

Evaporative Pre-Cooling for Commercial AC Systems

The Award Winning **PreChill™ System** uses the power of water to lower the temperature of air cooling the condensers. The PreChill™ misting nozzles spray a fine mist into the air around the condensers only when the condenser fans are running. This cools the air 15° to 25° Fahrenheit.



Significant Benefits

- ✓ Saves 20% to 40% on Your Air Conditioning Power Bill
- ✓ Extends the Life of Your Air Conditioning Equipment
- ✓ Keeps Your Condenser Coils Free Of Contaminants
- ✓ Increases the Cooling Capacity of Your Air Conditioner
- ✓ Provides Rapid Payback from Power Savings

Cooling Performance (Degrees Cooling)

Relative Humidity (%)	Ambient Air Temperature (F)								
	75	80	85	90	95	100	105	110	115
5	20.7	22.6	24.5	26.4	28.3	30.4	32.4	34.4	36.5
10	19.3	21.0	22.7	24.4	26.1	27.9	29.7	31.5	33.3
15	17.9	19.4	20.9	22.5	24.0	25.6	27.2	28.7	30.3
20	16.6	17.9	19.3	20.7	22.1	23.4	24.8	26.2	27.5
25	15.3	16.5	17.7	19.0	20.2	21.4	22.6	23.8	25.0
30	14.1	15.2	16.2	17.3	18.4	19.5	20.5	21.6	22.6
35	12.9	13.8	14.8	15.8	16.7	17.7	18.6	19.5	20.4
40	11.7	12.6	13.4	14.3	15.1	15.9	16.7	17.5	18.3
45	10.6	11.3	12.1	12.8	13.6	14.3	15.0	15.7	
50	9.5	10.1	10.8	11.4	12.1	12.7	13.3	13.9	
55	8.4	9.0	9.5	10.1	10.7	11.2	11.7		
60	7.4	7.9	8.3	8.8	9.3	9.8	10.2		
65	6.4	6.8	7.2	7.6	8.0	8.4			
70	5.4	5.7	6.1	6.4	6.7	7.0			
75	4.4	4.7	5.0	5.2	5.5	5.8			
80	3.5	3.7	3.9	4.1	4.3				
85	2.6	2.7	2.9	3.1	3.2				
90	1.7	1.8	1.9	2.0					



University of Texas A&M Study found that the efficiency of air conditioners is improved by 1.4 percent for every degree that the ambient air temperature can be reduced.

The Difference Maker



The Scale Shield™ filter screen is a key component of the **PreChill™ System**. One major problem with using water mist to cool air conditioning equipment is that the water contains minerals, which soon form deposits on the condenser coils. Instead of attempting the complicated and expensive task of removing the minerals from the water, the **PreChill™ System** keeps the water away from the AC equipment by using a special 3-dimensional fiberglass screen. The Scale Shield™ filter screen traps the atomized water droplets before they can reach the condenser coils. It also blocks any dirt, debris and other contaminants that would normally collect in the condenser coils and adversely affect the AC equipment's cooling performance and lead to costly cleaning expenses. This can be especially beneficial for restaurants, where grease exhaust vents are often located near the air conditioner equipment.

Enthalpy Controls



The **PreChill™ System** deploys approximately one nozzle per ton of AC capacity and each nozzle uses between 1/3 and 1/2 gallons of water per hour. The water is controlled by a special solenoid valve and thermostat that only turn on when the AC is actually running. This insures optimum efficiency, as no water is wasted. The amount of water used in the **PreChill™ System** is much less than the water needed to produce the power that is saved! In addition to saving water, the **PreChill™ System** is truly a "Green" innovation that significantly reduces carbon emissions and lowers the demand for electricity during peak summer hours.



Start Saving Money Now ...

Electricity rates continually rising and are projected to more than double in the very near future. It is a great time to take a look at your HVAC System since it is the largest single energy consumer in almost all buildings. For many businesses, heating and cooling can account for 20% to 50% of their annual energy usage.

The PreChill™ System performs year after year and pays for itself in a few months!

INCREASES AIR CONDITIONER EFFICIENCY

Provides Cost Savings and Extends Equipment Life

The **PreChill™ System** is a revolutionary new product that uses the power of water to cool the air around the Air Conditioning System's condensing units. This allows the Air Conditioner to transfer more heat, more quickly. This psychrometric based HVAC retrofit device will increase your Cooling System's efficiency while reducing the actual run time of the Air Conditioner's internal components. This reduces the Air Conditioning expense by as much as 35%.

