Superior Coatings for Superior Results

SPI Products around the WORLD, 2013 and beyond

Thermal Insulation Coatings and Corrosion Controls

Joseph E. Pritchett
President
Superior Products International II, Inc.
10835 W 78th Street
Shawnee, Kansas 66214 USA

NACE INTERNATIONAL
West Asia and Africa Region and Saudi Arabia Section

U.S. COMMERCIAL SERVICE
United States of America
Department of Commerce

SPI

- International Business amounts to 60% of SPI's business volume.
- 47 countries are active with the products.
- Oil field, roofing, heavy industry, marine, auto industry, military, aerospace, housing, containers, infrastructures, …..

Superior Coatings for Superior Results

SPI Family of Performance Coatings

Insulation / Fire Control

- Super Therm®
- Epoxotherm
- HPC ® Coating
- HSC ® Coating
- Omega Fire™

Corrosion Control

- Rust Grip®
- Moist Metal Grip
- Lining Kote
- Enamo Grip 5000

Top Coats

- Enamo Grip
- Enamo Grip 3700
- SP Seal Coat
- AQUA POX

Sealants/Roofing

- Super Base HS
- Total Seal
- SP Liquid Membrane

Stucco System

- iSTUCCO™

What Does SPI Do?

- Save Energy Usage and Corrosion Control Costs - 20% up to 60%.
- Save Maintenance, Repair and Replacement costs.
- Reduce or eliminate CUI (Corrosion Under Insulation)

Cost of Corrosion

- It is known that the corrosion of metallic structures has a significant impact on the US economy, including infrastructure, utilities, production and manufacturing, and government.
- The most recent two year study to estimate the current impact of metallic corrosion on the US economy and to provide strategies to minimize the impact of corrosion was funded by Federal Highway Administration and conducted by CC Technologies in the period from 1999 to 2001.

Cost of Corrosion

- The total direct cost of corrosion was determined to be $279 billion per year, which is 3.2 percent of the then U.S. gross domestic product (GDP).
- Indirect cost to the user (society costs) are conservatively estimated to be equal to the direct costs.
- This means that the overall cost of corrosion to the society could be as much as six percent of GDP.

Handling Corrosion

Currently being handled the same way as always for the past 50 years.

- Sandblast
- Primer
- One or multiple top coats.

Handling Corrosion

Why is there only limited success?

- Blast is made
- Coating application is delayed
- Surface is bloomed or flash rust has developed before application-- 100% of the time.

SPI Products in Preventing Corrosion

- New technologies to prevent corrosion continue to be developed.
- Cost based corrosion management techniques and products are available now to lower corrosion costs but not always implemented due strictly because it requires change.
- Rust Grip can play a significant role in preventing corrosion and thus saving big for the end user and for the society in general.

SPI Corrosion Control Coatings

- Rust Grip
- Moist Metal Grip
- Enamo Grip 5000
- Lining Kote
- Enamo Grip

RUST GRIP®

- Single Component
- Deep Penetration on initial coat
- Encapsulating
- 6780 psi on surface tensile strength
- Pull strength up to 4600 psi

SPI Performance Coatings

- Stop Corrosion Development Quick and Easy With Rust Grip®
- Solvent based, single component
- Applied by spray, brush or roller.
- Encapsulates existing rust, asbestos and Lead-based paint without removal.

SPI Performance Coatings

- Maintains flexibility and can bend to 90˚ without cracking.
- Surface rust is the profile for best adhesion.

SPI Performance Coatings

- RUST GRIP® penetrates deep into the pores, anchors, swells and encapsulates.
- RUST GRIP® pull testing ranges from 1400 psi (98 bar) up to 4600 psi (322 bar) over existing rust. Three coat systems average 150 psi.
- RUST GRIP® penetrated through 16 existing coats of lead-based paint.

SPI Performance Coatings

- RUST GRIP® tested for Water barrier against hydrostatic pressure and wind driven rain.
- Certified for Bridge Structures passing 15,000 hours of accelerated salt spray/UV testing with perfect 10 score which equals 30 years in actual environment.
- No sandblast required except to remove scale or pack rust

SPI Performance Coatings

US005695812A

United States Patent [19]

Pritchett

[11] Patent Number: 5,695,812

[45] Date of Patent: Dec. 9, 1997

[54] **METHOD FOR ABATING BIO-HAZARDOUS MATERIALS FOUND IN COATINGS**

[76] Inventor: **Joseph E. Pritchett**, 6459 Universal Ave., Kansas City, Mo. 64120

[21] Appl. No.: **677,558**

[22] Filed: **Jul. 8, 1996**

[51] **Int. Cl.**[6] **B32B 35/00**

[52] **U.S. Cl.** **427/140**; 427/385.5; 427/407.1; 427/421; 427/428; 427/429

[58] **Field of Search** 427/140, 385.5, 427/407.1, 421, 428, 429

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,870,550	3/1975	Mann	117/84
3,900,611	8/1975	Corbett et al.	427/214
4,067,840	1/1978	Wolf	260/29.6 R
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4,748,051	5/1988	Songer et al.	427/212
5,466,489	11/1995	Stahl	427/421
5,478,604	12/1995	Leeper	427/397.8

FOREIGN PATENT DOCUMENTS

61-162567	7/1986	Japan .
62-260071	11/1987	Japan .

Primary Examiner—Bernard Pianalto
Attorney, Agent, or Firm—Richard C. Litman

[57] **ABSTRACT**

The abatement of bio-hazardous particulate materials, such as asbestos, has a high priority for providing children with a future. The method of the present invention involves abating such materials by encapsulating them in a simple and effective manner. The method uses a special formulation that when applied to a potentially bio-hazardous surface, such a coating on a substrate, seeps into the pores of the surface, encircles and encapsulates the particles. The formulation also bonds the encapsulated particles to the surface of the substrate carrying the coating. The results of the method are complete encapsulation of potentially bio-hazardous particulate matter found in a coating on a substrate, bonding of the encapsulated particles to the surface of the substrate, and finally, the sealed coating is resistant to impact and abrasion.

12 Claims, No Drawings

SPI Performance Coatings

SPI Performance Coatings

ENVIRONMENTAL COMPLIANCE DIVISION
Environmental Protection Department
Building 9156, Rm. 128-A, Dhahran Heights, Dhahran
☎ 876-0321 876-0330

May 30, 2009

ECD- 082/09

Asbestos Abatement –
Juaymah Pier Warehouse

Jarallah A Sudairy, **Supt Terminal Engineering**
R-N-2046, Floor 2, East Wing,
Ras Tanura North Admin. Bldg.
Ras Tanura

Further to our letter ECD-058/09, dated April 12, 2009, EPD specialists met with the contractor and applicator of Rust Grip Encapsulation Technology to discuss potential limitations applicable to the use of this technology at Juaymah Pier Warehouse.

The contractor agreed to guarantee the shelf life for the application to last 50 years under normal occupational and environmental conditions. With this assurance, EPD has no objection to the application of encapsulation technology at Juaymah Pier Warehouse; and hence it is a business decision for Terminal Department to make, provided periodic visual assessments are done to ensure the condition of the encapsulated materials do not deteriorate.

Should you have any questions or need clarification, please direct them to Joe Ngao, on 876-0329.

K. M. AL-TURKI, General Supervisor
Environmental Compliance Division

JON/KMT
cc: EPD Manager
Letter book

Rust Grip for Asbestos Encapsulation, Saudi Arabia

ARAMCO APPROVAL FOR ENCAPSULATION

BIO HAZARDS - Exiting Asbestos and Lead based paints

Please plan to visit Juaymah Pier Warehouse to provide us with official quotation for supply and apply of Rust Grip as asbestos encapsulation method. EPD has accepted the Rust Grip provided that the contractor will guarantee the shelf life for the application to last 50 years under normal occupational and environmental conditions.

Regards,

Nabeel Faleh

TSU Project Engineer

Tel.(+966 3) 678-6081

Fax.(+966 3) 673-3143

Offshore Rigs, Schlumberger, Venezuela

Offshore Rigs

- **RUST GRIP** decking to stop corrosion and give a tough, long lasting corrosion protection even under abusive conditions. (475 bar tensile).
- **SUPER THERM** stops the heat load on the surface of the metal. Reduces the surface heat that workers are standing over.

Marine Applications

- The next set of photos are of the 300 foot Blue Dolphin. BJ Services, in Houston, Texas is currently ordering a similar boat being built in India. They plan to build another one in Brazil later this year. The rear section of the boat is all Rust Grip and Enamo Grip 5000. The rails, under deck and reels were fabricated by Gearn.

Marine Applications

Blue Dolphin

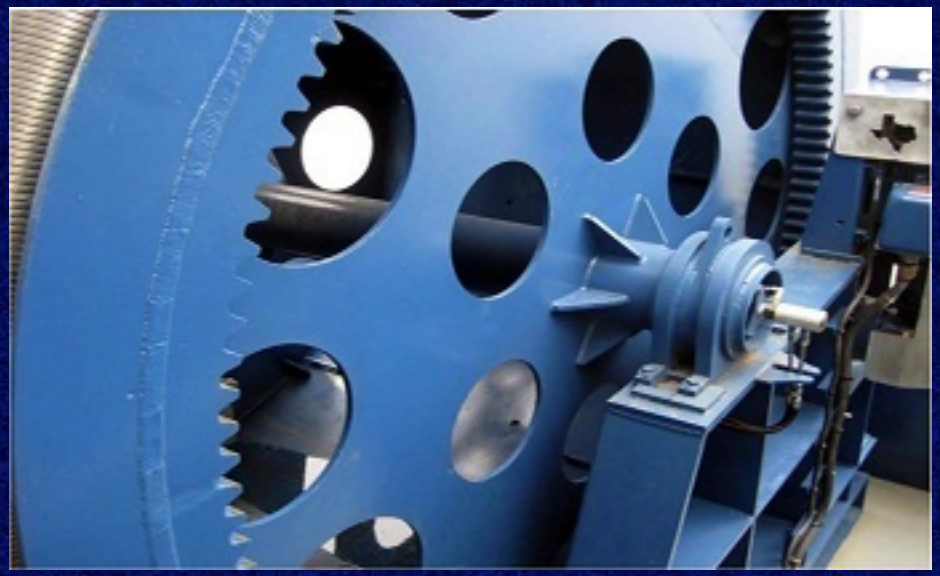
Marine Applications

Blue Dolphin

Marine Applications

Blue Dolphin

Marine Applications



Blue Dolphin

SPI For Marine Applications

- Blue Chip Casino II, 2006 Michigan City, Indiana
- The Largest US Coast Guard Approved Casino Vessel Ever Built In US
- $163 Million - Cost Of Construction
- Rusted Surfaces were power-washed at approximately 3,500 PSI and then primed with RUST GRIP®.
- No Sandblasting Required.

SPI For Marine Applications

- Blue Chip Casino II, 2006 Michigan City, Indiana

SPI For Marine Applications

- Blue Chip Casino II, 2006 Michigan City, Indiana

SPI For Marine Applications

- Taiwan Navy Destroyer Decking

SPI New Technology Solution

- Rust Grip Steel Encapsulation for FAA (Federal Aviation Administration facilities, equipment, concrete foundations, towers & antennas.
- One-coat encapsulation product to protect steel.
- One coat system, serving as the primer and topcoat.

SPI New Technology Solution

- Rust Grip provides superior encapsulation technology
- 60% less costly than the traditional 3 part zinc rich primer-epoxy-urethane systems being used over bridges and steel structures.

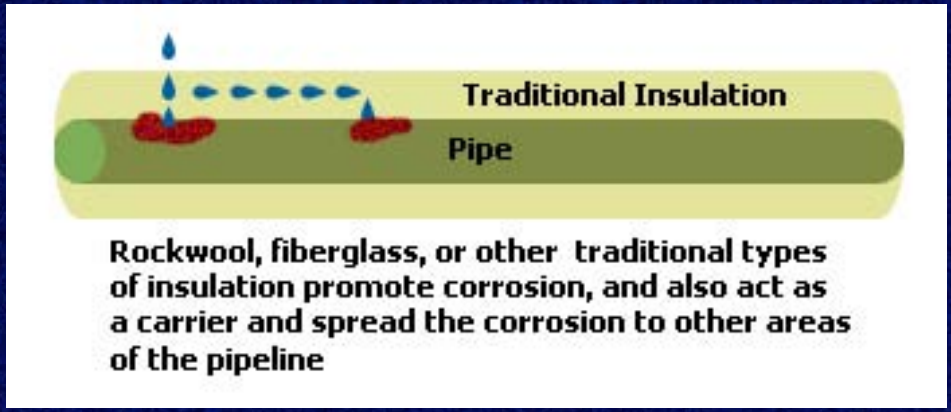
Panama Canal, Panama

Corrosion Under Insulation

- Underneath externally clad/jacketed insulation as a result of the penetration of water or absorption of moisture into insulation material
- Moisture ingress into conventional insulation usually results in accelerated corrosion of the underlying steel surface which can result in structural failure of the pipe, vessel or other insulated item.

Corrosion Under Insulation

- The corrosion may be more severe because the insulation will not allow evaporation and will act as a sponge.



Corrosion Under Insulation

- Undetected until the insulation and cladding/jacketing is removed to allow inspection or when leaks occur.
- Replacement of pipes is very expensive, with substantial down time.

Corrosion Under Insulation

Corrosion Under Insulation

- Billions lost in maintenance, replacement of equipment, facility, pipes, tanks and superstructure.
- With the standard wrap insulation and metal jacket, the jacket and wrap must be cut for test holes to check the corrosion development over the pipe. This causes deterioration of the insulation material and does not give an adequate number of test cuts due to the effort.

