

## **COLD-PLUS®** Test Document Summary Quotes – by Category

SOLID START™ / True Brand® recognizes that reviewing multi-page test data documents is time consuming, so we provide key Cold-Plus® Test Document quotes by category with brief application info, the Test Document Title and File Name. Complete Test Documents available upon request; contact your Cold-Plus Representative and request the appropriate File Name.

**Note:** In the complete Test Documents, references to Chillin, Green Volt and EnerFreeze refer to the Gold-Plus® formula.

### **Category List** (Each category's Test Document summary information following)

1. **Oil Fouling Removal & Thermal Transfer Improvement**
2. **Costs Reduced for Utilities / Power / Fuel**
3. **Emissions & Environmental Impact Reduced**
4. **Lubricity Increased**
5. **Compressor Run Time Reduced**
6. **Start-Up Amp Draw Reduced**
7. **Pool Boiling Improvement**
8. **Longer Unit Life & Reduced Maintenance Costs**
9. **Application Longevity**
10. **ROI (Return on Investment)**

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#### **1. Oil Fouling Removal & Thermal Transfer Improvement**

- "... 16% reduction in electricity usage after the installation of Cold-Plus! ... By removing the accumulated oil-fouling ... the increased heat transfer and refrigerant flow restored much of the degraded cooling capacity of a 12 year old Trane 20-ton Voyager A/C unit with 100,000 hours of operation.

Cold-Plus is a one-time treatment ... coating of molecules ... ensures that oil-fouling does not recur so that the unit will maintain this level pf performance for the remainder of its useful life.

To regain so much of the lost capacity ... illustrates how the effects of oil fouling accumulate, with this 20-ton Trane unit's performance being degraded by over 50% in a 12-year timeframe. "

- Application; RTU - 20 ton roof-top unit, Data Center Commercial Building
- Test Document Title; *Cold-Plus Case Study*
- File Name; *WCCTP Case Study1 - Cold-Plus.pdf*
- See also; *Copper Tubing Treated with Cold-Plus*
- File Name; *Oil Fouling Removal Photos - Cold-Plus.pdf*

## 2. Costs Reduced for Utilities / Power / Fuel

- “16% reduction in electricity usage after the installation of Cold-Plus! ... annual electrical saving of \$3900 on the 20 ton unit.”
  - Application; RTU - 20 ton roof top unit, Data Center Commercial Building
  - Test Document Title; *Cold-Plus Case Study*
  - File Name; *WCCTP Case Study1 - Cold-Plus.pdf*
- “... an estimated peak demand savings of 86 kW, a 15.1% reduction. This translates to an energy cost savings of \$16,176.”
  - Application; Chiller - 200 ton chiller comprised of four separate 50 ton chillers, Commercial manufacturing building
  - Test Document Title; *Energy Case Study*
  - File Name; *Vision Plastics Chiller Analysis - Cold-Plus.pdf*
- “... 23% greater performance after the Cold Plus has taken affect in the system.”
  - Application; Cooler - 25 ton, 35 degree F cooler, at the Crystal Valley Distribution Facility
  - Test Document Title; *Cooler Performance Evaluation & Analysis - Crystal Valley Foods*
  - File Name: *Crystal Valley Performance Report - Cold-Plus.pdf*
- “Comparing the ‘before’ and ‘after’ treatment data, demonstrates an improvement of nearly 17% less fuel consumed while doing the same amount of work ... the work performed by the refrigeration unit is the amount of btu’s removed from the interior of the refrigerated trailer.”
  - Application; Transport trailer refrigeration - Thermo King
  - Test Document Title; *Transport Refrigeration Evaluation & Analysis*
  - File Name; *Thermo King - Roland CPE Report 2 - Cold-Plus.pdf*
- ... total improvement of 16.96%. [Fuel savings]
  - Application; Transport trailer refrigeration - Thermo King Super II
  - Test Document Title; *Chiller Performance Evaluation & Analysis - Thermo King*
  - File Name; *Thermo King Results.pdf*
- 19.9 kwh savings, “Improvement; #87 - 20%, #87 - 17%, #94 -11%”
  - Application; Chiller – 120 ton, air cooled, screw compressor
  - Test Document Title; *Chiller Performance Evaluation & Analysis*
  - File Name; *Chiller Performance Evaluation and Analysis - McQuay - Cold-Plus.pdf*
- “This is showing a 10-12% reduction in average amps for the comparison period.”
  - Application; DX split systems 3 and 4 - Airport commercial building
  - Test Document Title; *The Effect of Cold-Plus™ on the A/C System in a Commercial Building*
  - File Name; *TC Results - Airport - Cold-Plus.pdf*
- “... Cold-Plus™ reduced the average power consumption in RTU #1 by approximately 13% ...”
  - Application; Roof Top Unit - 17.5 ton “... rated for 210,000 Btuh” - Theater
  - Test Document Title; *Air Conditioning Data Logging Results for Cinema ...Theater*
  - File Name; *Theater 1 – Cold-Plus.pdf*