The **PreChill™ System** uses an innovative low voltage control system with specially designed mister nozzles. The nozzles are customized for the existing water pressure and evenly spaced to provide maximum cooling. A special three-dimensional Scale Shield™ filter screen is utilized to protect the condenser coils by trapping moisture, dirt, debris and other contaminants. This Scale Shield™ insures the condenser coils remain clean and in pristine condition for optimal heat exchange efficiency.

Why Evaporative Pre-Cooling of Large Air-Cooled HVAC Equipment Provides the Solution

The electricity used by air-cooled HVAC Units is directly related to the outside air temperature. The hotter it is, the harder the cooling equipment has to work and the more energy it uses. With large air-cooled HVAC equipment, there is 1.3% to 1.5% electrical demand and energy reduction for each degree Fahrenheit the temperature is reduced. Accordingly, any operating air conditioning equipment will use from 25% to 35% less energy at 75° than it does at 95°.

The **PreChill™ System** harnesses the cooling power of evaporation to reduce energy and demand costs for large air-cooled systems. As the air is cooled, the cooler air allows the compressor to work more easily and it uses less power. The following diagram shows how this elegant but simple technology saves energy by making the condensing unit "think" it is considerably cooler outside than it actually is:

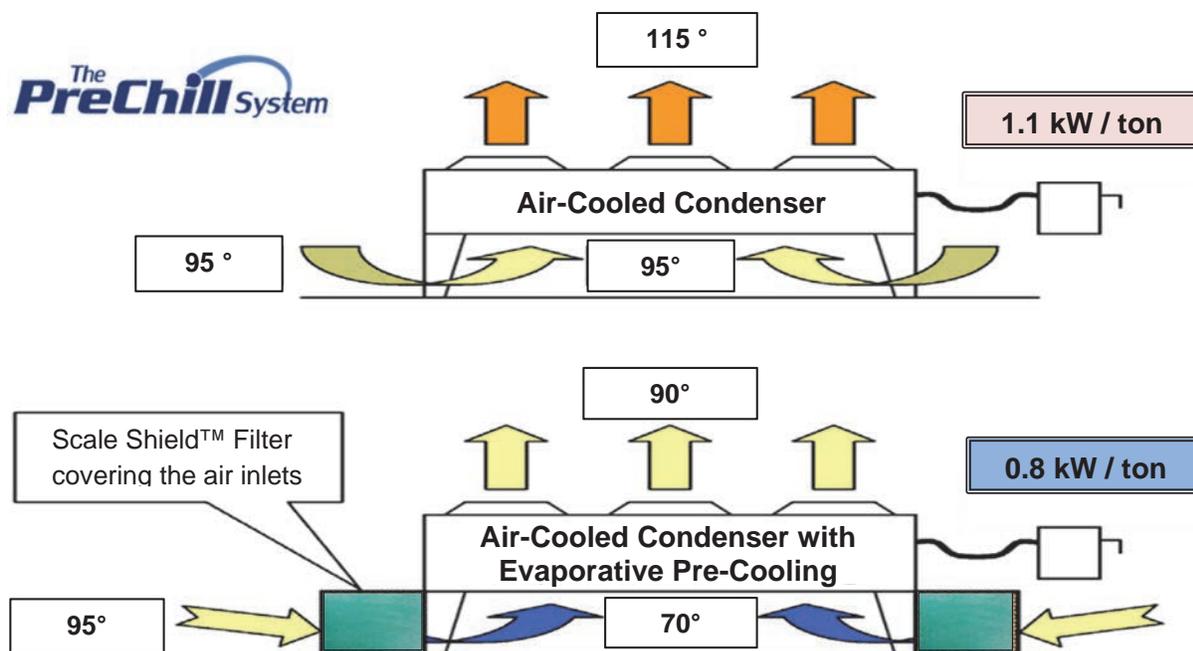


Illustration of Energy Savings and Demand Reduction Using Evaporative Pre-Cooling

The Difference Maker



The Scale Shield™ filter screen is a key component of the **PreChill™ System**. One major problem with using water mist to cool air conditioning equipment is that the water contains minerals, which soon form deposits on the condenser coils. Instead of attempting the complicated and expensive task of removing the minerals from the water, the **PreChill™ System** keeps the water away from the AC equipment by using a special 3-dimensional fiberglass screen. The Scale Shield™ filter screen traps the atomized water droplets before they can reach the condenser coils. It also blocks any dirt, debris and other contaminants that would normally collect in the condenser coils and adversely affect the AC equipment's cooling performance and lead to costly cleaning expenses. This can be especially beneficial for restaurants, where grease exhaust vents are often located near the air conditioner equipment.