The Traditional Concept of Corrosion Control using surface paints

- TOPICAL Coatings Perform Optimally At SSPC-SP10 Surface Preparation - Requires Abrasive Blasting To Abate The Substrate And Prepare Surface
- Serious Adverse Environmental Impact - Air, Water, and Soil Contamination, Worker Exposure, Pollution
- Near-White Metal Blast Produces A Minimum Of Six (6) And Up To Eight (8) Pounds Per Square Foot Of Spent Abrasive

No blast, minimum prep

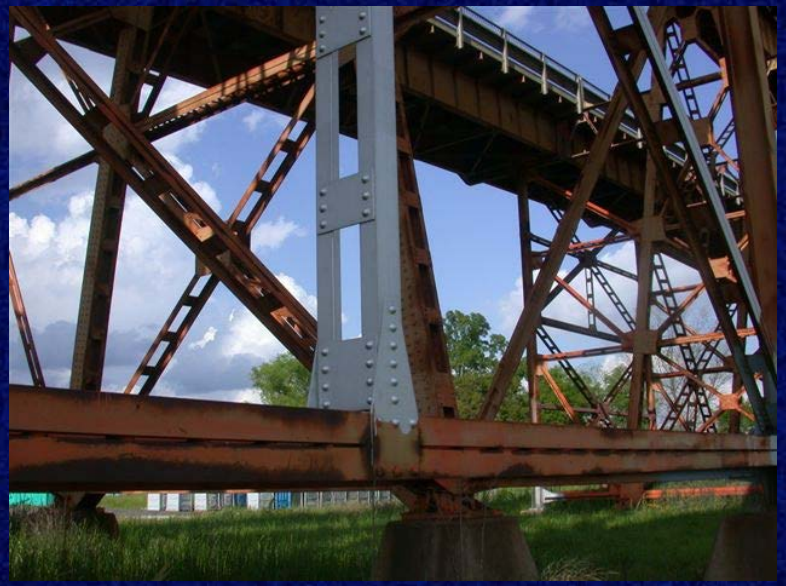
- RUST GRIP® is the answer to minimum or no blast according to corrosion presence.
- Green for the environment.
- Less Labor, one time set up to apply one coat instead of three labor set ups and time.
- Compared to three coat system – example: instead of one year it took two months.

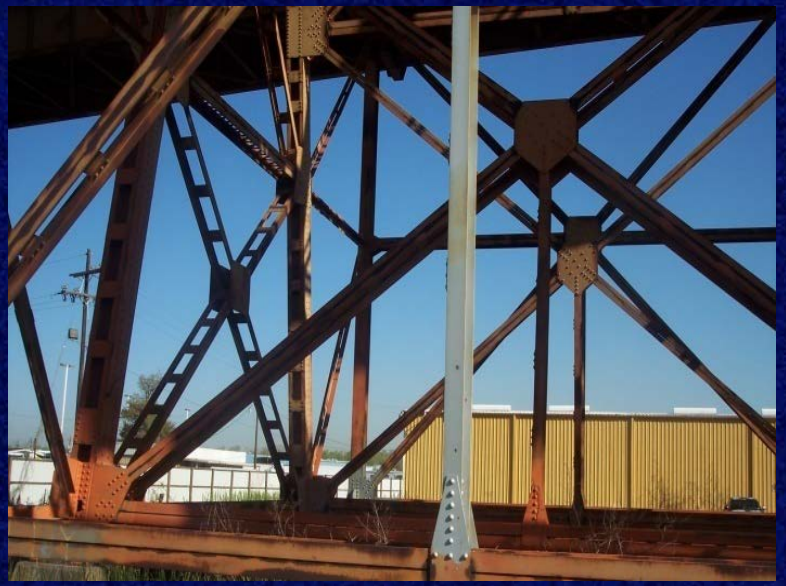
SPI For Infrastructure EXAMPLE:

- 5 mile long bridge in Baton Rouge, Louisiana using standard blast and three coat system was bid at $72 million.
- With the Rust Grip System, of water blast and one coat system the same bridge cost only $29 million.
- The result was a 60% cost savings in materials and labor.

Large Structure Coatings

- US190 Bridge in Baton Rouge, Louisiana





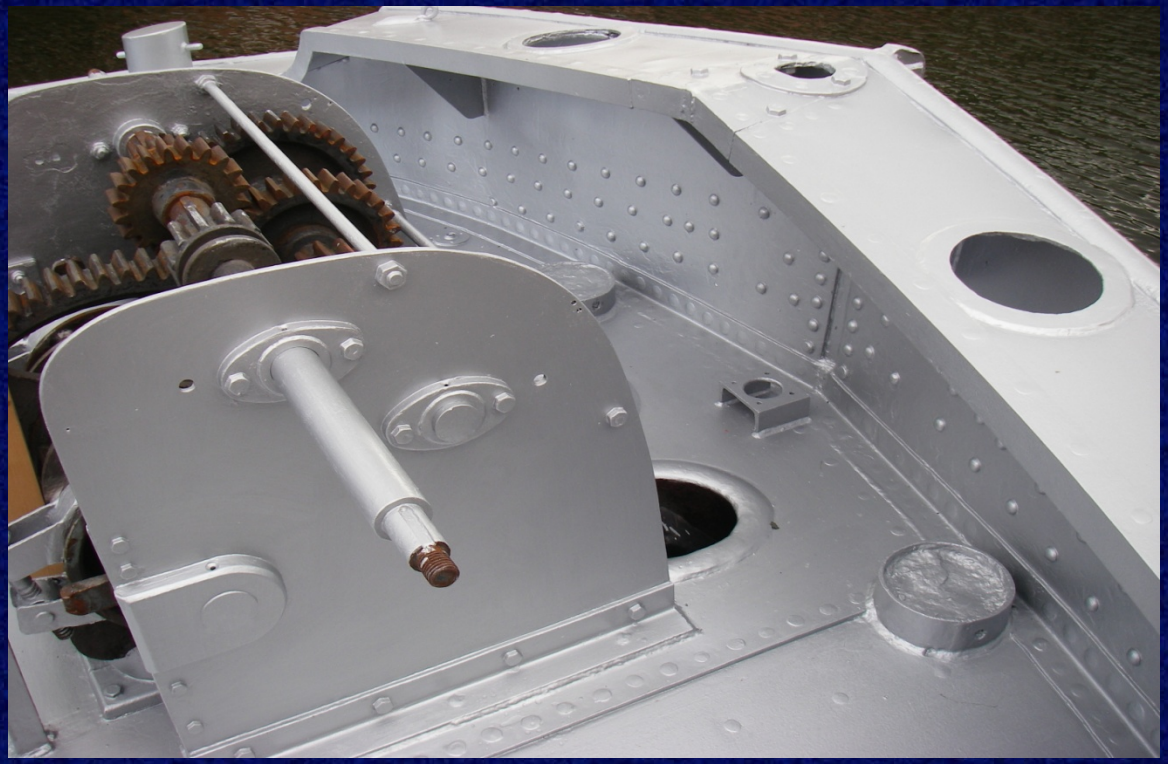
Large Structure Coatings

- College Park Bridge, Louisiana

Applying Rust Grip on the Bridge

SPI for Marine Applications

SPI for Marine Applications



SPI for Marine Applications

SPI for Marine Applications

SPI for Marine Application
Mubarak Challenger, Middle East, July 2010

Work in progress to cover deck and all railings with Rust Grip

Work in progress to cover deck and all railings with Rust Grip

Pipe lines in Australia

Pipe lines in Australia.

Pipe lines in Australia.

Pipe lines in Australia.

Big truck fuel station in Australia

Big truck fuel station in Australia

SHIPS- MARINE

Just finished this ship in Dubai, the owner was testing our RG on his deck...he loved the ease of use and not having to sandblast, the only prep was a surface scrub to remove any old lose paint, followed by a high pressure wash, then RG at 200 micron, over coated with Jotun Paint.

He is very pleased with the results, and has scheduled 5 other ships to be coated. We also have some big testing coming up with Dubai DryDocks that will put us on the map in terms of the Marine industry...stay tuned for more....

Best Regards,

Arin Shahmoradian

GULF BRANDS
GLOBAL DISTINCTION TO THE GULF

Dubai, U.A.E.

971 50 3187981

http://gulfbrands.ae

Superior Coatings for Superior Results

Superior Coatings for Superior Results

شركة مبارك البحرية ذ.م.م
MUBARAK MARINE LLC

May 3, 2011

Mr. Ahmed Al Haidan
Managing Partner
Gulf Brands L.L.C.
P.O. Box 28138
Dubai, U.A.E.

Dear Sir,

After meeting your company at the Off Shore Arabia Conference in April 2010, we decided to use Rust Grip on the deck of our ABS Class vessel Mubarak Challenger. It has now been over a year, and there are still no signs of corrosion development as originally promised by your company.

We also coated the roof of the engine room with Super Therm to reduce heat and sound transfer to the upper living quarters. Additionally we used 3mm of Hot Surface Coating to reduce the surface temperature of the hot pipes running throughout the engine room. Both Super Therm and Hot Surface Coating have done exactly what you promised, and continue to perform under extreme marine environments.

We look forward to using the same products on other vessels in the near future.

Technical Department
Mubarak Marine L.L.C.

شركة مبارك البحرية ذ.م.م.
MUBARAK MARINE (L.L.C.)
P.O. Box 7220
DUBAI, U.A.E.

P.O. Box 7220, Dubai U.A.E. - Tel. : 009714 - 2660160 - Fax: 009714 - 2694963
Office E-mail: management@mubarak.ae / For Tug Service E-mail : operations@mubarak.ae
Website: www.mubarakmarine.com

MMG Pipeline in South America

MMG Pipeline in South America

Heavy Cranes and Equipment
Houston, TX

Rust Grip Crane Application 1

Rust Grip Crane Application 1

Superior Coatings for Superior Results

Rust Grip Crane Application 2.

Rust Grip Crane Application 2

Rust Grip Crane Application 2

Rust Grip in a Cooler.

Rust Grip in a Cooler

Oil Storage Tank, Belgium.

Oil Storage Tank, Belgium

Rust Grip in Venezuela

- Rust Grip was applied over severely corroded pipes in 2000 in Venezuela. After 6 years in 2006 no change at all. Testimonials by Ray Jeffree / Technical Director.

Rust Grip in Venezuela

PT. Chevron Pacific Indonesia
Indonesia

Sub-Sea Oil Piping in Nigeria
Rust Grip®, Moist Metal Grip, Enamo Grip

Rust Grip®

Transformers – Argonne National Laboratories

SUPERIOR PRODUCTS
INTERNATIONAL II, INC.

OIL TANKS IN KAZAKHSTAN

RUST GRIP and SUPER THERM®

Stefan Rutten Kampweg 123
2990 Wuustwezel
mob: 32.(0)475.32.64.73
tel: 32.(0)3 690 02 40
fax: 32.(0)3 690 02 41

Superior Products Europe N.V.
stefan@specoating.com
http://www.specoating.com

SUPERIOR PRODUCTS INTERNATIONAL II INC USA

Before Power Wash and RUST GRIP® / SUPER THERM® application.

SUPERIOR PRODUCTS INTERNATIONAL II INC USA

Tanks before Power Wash, RUST GRIP® and SUPER THERM® for insulation.

SUPERIOR PRODUCTS INTERNATIONAL II INC USA

After Power Wash, RUST GRIP® and SUPER THERM®

The most recent SPI Project
Hoover Dam Bypass Bridge, Az / Ne

- The Bridge dubbed as Modern Marvel open on October 16, 2010
- 1,900 feet long, 890 feet above the Colorado River
- Will drastically cut travel time along the main route between Las Vegas, Nevada and Phoenix, Arizona

Hoover Dam Bypass Bridge
Arizona / Nevada

Hoover Dam Bypass Bridge
Arizona / Nevada

Hoover Dam Bypass Bridge
Arizona / Nevada

- The observation deck of the bridge expects 3-5 million visitors each year
- To protect observation deck steel railings from rust and visitors from possibility of burning from radiant heat, three SPI products were used:

Hoover Dam Bypass Bridge, Arizona / Nevada, October, 2010

- Primer: Rust Grip applied at 8 mils wet / 4 mils dry
- Insulation: Super Therm applied at 16 mils wet / 10 mils dry
- Topcoat: Enamo Grip applied at 8 mils wet/ 4 mils dry

Steel railings were allowed to develop flash rust before Rust Grip application

Railings were power washed at 3500 psi and primed with Rust Grip

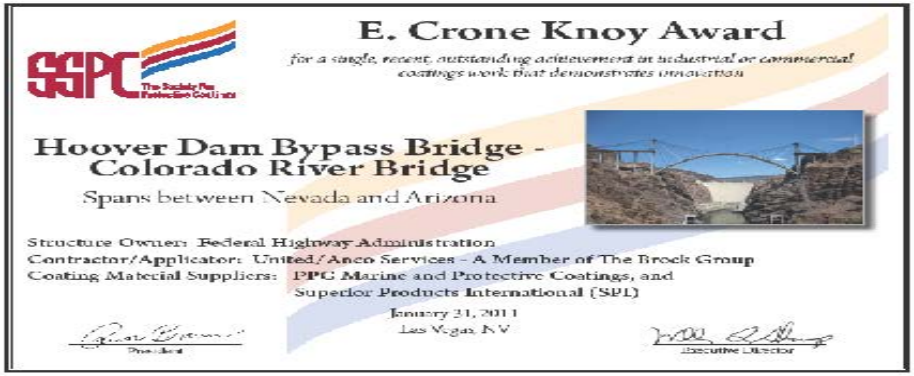
Super Therm was applied to prevent heat from loading onto the steel railings

Enamo Grip, in the color of choice, top coated Super Therm for added durability of the surface

Observation deck railings installed

Superior Coatings for Superior Results

Website: www.spicoatings.com



SSPC The Society for Protective Coatings

E. Crone Knoy Award

for a single, recent, outstanding achievement in industrial or commercial coatings work that demonstrates innovation

Hoover Dam Bypass Bridge - Colorado River Bridge

Spans between Nevada and Arizona

Structure Owner: Federal Highway Administration
Contractor/Applicator: United/Anco Services - A Member of The Brock Group
Coating Material Suppliers: PPG Marine and Protective Coatings, and Superior Products International (SPI)

January 31, 2011
Las Vegas, NV

President

Executive Director

SUPERIOR PRODUCTS
INTERNATIONAL II, INC.