- “... the average amps after installation was a 10.4% reduction.”
  - Application; DX split unit - commercial building
  - Test Document Title; *Results of Treatment of the Facilities Maintenance Office ...*
  - File Name; *Jupiter Island Club Analysis - Cold-Plus.pdf*
  
- “... a system kWh savings of about 14%.”
  - Application; Supermarket display cases and coolers - “Rack C consists of six compressors, connected to a condensing unit on the roof of the facility. ... The case temperatures range from 20 to 40 degrees [F] and contain dairy, meat, deli, and produce.”
  - Test Document Title; *Hy-Vee Store #1054* (Note: Enerfreeze is a private label name for Cold-Plus)
  - File Name; *Hy-Vee Supermarket - Cold-Plus.pdf*
  
- “... a 22 percent increase in efficiency at the end of 4 weeks on Unit 1. Unit 2 shows similar results.”
  - Application; “... two separate cold plate milk tanks each supported by two 10 ton compressors. ... milk cooled from 85 degrees to 37 degrees [F] on a per day basis.”
  - Test Document Title; *Dairy Cold-Plus Test Result*
  - File Name; *Dairy Test Results - Cold-Plus.pdf*
  
- “Efficiency increase – 12%”
  - Application; Transport trailer refrigeration - diesel powered Class 8 vehicle
  - Test Document Title; *USA TRANSPORT REFRIGERATION MODEL*
  - File Name; *Transport Refrigeration Model - USA - Cold-Plus.pdf*
  
- “Reduction - 10.1%” - average KW reduction
  - Application: DX split units - 4 ton and 3.5 ton - 12.5 ton system, commercial building
  - Test Document Title: *Study Documenting the Effect of Cold-Plus™ on the A/C System in Fort Pierce Utilities Authority J.D. Todd Gas Operations Building*
  - File Name: *FPUA Todd Center - Cold-Plus.pdf*
  
- 15% savings
  - Application; Split system - 12.5 ton, gymnasium
  - Test Document Title; *Minsky Gym Port Saint Lucie, FL Test Results and Evaluation of Refrigeration Treatment Cold-Plus™*
  - File Name: *Minsky Gym - Cold-Plus.pdf*
  
- “Efficiency Increase KW/Ton - 26%”
  - Application; Chiller – 60 ton Miami Seaquarium, Whale Tank Cooler
  - Test Document Title; *Seaquarium Chiller Test Results*
  - File Name; *Chiller Test Results - Seaquarium - Cold-Plus.pdf*
  
- “... drop in amp draw of between 18 and 22% for comparable operating conditions after the installation of Cold-Plus ...”
  - Application; “Unit number 306 at the Washington News building in Alexandria, Virginia.”
  - Test Document Title; *Washington News Test Results*
  - File Name; *Washington News Test Results - Cold-Plus.pdf*

- “... the average amperage for both compressors was reduced by 16.7%.”
  - Application; 10 ton two compressor system at Fire Station 10
  - Test Document Title; *Fire Station 10*
  - File Name; *Fire Station 10 Analysis - Cold-Plus.pdf*
  
- 11.5% total electric bill reductions; 45 customers with Cold-Plus installed for 3 or more years to determine the continued savings from total electric bill, not just the A/C cost. Proof of Longevity test required by Con-Edison New York for consumer rebates. The bills used were May through October and averaged 11.5% total electric bill reductions.
  - Application; Electric bills from 45 customers with Cold-Plus installed for 3 or more years.
  - Test Document Title; *Scatter plot July 8 - Cold-Plus*
  - File Name; *Scatter plot July 8 - Cold-Plus.pdf*
  
- “With an overall efficiency increase of 21.5% the results of this test would fall into the high range of efficiency increases in prior testing.”
  - Application; 20 ton air conditioner, Stericraft manufacturing facility.
  - Test Document Title: *Stericraft - Cold-Plus Refrigerant Enhancer Proof of Performance Test and ROI.*
  - File Name: *Stericraft Manufacturing Facility Proof of Performance Test and ROI - Cold-Plus.pdf*

### 3. Emissions & Environmental Impact Reduced

- ... the NORTHWRITE Award winning Technology Energy Expert software was selected. This Energy Expert technology uses the fusion engine developed by US DOE.
  - CO<sub>2</sub> [Carbon Dioxide] emissions reduction: 614 Lbs. (8%).
  - NO<sub>x</sub> [Nitrogen Oxide] emissions reduction: 1 Lbs. (8%).
  - SO<sub>x</sub> [Sulfur Oxide] emissions reduction: 2 Lbs. (10%).
  - Application; Restaurant HVAC unit utilizing Technology Energy Expert software developed by the US DOE (Department of Energy) to track daily energy cost/saving vs. baseline.
  - Test Document Title; *Longhorn Cold-Plus™ Test Result*
  - File Name; *Longhorn Restaurant Report - Cold-Plus.pdf*

### 4. Lubricity Increased

- “... the treatment is found to enhance ... wear lubricity to compressor operations.”
  - Application; Chillers - 200 ton comprised of four separate 50 ton chillers connected in parallel (16 compressors total in the system), Commercial manufacturing building
  - Test Document Title; *Energy Case Study*
  - File Name; *Vision Plastics Chiller Analysis - Cold-Plus.pdf*

