*** also showed a possible reduction in ***SURFACE MAINTENANCE*** as the majority of the ***Harmful UV*** that normally reduces coatings service life ***is not being absorbed by the Ceramic Coating*** itself. The aforementioned internal Humidity reduction factors took place ***regardless of the amount of direct solar gain***.

CLOSING COMMENTS

Let me ***thank*** Intermodal Facility & Maintenance, Inc. for giving us the opportunity to use their facility as a field test site. The data collected is a valuable asset to our ***ECAP*** program in building a comprehensive profiling of ***actual energy related loads*** that occur in ***real life applications***. This type of data is critical to other Engineers facing 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 actual performance curves of your chosen*** ***E***nergy ***C***onservation ***M***easures based on your supplied data and our field test results.

ASK ABOUT ENERGY STAR

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This is the third time we have had the pleasure to test ***the Ceramic Coatings PRODUCTS***, it is rare that a single product will show such ***Repeatable Results*** in three totally different environments, South Florida, Denver Colorado and LaPorte Texas a true testimonial to your products ***ENERGY STAR*** rating. 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 / NDE III
Dir. Florida Energy Conservation Assistance Program