RUST GRIP®

SALT SPRAY TESTING (2 testing programs)

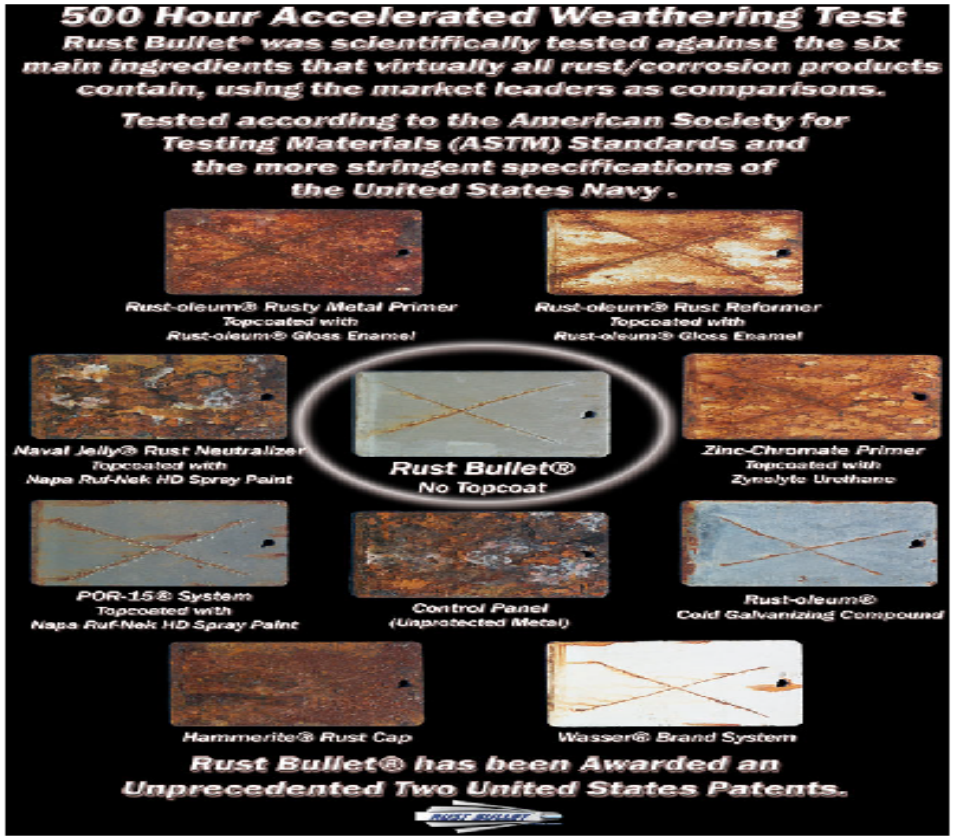
Test #1. ASTM B 117 testing at 500 hours with scribe.
Conclusions: **Did not exhibit any significant blistering or rusting in the overall areas. All RUST GRIP coated panels did not exhibit any blistering at the scribe line** which would eventually lead to film undercutting or delamination at the scribe.
Test Plate Picture:

Shows no sign of undercutting and bubbles along scribe.
RUST GRIP penetrates and becomes part of the metal surface to prevent the undercutting and deterioration from corrosion development.

Following is the results of the same ASTM B 117, 500 hour testing on competing products: Taken from the Rust Bullet® Website.

10835 W. 78th Street • Shawnee, Kansas 66214 • Phone: 913-962-4848; Fax: 913-962-6767
Website: www.spicoatings.com Email: sales@spicoatings.com

SUPERIOR PRODUCTS INTERNATIONAL II INC
USA



SUPERIOR PRODUCTS INTERNATIONAL II INC
USA

500 Hour Accelerated Weathering Test Comparison of the Individual Panels

Panel 3

PLAY VIDEO

PLAY VIDEO

"The Rust Bullet® panel has slight blistering and undercutting along the scribe lines and none around the hole or the edges. There is slight discoloration and some loss of gloss retention." — **as written from the Rust Bullet® website**. ".....Rust-oleum® Rust Reformer panel is approximate 85% failure".

SUPERIOR PRODUCTS INTERNATIONAL II INC
USA

Additional notes from the testing results from the Rust Bullet® site:

Panel #8: POR-15®, a four step system. It is the third best test panel in the testing series. As you can see, significant blistering and undercutting are proceeding from the scribe lines and there is moderate undercutting round the hole and the edges.

Panel #6: Wasser® Brand System panel is the second best test panel in the series and represents the peek of old technology. A significant rusting and undercutting is taking place at the hole and the edges, which indicates the difficulty of the system in covering sharp edges and corners. The scribe lines are undercutting as well. Like test panel #5 (Rust-oleum® Cold Galvanizing Compound), the three step Wasser® process utilizes a zinc rich under coat that provides a degree of galvanic protection, which is what allows the Wasser® System to do as well as it has done. Keep in mind that the use of a zinc metal undercoat brings along most of the problems of a zinc rich primer system, including environmental issues.

Panel #5: Rust-oleum® Cold Galvanizing Compound provides a higher degree of protection than the other coatings. Zinc particles are providing a degree of galvanic protection, but as you can see on the corners and the bottom of this panel, it has almost no abrasion resistance. The resin wash out will accelerate the process of decay.

SUPERIOR PRODUCTS INTERNATIONAL II INC
USA

Test #2: ASTM B 117 Accelerated salt/UV testing.
RUST GRIP has passed 15,000 hours with 6 plates with 6 mils of single applied coating.

Result / conclusions: Perfect 10 score, no blemishes, no rust, no bubbles.

No other competing products has performed to this level.

Picture of one of the test plates:

Report Copies:

SUPERIOR PRODUCTS INTERNATIONAL II INC
USA

D-L LABORATORIES
44 Kent Street
Brooklyn, New York 11222-1517
Phone (718) 383-9000
Fax (718) 383-7445
e-mail: dlabs@aol.com
Independent Testing and Consulting Laboratory Specializing in Coatings, Sealants, Waterproofing and Building Materials Industries Since 1939

January 12, 2011

Superior Products International II, Inc.
10835 W. 78th Street
Shawnee, KS 66214

Att: Mr. Craig R. Smith
Technical Director

Re: DL 16264
Via E-mail: crsmith@spicoatings.com

OBJECTIVE

To evaluate the salt spray resistance of coated steel panels.

PRODUCT TESTED

Three sets of coated panels, each containing three replicates were submitted for testing by Superior Products II, Inc. The coated sets were identified as:

Rust Grip 4.5, 4.5 and 5.5 mils

TEST PROCEDURE

The coated panels were exposed in a Salt Fog Chamber maintained in accordance with ASTM B 117, for 500 hours. The panels were evaluated periodically for blistering in accordance with ASTM D 714 and rusting in accordance with ASTM D 610.

TEST RESULTS

The test results can be found in the Appendix.

ASTM D 714, Degree of Blistering

Blister Size		Frequency of Occurrence	
10	- None	F	- Few
8	- Pinpoint size	M	- Medium
6	- 1/16-inch diameter approx.	MD	- Medium Dense
4	- 1/8-inch diameter approx.	D	- Dense
2	- ¼-inch diameter approx.		

ASTM D 610, Degree of Rusting

Rust Grade	Description
10	No rusting
9	Minute rusting, less than 0.03% of surface area
8	Few isolated areas, less than 0.1% of surface area
6	Extensive rust areas, less than 1% of surface area
4	Rusting to the extent of 10% of surface area
2	Approximately 33% of surface rusted
0	Approximately 100% of surface rusted

SUPERIOR PRODUCTS INTERNATIONAL II INC USA

Superior Products International II, Inc.
Re: DL-15801C
January 11, 2011

APPENDIX (cont.)

TEST RESULTS

ASTM B 117 SALT SPRAY (FOG) CORROSION RESISTANCE

The three coated panels of *Rust Grip NS, 5-mils* exhibit the following:

	Blistering	Rust Staining
8,250 Hours Exposure	10	10
8,500 Hours Exposure	10	10
8,750 Hours Exposure	10	10
9,000 Hours Exposure	10	10
9,250 Hours Exposure	10	10
9,500 Hours Exposure	10	10
9,750 Hours Exposure	10	10
10,000 Hours Exposure	10	10
10,250 Hours Exposure	10	10
10,500 Hours Exposure	10	10
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13,500 Hours Exposure	10	10
13,750 Hours Exposure	10	10
14,000 Hours Exposure	10	10
14,250 Hours Exposure	10	10
14,500 Hours Exposure	10	10
14,750 Hours Exposure	10	10
15,000 Hours Exposure	10	10

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
Materials and Testing Section
5080 Florida Blvd.
Baton Rouge, Louisiana 70806
www.dotd.la.gov
225-248-4133

BOBBY JINDAL
GOVERNOR

WILLIAM D. ANKNER, Ph.D.
SECRETARY

July 17, 2009

QUALIFIED PRODUCTS LIST 79
PROTECTIVE COATINGS FOR MAINTENANCE
OVERCOATING OF STEEL BRIDGES
QPL IDENT. NO . 79-010
Rust Grip MCU Primer
Rust Grip MCU Primer

Superior Products International Southeast, Inc
Mr. Craig R. Smith
10835 W 78th Street
Shawnee, KS 66214

Dear Mr. Smith:

The Department has completed its evaluation of the above referenced Paint System. This product has been found to conform to the QPL 79 specification requirements. It has been approved for use by the Department and listed on the Qualified Products List 79: PROTECTIVE COATINGS FOR MAINTENANCE OVERCOATING OF STEEL BRIDGES as follow:

Product Source Code	Product	VOC		Source
		lb/gal	g/l	
7909	Rust Grip MCU Primer Rust Grip MCU Primer	3.5 3.5	414 414	Superior Products International 10835 W 78th Street Shawnee, KS 66214

Please note that all products to be used by the Department, regardless of prior approval, shall be sampled in accordance with the Material Sampling Manual and tested for specification conformance. Non-conformance with the specifications may result in the removal of the product from the Qualified Products List. Please include your product source code number with any future correspondence.

If you should require any assistance, please contact Mr. Richie Charoenpap at 225-248-4217.

Sincerely,

Luanna Cambas, P.E.
DOTD MATERIALS ENGINEER ADMINISTRATOR

LC:RC:tt
cc: Mr. Richie Charoenpap, P.E.
Ms. Cassadra Collins

COST COMPARISON

3-Part System vs. RUST GRIP®

- **3-Part System Steps**
- 1) White Sandblast / Prep $ 7.50/sqft
- 2) Primer $ 0.75/sqft for product
- 3) Intermediate $ 0.60/sqft for product
- 4) Top Coat $ 0.60/sqft for product

COST COMPARISON, cont.

- 5) Labor @ $0.85/sqft x 3 $ 2.55/sqft for labor

  Total $12.00/sqft
- **RUST GRIP® System Steps**
- 1) Pressure-Wash / Prep $ 3.26/sqft
- 2) RUST GRIP® $ 1.35/sqft for product
- 3) Labor x 1 $ 1.27/sqft for labor

  Total $ 5.88/sqft

COST COMPARISON cont.

Using Rust Grip® is $6.12 (51%) Less Expensive than Traditional 3-Part System

- Cost may vary depending on location in country, union or non-union labor, height of structure, over water, or whether dealing with Lead Based Paint (LBP).
- LBP sandblast and surface prep will include labor, containment, water processing, and disposal of bio-hazardous materials. Estimated Prep cost is $16.00 / sqft.

COST COMPARISON cont.

- Rust Grip® needs no sandblast or disposal of bio-hazardous material for encapsulating LBP. Estimated Prep cost is $7.00 / sqft. A savings of 9.00 per square foot.
- LBP Estimated Systems- 3-Part System: $19.90/sqft RUST GRIP® System: $9.75/sqft. Additional savings of $10.00/sqft.
- Costs will vary depending on the size of job. Larger projects will demand lower pricing.

SUPER THERM®

- Single Component – Water based
- Insulation coating – repels heat load
- Sound Reduction – ASTM
- “0” Flame Spread – Class A
- Water barrier – ASTM
- USDA approved – USGBC Gold Certificate

SUPERIOR PRODUCTS
INTERNATIONAL II, INC.

SUPER THERM Heat Insulation Coating Specifications

Features:

1.) Insulation Coating

- Reflects 95% of the sum total of all three heat waves
  - UV – 99%
  - Short Wave (Visual Light) – 92%
  - Long Wave (Infrared) – 99.5%
  - ASTM E1269 and ASTM 1461 Reduces conduction of BTU heat from 367.20 down to 3.99 with one coat of SUPER THERM.
  - ASTM C236 "Standard Test Method for Steady-State Thermal performance of Building Assemblies by Means of a Guarded Hot Box". Fiberglass at 3" rated 0.53 BTU K value. One coat of SUPER THERM at 10 dry mils rated 0.31 BTU K value and one coat applied at 10 dry mils to one side of wall and another coat applied to opposite side at 10 dry mils rated BTU K value of 0.21. 148% better performance than the fiberglass.

Emissivity rating of 0.91
Emits any heat absorbed from its' surface at a 91% rate.
Allows the coating to work on interior to stabilize the ambient air.

2.) Water Barrier Coating
ASTM D 6904 Resistance to Wind Driven Rain for Exterior Coatings
ASTM D 7088 Resistance to hydrostatic Pressure for Coatings
Passed all testing standard to 55 mph wind driven rain.

3.) Flame Spread Class A fire rating
ASTM E 84-89 "0" Flame Spread and "0" Smoke

4.) Sound Reduction
ASTM E90 "Standard Method for Laboratory measurement of Airborne Sound Transmission Loss of building Partitions."
ASTM E413 "Standard Classification for Determination of sound Transmission Class."
Both sides total accumulative result is STC 41
Talking range of 1000 Hz to 1600 Hz – STC 50 and again at 5000 Hz.