### 5. Compressor Run Time Reduced

- “... a 10% reduction in compressor run time ...”
  - Application; DX split system - 3.5 ton Trane unit, Jupiter Island Club commercial building
  - Test Document Title; *Results of Treatment of the Facilities Maintenance Office ...*
  - File Name; *Jupiter Island Club Analysis - Cold-Plus.pdf*
  
- Compressor On % Difference; 11.13
  - Application; A/C systems for shopping mall commercial building
  - Test Document Title: (no title)

- File Name; *TC Results - Mall - Cold-Plus.pdf*
- “... 19.96% decrease in compressor running time ...”
  - Application; DX split system, 3.5 ton Trane unit, residential
  - Test Document Title; *Bob Bolding Cold-Plus™ Test Results*
  - File Name; *Residential - 3.5 ton Trane - Cold-Plus.pdf*
- “...compressor run-time to achieve the set peak performance system temperatures was reduced by 40.11%.”
  - Application; Ice maker
  - Test Document Title: *Proof of Performance Test*
  - File Name; *Weatherly Bellevue Club POP Test - Cold-Plus.pdf*
- “... Before Cold-Plus, both compressors on the 30 ton unit had to run to remove the constant heat load from the UPS room and unit’s controller could only shut off the 2<sup>nd</sup> compressor on the coolest nights between 4 and 7 am ... Whereas after the Cold-Plus application ... the second compressor shuts off for 8-10 minutes periods each hour throughout the night since only a single compressor is needed on the 30-ton unit, because of the INCREASED CAPACITY of the 20-ton unit that was treated with Cold-Plus.”
  - Application; RTU - 20 ton roof-top unit, commercial Building
  - Test Document Title; *Cold-Plus Case Study*
  - File Name; *WCCTP Case Study1 - Cold-Plus.pdf*

## 6. Start-Up Amp Spike Reduced

- “What the results show is a virtual elimination of the amp spike during startup. This is important for two reasons:
  1. Most of the wear in a compressor takes place at start-up and is spike related.
  2. If the unit is on a demand meter elimination of the spike can help prevent exceeding the demand setting and thus triggering a higher rate.”
    - Application; DX split system - Trane 208 volt twin compressor unit
    - Test Document Title; *South Florida Municipality - Gymnasium*
    - File Name; *South Florida Municipality - Gym - Cold-Plus.pdf*

## 7. Pool Boiling Improvement

- “... the treatment is found to enhance pool boiling attributes of refrigerant ...”
  - Application; Chiller - 200 ton chiller comprised of four separate 50 ton chillers connected in parallel (16 compressors total in the system), commercial manufacturing building.
  - Test Document Title; *Energy Case Study*
  - File Name; *Vision Plastics Chiller Analysis - Cold-Plus.pdf*

## 8. Longer Unit Life & Reduced Maintenance Costs

- “Qualitatively, it has been observed that the reduced load on the unit after treatment with Cold-Plus also results in longer operational lifespan and fewer service calls.”
  - Application; RTU - 30 ton roof-top unit, commercial building
  - Test Document Title; *Cold-Plus Case Study*
  - File Name; *WCCTP Case Study1 - Cold-Plus.pdf*
- “... 2 years extended compressor life ...”
  - Application; DX split system - residential 3.5 ton unit

- Test Document Title; *Bob Bolding Cold-Plus™ Test Results*
- File Name; *Residential - 3.5 ton Trane - Cold-Plus.pdf*

### 9. Application Longevity

- “The study clearly shows ... the decreased KWH for each of these units .... Because of the polymer this should continue for the life of the unit.”
  - Application; RTU - 20 ton roof-top unit, commercial building
  - Test Document Title; *Cold-Plus™ Proof of Longevity*
  - File Name; *Longevity - Cold-Plus.pdf*

### 10. ROI (Return on Investment)

- “The return on investment for The Puerto Rico Longhorn restaurant based on the 8% reduction in consumption and the Cold-Plus™ injection cost is less than 7 months.”
  - Application; Restaurant HVAC system utilizing Technology Energy Expert software developed by the US DOE (Department of Energy) to tracks daily energy cost/saving vs. baseline.
  - Test Document Title; *Longhorn Cold-Plus™ Test Result*
  - File Name; *Longhorn Restaurant Report - Cold-Plus.pdf*
- “... the ROI is certainly less than 12 months and probably closer to 8 months.”
  - Application; DX split systems - Trane units 3 and 4, Airport commercial building
  - Test Document Title; *The Effect of Cold-Plus™ on the A/C System in a Commercial Building*
  - File Name; *TC Results - Airport - Cold-Plus.pdf*
- “ROI – 2.5 months”
  - Application; Transport trailer refrigeration - diesel powered Class 8 vehicle
  - Test Document Title; *USA TRANSPORT REFRIGERATION MODEL*
  - File Name; *Transport Refrigeration Model - USA - Cold-Plus.pdf*