5.) Mold / Mildew Resistance
ASTM D-3273-82T tested for severe mold environment – Temp 90F and RH of 95%-98% for 5 ½ weeks. Rated 9 out of 10.

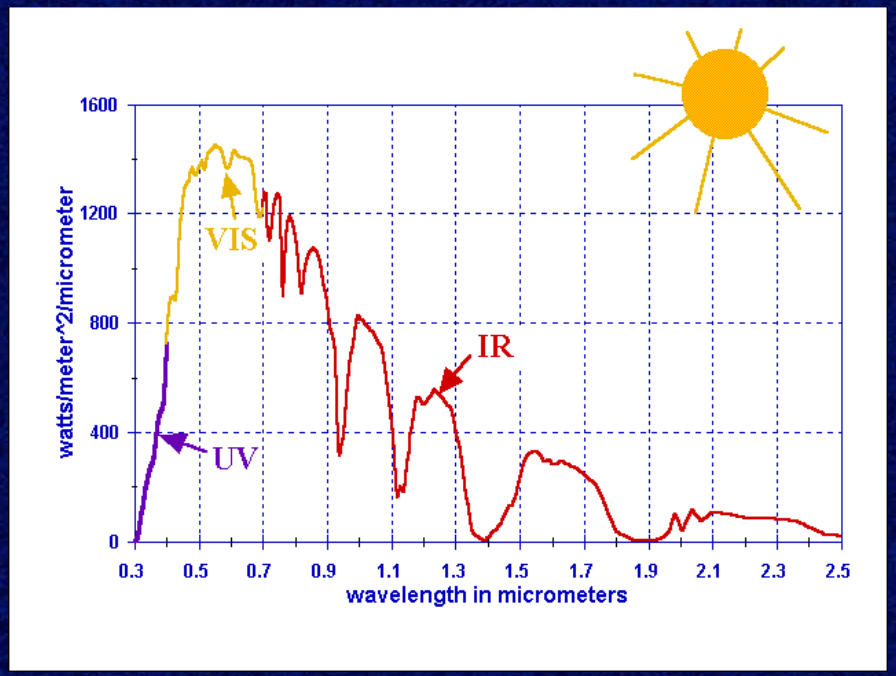
6.) Condensation Control
Field Study Testing

7.) Static Coefficient of Friction is an average of **1.14** when tested in 2007.
Kinetic Coefficient of Friction is and average of **0.78**.

8.) Certifications:
UL , FM, ABS, ENERGY STAR, California Bureau of Home Furnishings and Thermal Insulation, ICC (International Code Council #21-25), CRRC (Cool Roof Rating Council – Emissivity of 0.91), JIS (Japanese Institute of Standards) A 5759. US GREEN BUILDING COUNCIL- Certified, LEED

10835 W. 78th Street • Shawnee, Kansas 66214 • Phone: 913-962-4848; Fax: 913-962-6767
Website: www.spicoatings.com Email: sales@spicoatings.com

Windows of Radiation Heat



Ultraviolet (UV)

- 3% of total energy
- Responsible for sunburn

Visible (VIS)

- 40% of total energy
- Visible light

Infrared (IR)

- 57% of total energy
- Felt as heat

Offshore Rigs

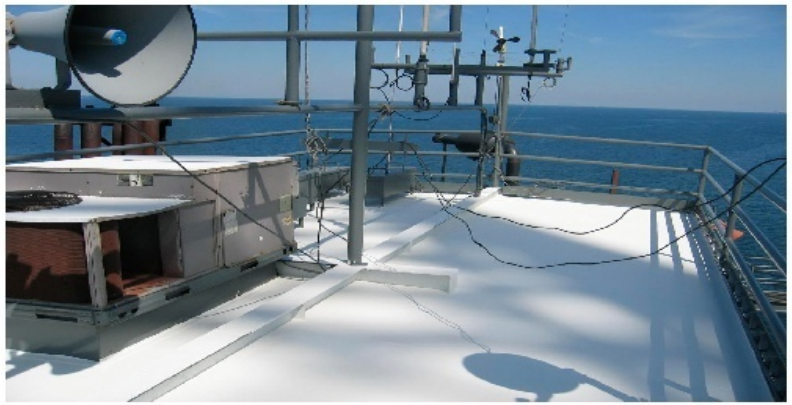
- **SUPER THERM** reduces the sound from lower machine areas up through other levels.
- **SUPER THERM** brings living quarters to ambient temperatures for better rest of workers.

SUPER THERM®
21st Century Solutions for 20th Century Challenges

Rowan Drilling

Cecil Provine Offshore Oil Rig

Super Therm® was applied to the Control Room roof on the Cecil Provine and dropped the surface temperature by 35° (124°F to 89°F).

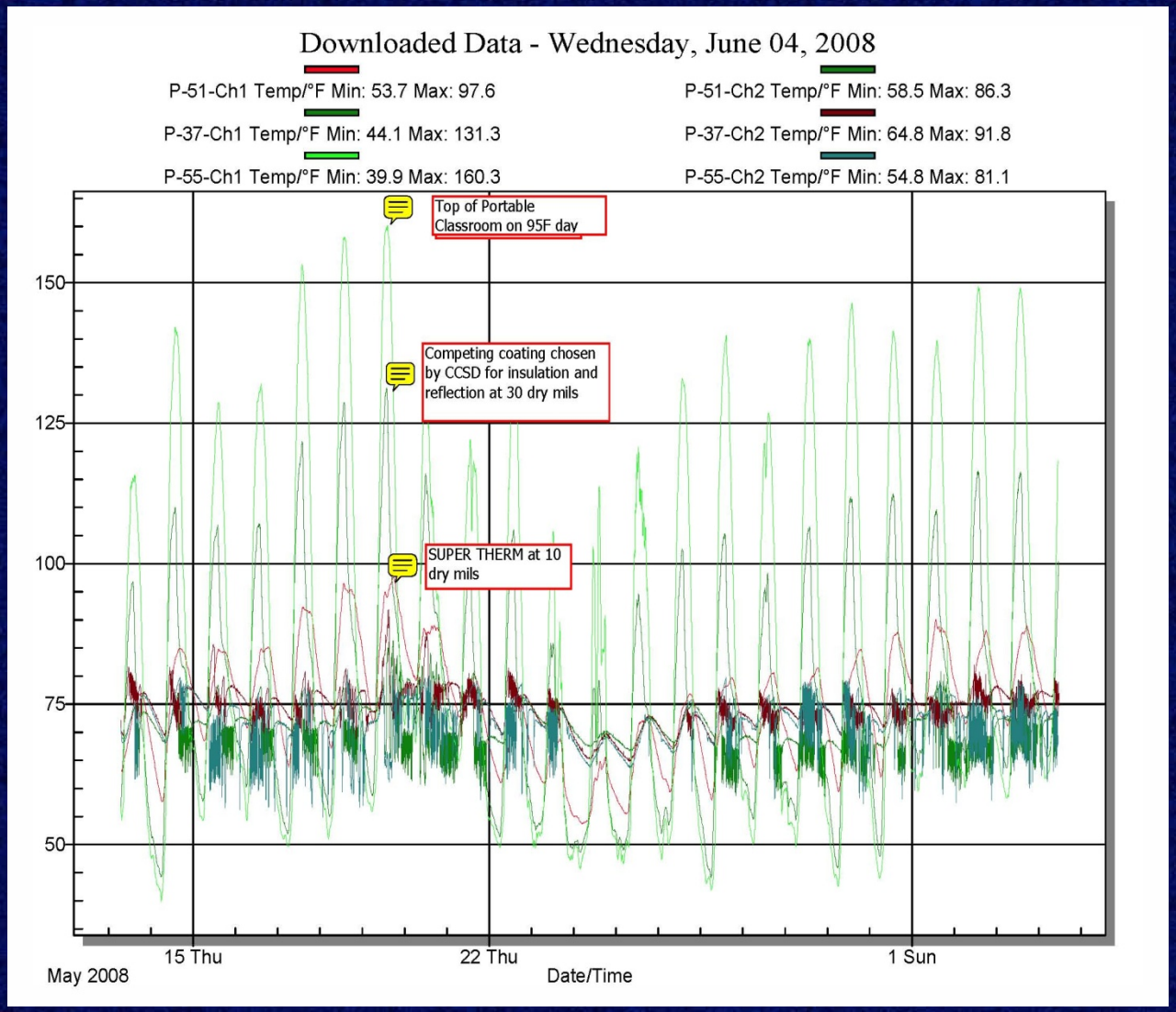


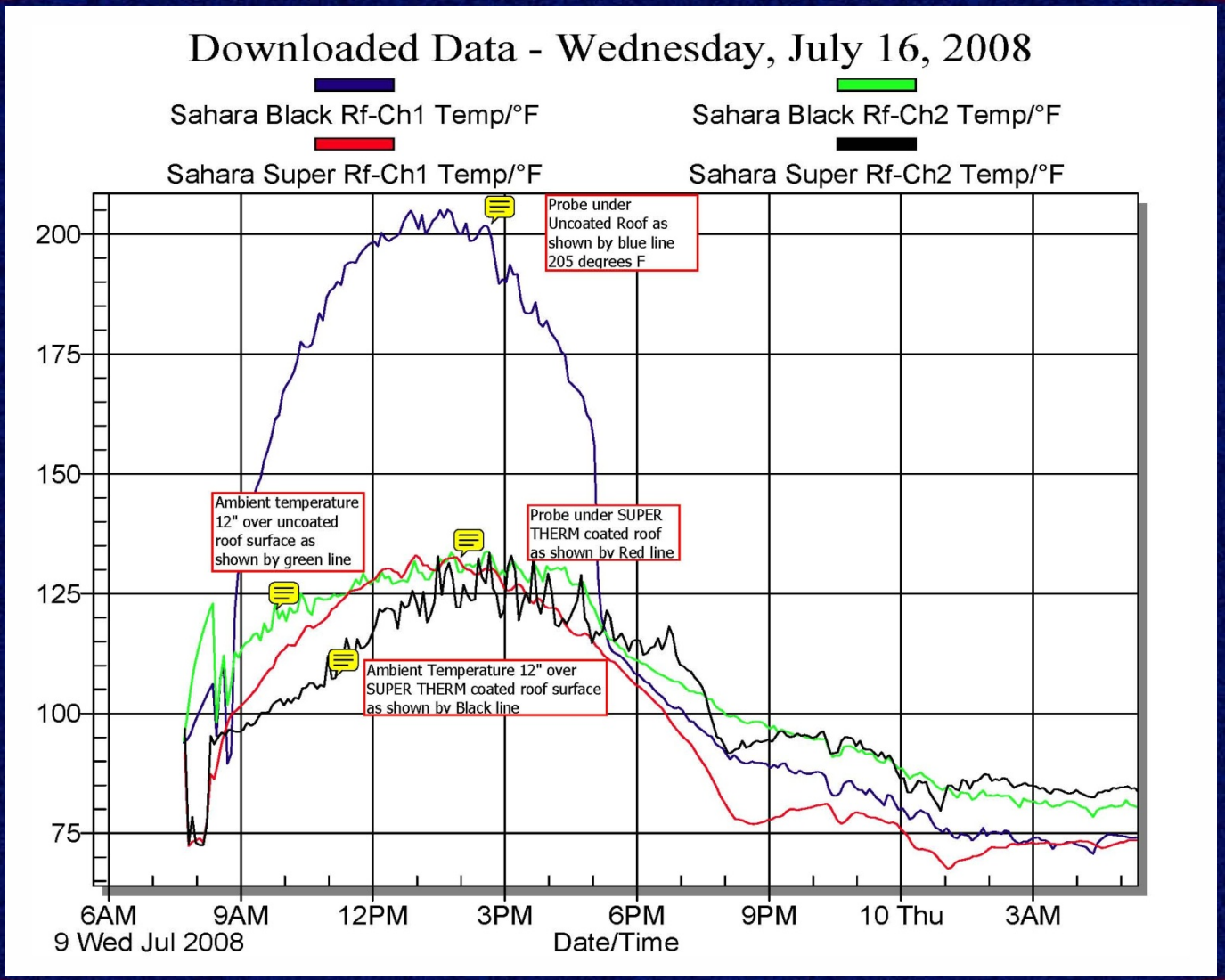
The Cecil Provine's Welder's Shack was primed with Rust Grip® and topcoated with Super Therm®, which decreased the inside ceiling temperature by 30°F.

Aramco Product Codes

- Super Therm & Enamo Grip " approval in the SAP system under Materials # 1000769612 & 1000769613).
- Super Therm is under the Category APCS - 5A
- APCS-5A is in the coating standard SAES-H-001

Superior Coatings for Superior Results





E-MAIL daiko@daikoshokai.com
WEB SITE http://www.daikoshokai.com

Superior Coatings for Superior Results

UPDATE – 14 YEAR HISTORY

Dear Mr. Pritchett,

In your message dated February 10, 2010, you asked us to request a short report from the tank terminal where tanks were coated with Cool Therm. We are sorry for taking this long to send you the report, but we finally received the report from AST Inc. We requested a letter with their company letter head, but they told us that this report by email message would be the best they can provide.

I have attached the email message we received from Mr. Hanaoka of Kitazawa Yakuhin Corporation, who is the purchase agency for AST Inc.
http://www.kitazawa-yakuhin.co.jp/index.html
http://www.ast-inc.jp/en/

Mr. Hideki Yonekura, the department manager who wrote this report translated his report to English.

I hope it would be what you were looking for.

Sincerely,
Satomi Sakai

****
DAIKO SHOKAI CO., LTD.
3-11-23 Nagai-higashi, Sumiyoshi-ku, Osaka,
Japan 558-0004
TEL) +81-6-6696-1155
FAX) +81-6-6696-1175
E-MAIL daiko@daikoshokai.com
WEB SITE http://www.daikoshokai.com
****

Here is the English part:

A whole surface of a tank (1,000KL) in Hokko Terminal had coated with Cool Therm in 1996, and we had recognized the beneficial effects. Therefore all of the 39 tanks in Hokko terminal (30,000KL) were coated with insulation coating.

The maximum effect is that VOC emission in the atmosphere has been reduced strongly. This is because a temperature in the tanks are kept at a low temperature constantly by full coating with Cool Therm, and breathing of tanks are depressed.

Moreover, relating to cooling tanks and refrigerated storage s coated with Cool Therm, the effect of freezing have risen by 20 percent.

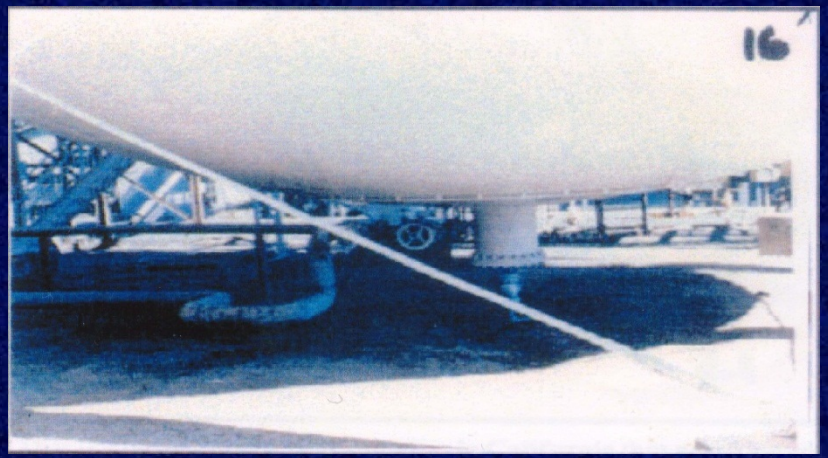
The temperature in the tanks were controlled by using electricity and water before, but it is not needed any more after coating. Cool Therm is the superior eco product which lessens the burden on the environment.

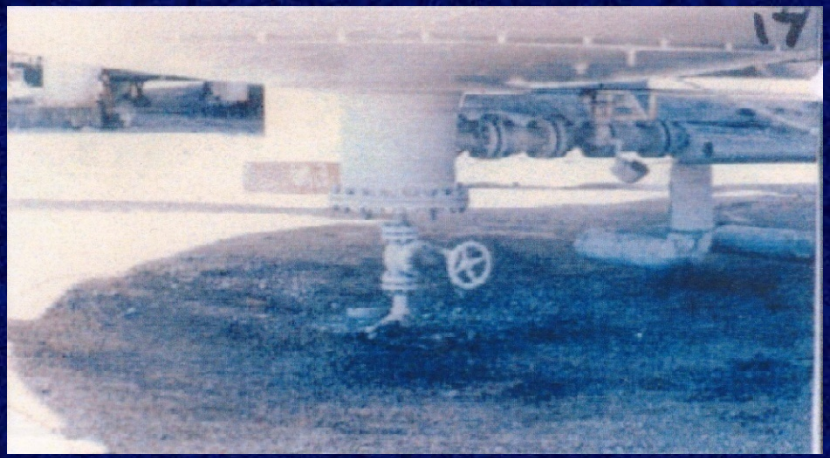
The tank coated in 1996, which were recoated with top coat only in 2009, the heat insulating effect is still continuing, and the durability is demonstrated.
We are promoting insulation coating of tanks and storages as part of environmental protection.

AST Inc.(Advanced Storage & Transportation)
ENVIRONMENT SAFETY DEPARTMENT
Hideki Yonekura, Department Manager
yonekura-h@ast-inc.jp

Superior Coatings for Superior Results

Preventing Condensation in Ammonia Tank





Large Structure Coatings

- Hickam Airforce Base, Hawaii

Large Structure Coatings

- Hickam Airforce Base, Hawaii

Applications on Metal Roofs, Japan

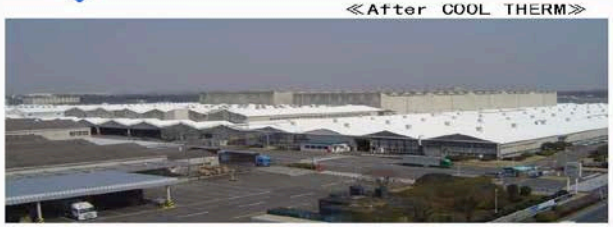
Nissan Motor Co., Ltd.
Sagamihara Parts Distribution Center

Slate Roof Insulation Coating Project
Application Date: 2004/9～2005/3

≪Before≫

Application Area
165,000 m²

≪After COOL THERM≫



≪After COOL THERM≫

DAIKO SHOKAI CO., LTD.

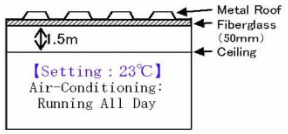
Applications on Metal Roofs, Japan

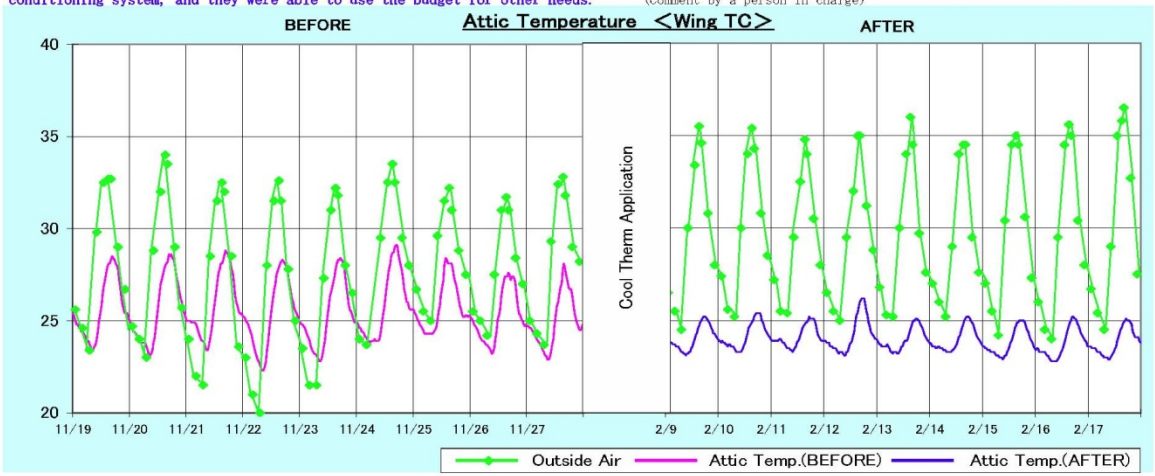
Rohm Apollo Electronics, Thailand

Rohm Apollo Electronics (Thailand) Co., Ltd.

Application Date: December 2004 to February 2005 Area Size: 23,000㎡

According to the calculation based on the temperature reduction data of the attic area, it will **save ¥8,500,000 worth of energy**. However, the savings on the actual electricity bill for a few months after the application was already more than that amount. They were also planning to install an air-conditioning system with a **¥28,000,000** budget along with the Cool Therm application, because the temperature in the factory in mid-April was hotter than the set temperature. However **there was no longer a need for the air-conditioning system, and they were able to use the budget for other needs.** (Comment by a person in charge)



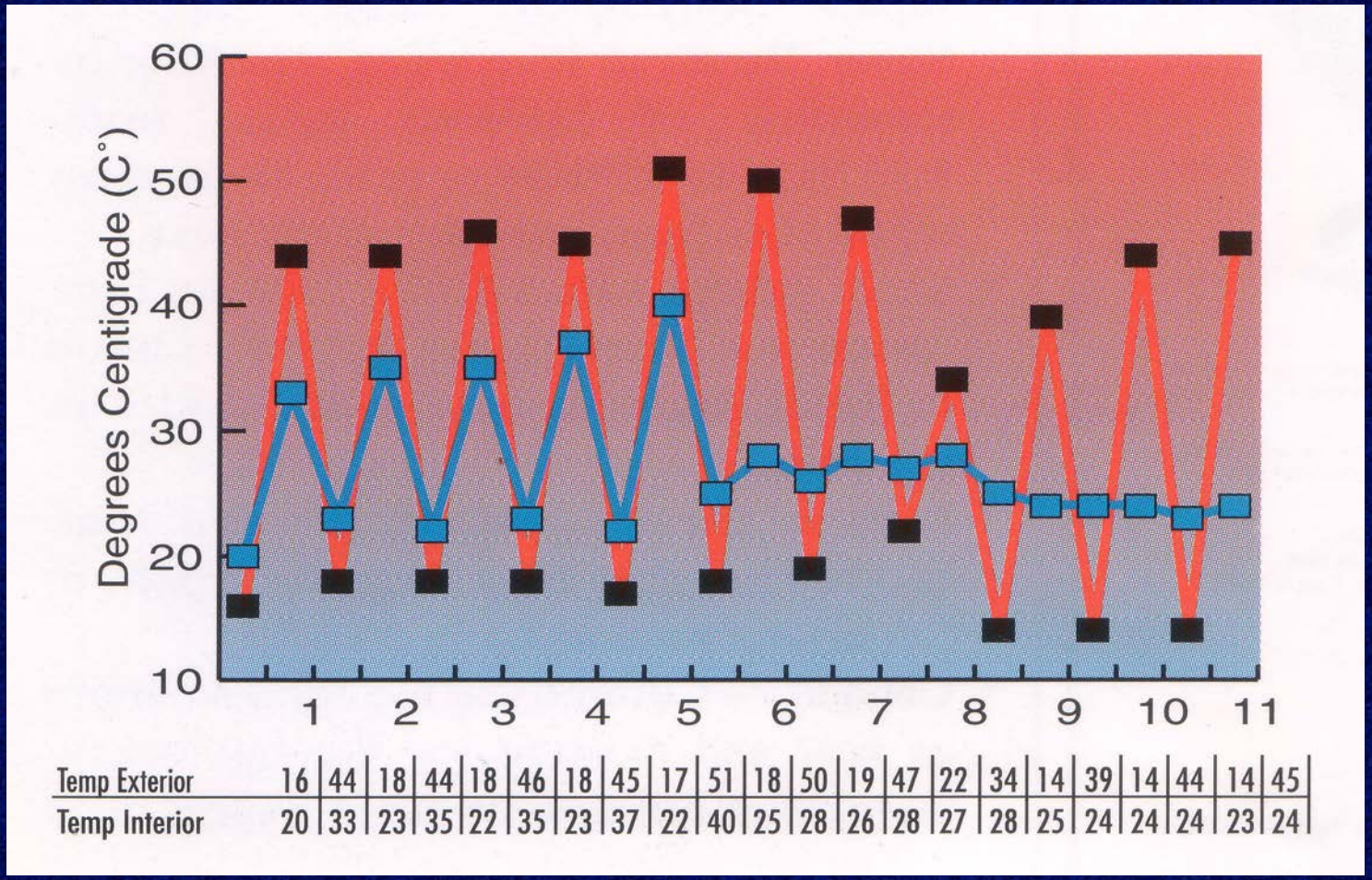


	11/19	11/20	11/21	11/22	11/23	11/24	11/25	11/26	11/27	Average
Max Outside Temp.	33.5	32.7	34.0	32.5	32.6	32.2	33.5	32.2	31.7	32.8
Max. Attic Temp.	28.5	28.6	28.8	28.3	28.4	29.1	28.4	27.6	28.1	28.4
Temp. Gap	5.0	4.1	5.2	4.2	4.2	3.1	5.1	4.6	3.6	4.4

Cool Therm Application	2/9	2/10	2/11	2/12	2/13	2/14	2/15	2/16	2/17	Average
	35.5	35.4	34.8	35.0	36.0	34.5	35.0	35.6	35.8	35.3
	25.2	25.4	25.2	26.2	25.1	25.2	25.0	25.2	25.1	25.3
	10.3	10.0	9.6	8.8	10.9	9.3	10.0	10.4	10.7	10.0

DAIKO SHOKAI (THAILAND) CO., LTD.

Thermal Cyclic Test in Spain



Temp Exterior	16	44	18	44	18	46	18	45	17	51	18	50	19	47	22	34	14	39	14	44	14	45
Temp Interior	20	33	23	35	22	35	23	37	22	40	25	28	26	28	27	28	25	24	24	24	23	24

SPI CASE HISTORY

Areas of Activity on the Tucson Airport Project

Superior Coatings for Superior Results

Daiko Shokai Co., Ltd.

Energy Performance Field Testing with Sony - Coda Factory

May 1994 (Before)	3,767 Kw
May 1995 (After)	519 Kw
June 1994 (Before)	5,647 Kw
June 1995 (After)	1,869 Kw

Hitachi Electronic

Uncoated	82℃
Coated (After)	47℃
Room Temp. Reduction	35℃

Good-Standing Factories in Energy Control Improvement Case Examples Japan

Factories that were awarded by the Secretary of State for Trade and Industry-Director and General of the Agency of Natural Resources and Energy.

(1998 Electric Category : 19 Case Examples)

April, 1999

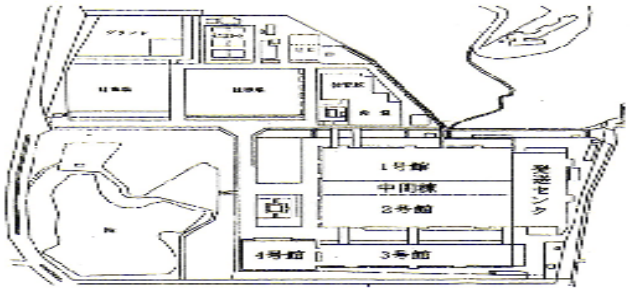
National Electricity Saving Committee

Application of Insulation Coating on Factory Roofs

- **Factory Information**

Capital	¥2000Million ($17Million)	Contract Demand	4,700kW	Voltage	33kV	Site Area	181,751 sqm	Building Area	86,000 sqm
Main Product	Video Camera	Electric Power Consumption Rate	1,320,000kwh/ ¥1million	% of Electricity Cost in Production Price	0.18%	Workers	2,500	Electricity Related Workers	7

- **Factory Site Map**



Bldg. Name	Area (sqm)	Note
Bldg.1	12,600	
Bldg.2	12,600	
Bldg.3	7,100	Not Applied
Bldg.4	Not Included	
Middle Bldg.	4,400	
Shipping Center	6,900	
Dining Bldg.	2,400	
Gym	1,600	Not Applied
Energy Center	1,400	
TOTAL	49,000	

*40,300sqm is applied so far.

- **Reasons for improvement**

Out of all electric energy that this factory consumes, the energy used for air conditioning is high, and it takes up about 30%. The energy consumption rate for air-conditioning in summer is especially increasing due to the automation of offices and factories.

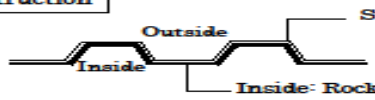
There are nine buildings in this factory and the first construction of Building 1 began in 1973, and the construction of the roofs was corrugated metal sheets + paint. Due to this roof construction, it had poor insulation performance, and it was a burden to the air conditioners in summer.

The temperature of the roof surface was very high due to the radiant heat, and the work environment was also poor. They had to lower the temperature setting of the air conditioner. Therefore, there was a need for improvement in energy saving.

- **Improvements**

Before:

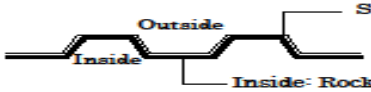
Roof Construction



Due to the deterioration of coating, application was done as a part of the renovation project.
(Change of Coatings)

After:

Roof Construction



Ceramic Insulation Coating was applied by spray in two layers to the surface of corrugated metal sheet roof.

Composition: **COOL THERM (SUPER THERM®)**
Water-Base Paint (Acrylic Resin + Urethane Resin + Three Kinds of Ceramics)
*Insulation Mechanism-----Two kinds of ceramics repel sun light.
The third ceramic works as a vapor barrier

- **Results**

1. Energy Saving

Condition: Fine day in summer Outside Temperature: 32C (90F)

	Outside Surface Temp	Room Surface Temp.
Before	63C (145F)	61C (141F)
After	41C (105F)	38C (100F)
Difference	▲22C (71F)	▲23C (73F)

Energy Saving Effect:

40,300sqm × 23C (73F) × 2.76Kcal/h · sqm · C
(K Value: over-all coefficient of heat transfer for steel)
= 2,558,244kcal/h
2,558,244kcal/h × 8h/day × 20 days/month × 6 months/year × 0.75
(Period of Air-conditioning Used) (Fine Sky Ratio)
= 1,841,760 Mcal/year

Calculation of Electricity:

1,841,760 × 10^3kcal/year ÷ 3,000kcal/h · RT × 1.2kW/RT
= 736,704kWh/year

Energy Saving Cost:

736,704kWh/year × ¥15/kWh = ¥11,050,560/year

2. Prolongation of Life Span

The re-painting cycle has extended from seven years to nine years.

o Improvement Evaluation

Initial Cost for Improvement (¥10,000) (A)	Energy Saving Effect (¥10,000/year) (B)	Pay-Back Period (year) Excluding Interest (A/B)
Ceramic Insulation Coating 6,850 Bituminous Coating 5,680 Difference 1,170	1,105	1.06

ROI : Thirteen (13) month payback savings to investment.
Comparison of cost: Bituminous versus COOL THERM (SUPER THERM®).
COOL THERM (SUPER THERM®) is 20% more in cost but returns its total investment in 13 months compared to 0 return from Bituminous.

Special Front Porch FLORIDA Project

ENERGY CONSERVATION ASSISTANCE PROGRAM

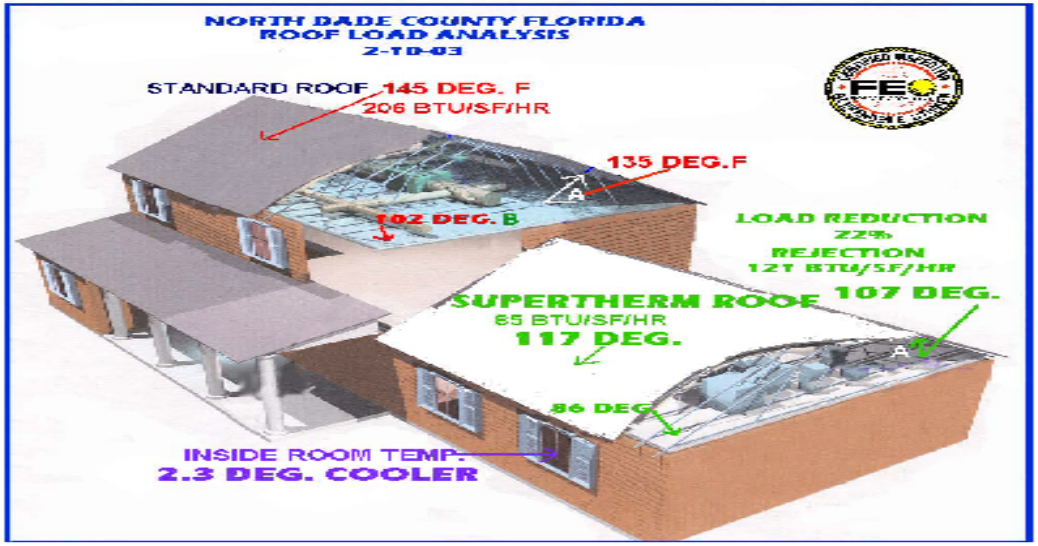
ECAP

REPORT

Prepared by
Alexander E. Ohmer CEA

Saving Energy Saves Everything

Funded by your FLORIDA ENERGY OFFICE



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.

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 ABSORBTON
STANDARD ROOF	206	145 Max.	22.0	0.045	206 / 145 98.0
SuperTherm ROOF	85	118 Max.	19.0 Reflectance Equivalent	0.270	85 / 118 03.0

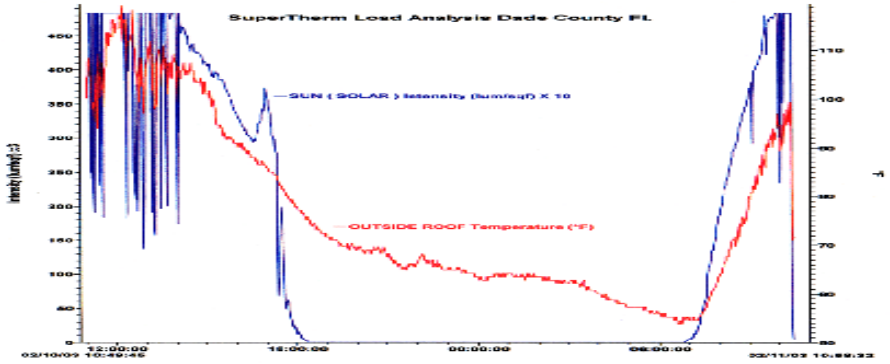
SYSTEM LOADS AS TESTED

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 ENVIROMENTAL 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 *E*nergy *C*onservation *M*easure (*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*** .

Front Porch
FLORIDA

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 Roofing 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

Apartment Buildings in Munich, Germany

Report
Proprietors comunity
Condominions
Munich, Riemerschmidtstrasse

Comparison energy consumption periode
2001/2002 - 2002/2003

3 Apartementbuildings with common heating system
recording of heating cost from July to June
2 Buildings with 54 individual flats, 1 building with 24 flats

Building 41 – 43 with 54 flats was coated with SuperTherm in summer 2002
Only on 3 sides no other renovation (the yellow building on the picture)

As per calculation of heatingcost (calculated by an independent institut)

Total oil consumption for all 3 buildings:

Periode 2001/2002	166.000 ltr.
Periode 2002/2003	160.000 ltr.

The building coated with SuperTherm represents 41 % of all flats, therefor

41 % =	68.060 ltr
minus energy for warmwater	40.836 ltr
Savings against previous year	6.000 ltr
Enery savings in liter oil	**14,69 %**

Climate data

Average temperatur in winter was according to climate data 1°C lower in winter 2003
This results in ca. 6 % increase ofheating energy.

Total saving 20 %

Stop CUI With SPI

- **Rust Grip, HPC & Super Therm over hot pipes to control CUI.**
- Up to 170 C, RUST GRIP® applied to surface of pipes, tanks or valves can block and stop corrosion development.
- Apply HPC ® as the insulation and then SUPER THERM® to seal the surface with RUST GRIP® to block moisture and air flow from reaching the surface.

Stop Corrosion With SPI

- Stop moisture loading into the insulation material
- Stop the free air flow into the insulation material
- Stop the condensation that release foam insulation
- Provides a 100% seal to block air, moisture and chemicals from attacking the surfaces
- Stop CUI from forming

Blocking Heat With SPI

- Reduce evaporation by 90%
- Drop temperature inside of tanks
- Reduce heat load
- Reduce interior temperatures on storage tanks to within 5 degrees of ambient.
- Reduce heat load over surface from 108 watts(367 BTU) per sq.m/hour down to 1 watt (3.99 BTU) per sq.m/hour..

Blocking Heat With SUPER THERM®/ HPC®

- Prevent moisture from causing heat gain.
- Replace metal jacketing for a moisture and air tight system with a simple spray that covers 100% of all surface from elbows to valves.
- Covers all configurations

How Standard Insulation Works

- Materials absorb 100% of heat load from surface.
- R or K value is the measurement of how fast this heat transfers through the material.
- Moisture absorbs into the material and speeds the transfer rate which dramatically reduces the R or K value after it is installed.
- Air flow into and through these materials cancels out the R or K value.

How Standard Insulation Works

- After the fiber material is fully loaded with heat , does it have any insulation value? The resistance is finished.
- ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers) has the 90.1 Code with a chart showing R 19- R21 over any metal structure tested to only R 7.4.

Super Therm, HPC, HSC

- The 21st century concept of thermal insulation.
- SUPER THERM blocks initial heat load from ever happening that begins the insulation process.
- SUPER THERM protects surfaces from weathering.
- SUPER THERM is a tested water barrier.
- SUPER THERM is a “0” flame spread/ fire retarder.

Super Therm, HPC, HSC

- The 21st century concept of thermal insulation.
- SUPER THERM repels heat from a surface so that the heat cannot have an initial loading into the surface. After loading, heat transfers.
- HSC – HPC holds heat inside a tank or pipe at the surface level and resist the “heat transfer” of heat through a material to escape to the atmosphere. There is no “reflecting” heat. It catches and holds the heat from moving or transferring.

SPI for Marine Applications

SPI for Marine Applications

SPI for Marine Applications

HPC®

- Single Component – Water based
- Sprayed over hot pipes while operating
- Can be sprayed over surface up to 900F
- Initial coats are light to allow steam escape
- A single coat can be sprayed to 500 mils.
- There is a char that develops at the hot surface level and can char up into the coating toward the surface. Must apply the proper thickness. Organic resins char.

HSC®

- Single component – Water based
- Sprayed over hot surfaces up to 350F (170C).
- Sprayed over interior surfaces to prevent heat transfer from exterior heat load.
- Smoother appearance than HPC®

HPC

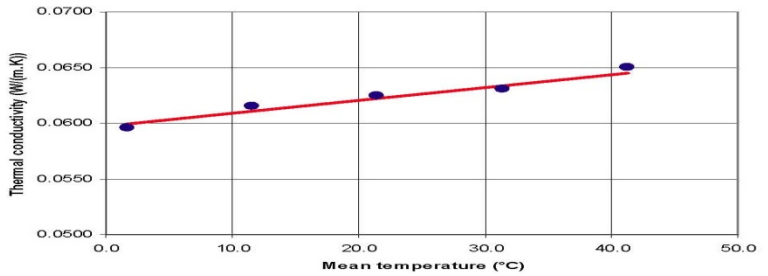


Figure 4 Relation between the thermal conductivity of Hot Pipe Coating and its average temperature

2.2.4.3 Thermal conductivity at different mean temperatures

These are given in the following table:

Mean temperature °C	Thermal conductivity W/(m.K)
-10	0.059
0	0.060
10	0.061
20	0.062
30	0.063
50	0.066
100	0.071
200	0.083
300	0.094
400	0.106
500	0.117

As all insulating materials, Hot Pipe Coating performs the best at low temperatures. Above a mean temperature of 350°C, its thermal conductivity passes 0.1 W/(m.K). The effect on the surface temperature and the heat loss of 1 meter run steel pipe thus depends on the temperature of the fluid in the pipe, de insulation thickness applied, the diameter of the pipe and the fact of the pipe hangs inside or outside. Only to illustrate the effect of Hot Pipe Coating, we calculated the reduction in heat loss per meter run for a steel pipe with an exterior diameter of 10 cm, hung in an environment with an effective temperature of 20°C. The pipe transports a 350°C hot fluid

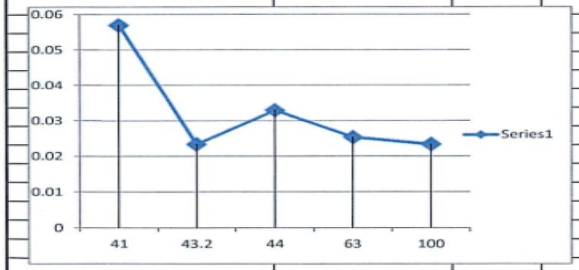
and is insulated with a 1 cm thick layer of Hot Pipe Coating. Without coating, the heat loss touches 3409 W/m. With Hot Pipe Coating it diminishes to 776 W/m, i.e. a decrease with 77.3%. The average thermal conductivity in the coating then reaches 0.088 W/(m.K).

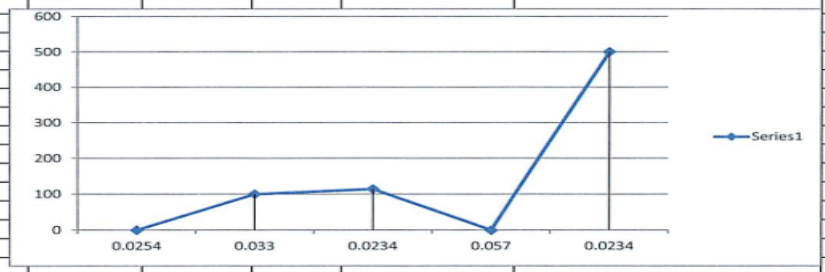
Superior Coatings for Superior Results

Russian Scientific Lab Results

Коэффициент теплопроводности материалов SPI по результатам применения в России.

Наименование объекта	Предмет изоляции	Материал	Ду, мм	Токр.ср.	Тнеизол.	Тиз.,°С	δиз.,мм	λ, (Вт/(м°С)) W/mK	ΔT, °С
Name of company and city	Object of insulation	Ins. Mat.	OD., mm	T amb., °C	T no ins. °C	T ins., °C	Ins. Thickness, mm	Ins. Conductivity, W/mm K	ΔT, °C
Магнитогорск, МП "Трест Теплофикация", котельная	Трубопровод / pipe	HSC	500	20	97.3	54.1	3	0.0234	43.2
ОАО "УралХимМаш", котельная	Трубопровод / pipe	HSC	114	19.5	164	64	5	0.0234	100
Тепловой узел Кагальницкого молзавода, Ростов	Трубопровод / pipe	HSC	32(50)	26.9	125	62	4	0.0254	63
Новошахтинск, ГБ № 1	Трубопровод / pipe	HSC	100	0	59	15	4	0.033	44
Газпром добыча Ямбург	Фасонные части	HPC	-	25	151	71	7.5	0.0376	80
Газпром Трансгаз Самара	Фасонные часть	HPC	-	98	394.4	140	7	0.011	254.4
Газпром Трансгаз Самара	Фасонные часть	HPC	-	98	394.4	110	20	0.0075	284.4
Астрахань	Трубопровод /pipe	HSC	159(5)	3	68	27	5	0.057	41





Storage Tanks
Los Angeles, California

Heat Exchanger
Istanbul, Turkey

La Défense Office
Tower Paris, France

LBC Tank Terminal
Port of Antwerp,
Belgium

LG Chemical Daesan Factory, Korea

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 130℃

- Note: Direct coating on the surface without a pre-treatment

Incinerator Coating

Incinerator Before: 180℃

Incinerator After: 50℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 150℃

- Note: Direct coating on the surface without a pre-treatment

Incinerator Before: 260℃

Incinerator After 1-st coating: 110℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 125℃

- Note: Application was easy even in areas of frequent access points

Strainer Coating

Strainer Before coating: 170℃

Strainer After coating: 45℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 130℃

- Note: Direct coating on the surface without a pre-treatment

Trap Coating

Trap Before coating: 180℃

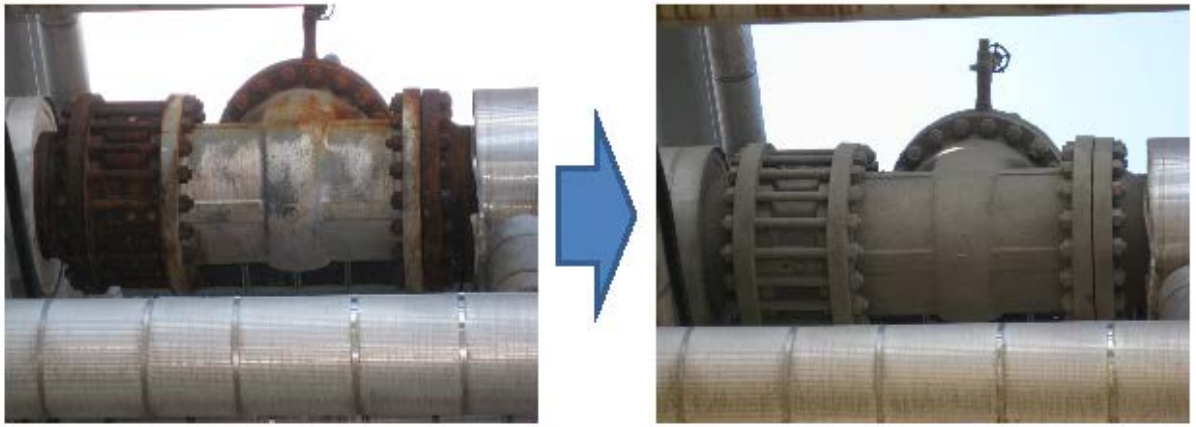
Trap After coating: 50℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 105℃

- Note: Direct coating on the surface without a pre-treatment



Valve Before coating: 160℃

Valve After coating: 55℃

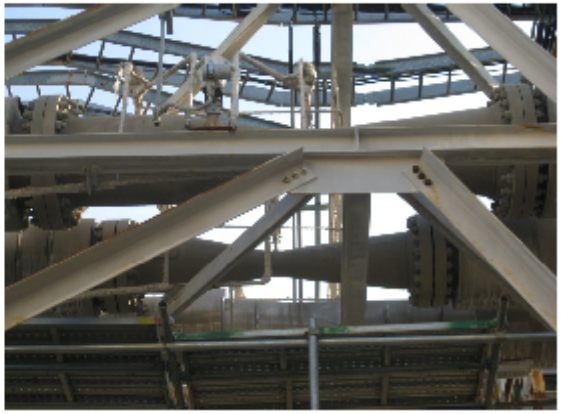
< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 105℃

- Note: Direct coating on the surface without a pre-treatment

Flange Before coating: 160℃



Flange After coating: 55℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 130℃

- Note: Direct coating on the surface without a pre-treatment

Strainer Coating

Strainer Before coating: 180℃

Strainer After coating: 50℃

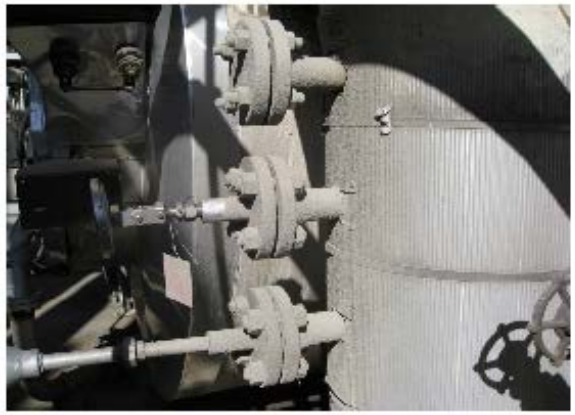
< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 85℃

- Note: Direct coating on the flange of an outdoor gauge

Flange Before coating: 130℃



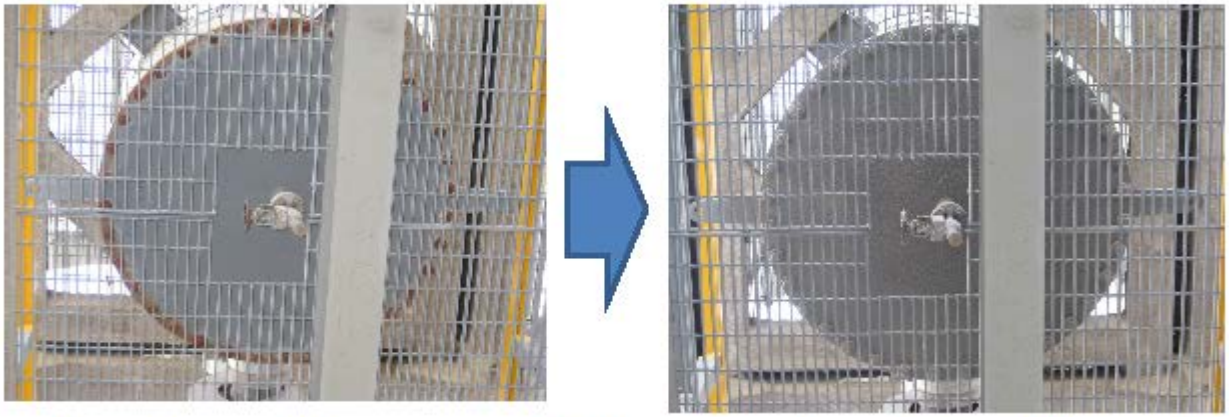
Flange After coating: 45℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 105℃

- Note: Direct coating on channel cover



Channel Cover Before coating: 150℃

Channel Cover After coating: 45℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 85℃

- Note: Direct coating on the flange of a heat exchanger

Flange Before coating: 130℃

Flange After coating: 45℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 130℃

- Note: Coating on corroded surface of a heat exchanger flange after a simple pre-treatment

Flange Before coating: 185℃

Flange After coating: 55℃

< LG Chemical Daesan Factory >

- Purpose: Insulation coating for energy efficiency

- Result: △T = 85℃

- Note: Coating on the surface of a flange

Flange Before coating: 130℃

Flange After coating: 45℃

OTHER CORROSION / SEALING COATINGS

- ENAMO GRIP 5000
- ENAMO GRIP
- LINING KOTE
- MOIST METAL GRIP (MMG)
- SP LIQUID MEMBRANE

ENAMO GRIP 5000

- Solvent two-part polyester.
- Designed to withstand acids and chemical splash or vapors in any environment.
- UV controlled to be used on the exterior to protect tanks, pipes or equipment from chemical and UV deterioration.

ENAMO GRIP 5000

- Used over all metal surfaces.
- Used on concrete flooring to protect concrete in the environment from splash and acid drips that deteriorate the concrete and cause cracking. Designed originally for aircraft hangers to withstand Skydrol drips.

ENAMO GRIP

- Solvent two-part polyurethane
- Finish coat in any color and also clear gloss or matte
- Used as the color top coat over pipes and tanks or flooring.

Lining Kote

- High molecular weight two-part epoxy
- Used to coat the interior of acid or chemical tanks
- Used in oil fields and petrochemical areas
- Used for coating the interior of drilling mud tanks and frac tanks to contain drilling liquids and protect the interior of the tanks.

Lining Kote

- Used by Haliburton Oil in Australia and some tanks have performed for 8 years without deterioration.
- Most tanks deteriorated within 1 year before Lining Kote came into use

SP LIQUID MEMBRANE

- Single Component – Solvent based
- Liquid Rubber – monolitic Actual rubber and not a synthetic material. Could line swimming pools to demonstrate how water tight it is.
- Easy to spray with airless
- 8 hour pot life and easy clean-up
- Water barrier and seal

OMEGA FIRE

SUMMARY OF 7 HOUR TEST

- The testing is interesting to read. Starting from 0 minutes to record each minute time frame and the average (last two columns of the test report) of the probes and the furnace heat levels.
- For instance, the temperature of the metal to begin the test was 50F (10C). It took a full hour in the fire to increase 3 degrees to 53F(12C).
- At 120 minutes (2 hours), it was only 73F (23C).
- At 180 minutes (3 hours), it was only 107F (42C).
- It was 203 minutes (3 hours 23 minutes) before the steel surface reached 122F (50C) which was a goal we had for the two hour mark for a particular project.
- The furnace was turned off because the lab was shutting down for the day and at that time, the furnace had operated for 7 hours and the temp was only 607
  F (319C). The failure temperature is 1000 F (538C).

PROCEDURE:

The furnace used in this test measures 3ft x 3ft x 3ft. The outside construction is steel and the furnace is lined with a ceramic refractory insulation. The furnace dimensions inside the insulation are nominally 27" x 27" x 27". A single burner is centered vertically in the wall opposite the sample. This burner is rated for 1.5 million BTU/HR and is of the flat flame or non-impinging flame design. Furnace conditions are monitored by three Inconel-sheathed chromel-alumel thermocouples. These thermocouples are positioned 6" from the face of the sample. A transition piece was placed on the front of the furnace that had an opening of 12" x 12" were the sample was to be placed. The sample was placed through this opening so that the I-Beam is exposed to the inside of the furnace and support by the ½" plate.

The fire test was run following the ASTM E119 time-temperature curve.

The endpoint for this ASTM E119 Test occurs when all the thermocouples on the sample reach an average of 1,000°F, or when any individual thermocouple on the sample reaches 1,200°F.

RESULTS:

Time (hours)	Average Temperature (deg. F)
0	50
1	53
2	73
3	107
4	148
5	209
6	363
7	607

After 7 hours the furnace was voluntarily shut off with none of the endpoint criteria met.

The time-temperature data are contained on the following pages.

Neil Schultz
Executive Director

A Rahim
Amirudin Rahim
Technical Director

OMEGA FIRE COATING

- CERAMIC FILLED TO BLOCK FLAME IMPINGEMENT AND HEAT CONDUCTION
- NEW YORK CITY DEPT. OF BUILDINGS CODE CERTIFICATE FOR 2 HOURS
- SHIPPING CONTAINER FIRE TESTING FOR 3 HOUR CERTIFICATE OVER 14 GAUGE STEEL
- UL 1709 – 2 HOURS
- ASTM E-119 – 3 HOURS
- NORTHROP GRUMMAN QUALIFICATION PROGRAM
- NAVAL AIRCRAFT CARRIER TESTING
- STRUCTURAL STEEL
- RESULTS ARE COMPLETE WITH TIME SHEET LISTING SHOWING PER MINUTE RESULTS.

Summary
and
Return on Investment

ROI, How Effective?

- **SUPER THERM**….
- DOE (Dept of Energy) study and SONY study shows SUPER THERM provides 13 month up to 2 year return on investment.
- DROP BTU or Watt heat load from 108 watts down to 1 watt per sq.m per hour over the tank surface.

ROI, How Effective?

- **RUST GRIP…**
- Replace sandblasting and 3 coat system.
- Encapsulates Lead Based Paint Without Removal or Exotic Containment.
- Save 60% of total cost and time now used over conventional systems.
- RUST GRIP is 20 years old with testing and field proven.

ROI, How Effective?

RUST GRIP IS VERY COST EFFECTIVE

3- PART SYSTEM STEPS

Sandblast	$2.50/sqft
Primer	$0.30/sqft
Intermediate	$0.30/sqft
Top coat	$0.30/sqft
Labor	$1.50/sqft
Total	**$4.90/sqft**

RUST GRIP SYSTEM

Power Wash	$0.45/sqft
Rust Grip	$0.65/sqft
Labor	$0.50/sqft
Total	**$1.60/sqft**

Federal Aviation Administration Findings

SUPERIOR PRODUCTS INTERNATIONAL II INC USA

Traditional Three-Coat System Versus Rust Grip® One Coat System

500,000 SQ. FT. BRIDGE (OVER WATER) WITH LEAD BASED PAINT		
DESCRIPTION	**THREE-COAT SYSTEM**	RUST GRIP®
Surface Preparation (Including containment and disposal of lead based paint)	SSPC, SP-6 OR SP-10 $8.00 - $10.00/sq.ft.	SSPC, SP-2 OR SP-3 Encapsulation @ $2.00-$3.00/sq.ft.
Coating Cost	Ten Mils DFT @ $0.78/sq.ft.	Four Mils DFT @ $0.75/sq.ft.
Application Costs ($0.25 - $0.40/sq.ft.)	Three Coats @ $0.90/sq.ft.	One Coat @ $0.35/sq.ft.
Traffic Control	$0.30/sq.ft.	$0.20/sq.ft.
Clean-up	$0.10/sq.ft.	$0.10/sq.ft.
TOTAL COST PER SQ.FT.	**$11.08**	$3.90
TOTAL DOLLAR COST	$5,540,000	$1,995,000

500,000 SQ. FT. BRIDGE (NOT OVER WATER) WITH LEAD BASED PAINT		
DESCRIPTION	**THREE-COAT SYSTEM**	RUST GRIP®
Surface Preparation (Including containment and disposal of lead based paint)	SSPC, SP-6 or SP-10 $6.00 - $8.00/sq.ft.	SSPC, SP-2 or SP-3 Encapsulation @ $1.50-$2.50/sq.ft.
Coating Costs	Ten Mils DFT @ $0.78/sq.ft.	Four Mils DFT @ $0.75./sq.ft.
Application Costs ($.25 - $.40/sq.ft.)	Three Coats @ $0.90/sq.ft.	One Coat @ $0.35/sq.ft.
Traffic Control	$0.30/sq.ft.	$0.20/sq.ft.
Clean-up	$0.10/sq.ft.	$0.10/sq.ft.
TOTAL COST PER SQ.FT.	**$9.08**	$3.40
TOTAL DOLLAR COST	$4,540,000	$1,700,000

500,000 SQ. FT. BRIDGE (OVER WATER) WITH NO LEAD BASED PAINT		
DESCRIPTION	**THREE-COAT SYSTEM**	RUST GRIP®
Surface Preparation (Including containment and disposal of lead based paint)	SSPC, SP-6 OR SP-10 $6.00 - $8.00/sq.ft.	SSPC, SP-2 OR SP-3 Encapsulation @ $1.50-$2.50/sq.ft.
Coating Cost	Ten Mils DFT @ $0.78/sq.ft.	Four Mils DFT @ $0.75/sq.ft.
Application Costs ($.25 - $.40/sq.ft.)	Three Coats @ $0.90/sq.ft.	One Coat @ $0.35/sq.ft.
Traffic Control	$0.30/sq.ft.	$0.20/sq.ft.
Clean-up	$0.10/sq.ft.	$0.10/sq.ft.
TOTAL COST PER SQ.FT.	**$9.08**	$3.40
TOTAL DOLLAR COST	$4,540,000	$1,700,000

500,000 SQ. FT. BRIDGE (NOT OVER WATER) WITH NO LEAD BASED PAINT		
DESCRIPTION	**THREE-COAT SYSTEM**	RUST GRIP®
Surface Preparation (Including containment and disposal of lead based paint)	SSPC, SP-6 or SP-10 $5.00 - $7.00/sq.ft.	SSPC, SP-2 or SP-3 Encapsulation @ $1.00-$2.00/sq.ft.
Coating Costs	Ten Mils DFT @ $0.78/sq.ft.	Four Mils DFT @ $0.75./sq.ft.
Application Costs ($.25 - $.40/sq.ft.	Three Coats @ $0.90/sq.ft.	One Coat @ $0.35/sq.ft.
Traffic Control	$0.30/sq.ft.	$0.20/sq.ft.
Clean-up	$0.10/sq.ft.	$0.10/sq.ft.
TOTAL COST PER SQ.FT.	**$8.08**	$2.90
TOTAL DOLLAR COST	$4,030,000	$1,450,000

ROI, How Effective?

- **ONE-COAT PAINT SYSTEM**
- ELIMINATE SANDBLASTING: Reduced Surface Preparation Costs (SSPC-SP2 vs. SSPC-SP10)
- ENCAPSULATE LEAD-BASED PAINT: With Its Ability To Encapsulate Lead-based Paint, existing rust or Asbestos.
- Rust Grip® will dramatically reduce the need to monitor and maintain rigs, pipes or tanks coated with the Traditional Overcoat Method.

ROI, How Effective?

- **REPLACE JACKETING**
- Current Metal Jacket is not air tight and not moisture tight
- Moisture and air blows into the insulation.
- HPC® to insulate over all configurations.
- SUPER THERM® to seal off from air and moisture.

ROI, How Effective?

- **REPLACE JACKETING**
- RUST GRIP® to give a 0.24 permeability to block moisture, air flow, chemicals and salts with a 6780 psi (475 bar) surface tensile strength that covers 100% of the pipe surface, including valves and odd configurations.
- RUST GRIP® acts a monolithic metal jacket with no seams, no air leaks and no moisture absorption.

ROI, How Effective?

- Replace the wrap and jacket system that can cost over $25 per linear foot.
- HPC®, SUPER THERM® and RUST GRIP® system can cost up to or less than $20.68 per linear foot WITHOUT FUTURE CORROSION EFFECT.
- Another option: Keep existing insulation wrap, but remove the metal wrap and replace with a coat of SUPER THERM® to seal and RUST GRIP® to be the monolithic air and moisture tight jacketing that prevents CUI.

ROI, How Effective?

- Easy to apply, then easy to repair and reapply saving millions in time and materials.
- Reduce the replacement schedule for pipes, tanks and equipment.
- This amounts to millions and billions in savings over a single year up to 10 or 15 year life expectancy for the equipment and facilities.

ROI, How Effective?

10-Year Retest – No Loss of Performance

Room Temperature Data after 10 years ①

KOKUYO Co., Ltd. Nagoya Distribution Center (Aichi)

Application Date: July, 1994 Area: 6,000sq.m. (Batten Seam Metal Roof)

When COOL THERM was applied in 1994, the room temperature had decreased by 5 to 7℃. With the coomparison of the same outside air temperature, the coating maintained the same insulation effect in 2004, even 10 years after it was applied. There was no deterioration in coating, either.

The work environment before the application was severe; almost like in sauna with no air-conditioner or windows for breeze. Cool Therm changed it to a very comfortable environment, and we still don't need to install air-conditioners. (comment by Kokuyo manager)

Temperature Result

Measurement Points: 1.8m from the mezzanine floor (center)

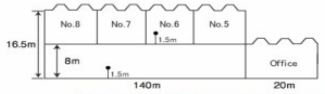
	BEFORE July 10, 1994	AFTER July 30, 1994	After 10 Years August 28, 2004
Outside Temperature	33.5℃	32.5℃	34.3℃
Room Temperature (mezzanine)	39℃	32℃	33.5℃

※ COOL THERM was applied to a total of more than 40,000sq.m. at Kokuyo Co., Ltd. including Shiga Distribution Center, Saga, Fukae, Headquarter Show Room, etc.

Room Temperature Data after 10 years ②

TOSHIBA Logistics Corporation Kyushu Branch (Fukuoka)

Application Date: August 1996 Area: 16,500sq.m. (Metal Roof)



It still maintains the same room temperature after 10 years.

Before the application there were days when the room temperature in the 2nd floor exceeded 37℃ to 40℃ in summer, but after the application, the room temperature was kept around 33℃. We are very satisfied with the improved work environement. (comment by Toshiba Logistics manager)

Temperature Result

Measurement Points: 1.5m from the 2nd floor (center)

	BEFORE August 10, 1994	AFTER August 1, 1996	After 10 Years August 15, 2006
Outside Temperature	35.5℃	36℃	35℃
Room Temperature (2nd floor)	39.2℃	32.9℃	33℃

※ COOL THERM was applied to a total of more than 70,000sq.m. at Toshiba Logistics Corporation. including Ibaraki, Kashiwa, Higashi-Osaka, Chitose, Oita, Himeji, etc.

Superior Coatings for Superior Results

ROI, How Effective?

Reflectivity change with aging of other reflective coatings

Twenty one high-reflectance coatings have been tested based on the JIS Standard as a part of the heat island mitigation effect investigation program by the city of Tokyo. The result of the newly applied product was publicly released before, but the result after it aged has just been released in the "International Workshop on Countermeasures to Urban Heat Island" in a presentation "**Research on Cool Roof in Japan**" by Mr. Yasushi Kondo, PhD of Musashi Institute of Technology. Dr. Kondo is a researcher with authority in the high reflectance coating field.

There are many high-reflectance coatings in the market nowadays, but not enough research has been done on its product quality. Therefore, it is difficult for users to select reliable products.

In the test done by Dr. Kondo, the product No.13 had one of its highest reflectance in the new stage, but only after one and a half years (571 days) the reflectance had decreased by about 30%.

<Product No.13>

	Solar Reflectance (300~2500nm)		Visible Light Reflectance (300~780nm)		Near-Infrared Reflectance (780~2500nm)	
	New	571 days	New	571 days	New	571 days
White	80. 8 →	**54.8**	85. 2 →	**50.4**	82.1	61.4
Black	40. 4 →	30.7	5. 8 →	6.9	71.2	51.5

Test Method: JIS R 3106 (Reflectance Test on Plate Glass)

On the contrary to this test result, Super Therm's reduction in reflectivity (Visible Light) after **15 years** was only **8.1%**. (92.2%- 84.1%=8.1%)
This result proves that Super Therm's durability in reflectivity is by far excellent.

<Super Therm>

- The Solar Reflectance at the new stage was **92.2%** (Building Material Test Center)
- The Solar Reflectance **After 15 years** (K-Teck, Kansas)

	Solar Reflectance (300~2500nm)	Visible Light Reflectance (300~780nm)	Near-Infrared Reflectance (780~2500nm)
White	**73%**	**84.1%**	67.1%

Test Method: JIS R 3106 (Reflectance Test on Plate Glass)

- The reduction of solar reflectance in 3 years tested for the Energy Star Program by EPA was only **0.06%**.

SPI Performance

- RUST GRIP® - Passed 15,000 hours (625 days) of UV, Salt Spray and Weathering cycles without dropping from a perfect 10 score. This equals **30 years** in environment. Single coat at 150 microns (6 mils) dry thickness.
- SUPER THERM® - Lab tested and field tested for 18 years. Losing only 8% of reflective ability and only losing 37 microns (1.5 mils) from 200 micron (8 mils) dry film thickness when first applied.

Superior Coatings for Superior Results

SPI Family of Performance Coatings

Insulation / Fire Control

- Super Therm®
- Epoxotherm
- HPC ® Coating
- HSC ® Coating
- Omega Fire™

Corrosion Control

- Rust Grip®
- Moist Metal Grip
- Lining Kote
- Enamo Grip 5000

Top Coats

- Enamo Grip
- Enamo Grip 3700
- SP Seal Coat
- Aqua Pox

Sealants/Roofing

- Super Base HS
- Total Seal
- SP Liquid Membrane

Stucco System

- iSTUCCO™

Superior Products International II, Inc. is a member of:

- U.S. Green Building Council since 2006.
- Florida Power and Light Company Rebate program – product listed and certified.
- Energy Star Certified and Listed Roofing Product.
- CRRC (Cool Roof Rating Council) certified and listed product.

RUST GRIP

"GREEN" CONTRIBUTION

- "CERTIFIED" – US GREEN BUILDING COUNCIL.
- ENVIRONMENTALLY FRIENDLY – MEETS CALIFORNIA AND FEDERAL VOC REQUIREMENTS FOR A METALIC PIGMENTED CORROSION COATINGS.
- MBDC CRADLE TO CRADLE PRODUCT CERTIFICATION RUST GRIP achieved Gold Certificate for environmentally friendly raw material.
- USDA certified, tested and approved for use in and around food facilities.
- EPA letter of acceptance for containment of bio-hazardous materials.

SUPER THERM

Green Certified and LEED Qualified

- The US Green Building Council (USGBC) has announced that projects seeking certification under the LEED (Leadership in Environmental and Energy Design) Green Building rating System™ can now earn "Innovation in Design" points by using the Cradle to Cradle program for certified building projects with the use of Super Therm.

Super Therm
has passed or merited certifications:

1. Energy Star Program – approved and accepted as an energy partner for saving energy
2. ICC-ES Legacy Report 21-25 – Thermal and Moisture Protection / Building Insulation
3. ECAP Report: Energy Conservation Assistance Program – Department of Energy –United States –Florida Energy Office
4. Cool Roofing Council – Member and Product Rating Compliance
5. State of California Bureau of Home Furnishing & Thermal Insulation
6. State of Florida Energy Rebate Program
7. Reflective Roof Coatings Institute – SPI II, Inc. is a founding and active member
8. And much more on the list of registrations and certifications…

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A Division of DW Pearce Enterprises Ltd (1979)
18523 Fraser Hwy, Surrey, BC, CANADA V3S 8E7
Tel: (604) 573-2212 Fax: (604) 576-7773
eaglecoatings.net info@eaglcoatings.net

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