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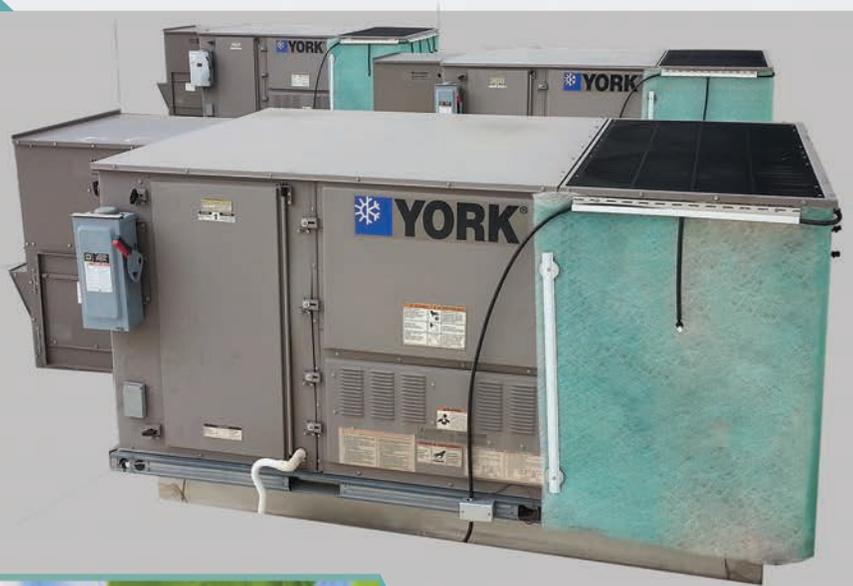


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The PreChill™ System performs year after year and pays for itself in a few months!

Evaporative Pre-Cooling for Commercial AC Systems



Save Energy
Save Money
Save the Earth



An Efficient
Eco Friendly
Green Solution

Significant Benefits

Saves 20% to 40% on your Annual Cooling Cost and is Durable, designed to last for years while requiring only minimal maintenance.

- ✓ Keeps Condenser Coils Free of Contaminants
- ✓ Provides Increased AC Cooling Capacity
- ✓ Extends Equipment Life

ABSOLUTELY SAFE

The Federal Trade Commission's Magnusson-Moss Warranty Act (P.L. 93-637) states that a manufacturer cannot void or disavow a warranty due to an added-on, second-party product unless it is proven that the second-party product does, in fact, damage equipment and notifies the second-party manufacturer and its customers.

Since its inception in 2006, having installed this product on most all major HVAC manufacturer's equipment, neither Cooling Concepts, Inc., nor any of its customers, has ever received any such notice or letter regarding issues of a condenser being negatively affected by the implementation and use of the PreChill™ Pre-Cooling Solution.

Incentives Available for
Qualifying Equipment

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🌐 www.prechillusa.com

📍 South Jordan, Utah 84095

EXPECT THE FOLLOWING BENEFITS

When Installing a PreChill™ System

Saving Money

As power costs keep going up, the **PreChill™ System** allows you to lower your air conditioning costs by more than 25%, providing immediate savings.

Saving Energy Consumption

The time of the year in which it is most difficult for power companies to provide enough electricity is summer. The **PreChill™ System** lowers the need for power during the times of peak demand.

Very Low Electrical Use

The solenoid water valve only activates when the AC thermostat activates the 24V micro-switch. The **PreChill™ System** does not require high pressure pumps or chemical injection pumps to operate.

Saving Water

The **PreChill™ System** uses approximately 2 liters of water per hour per ton of AC, which saves approximately, 1 kWh. The power companies use 95 liters of water to produce 1 kWh of electricity. The **PreChill™ System** saves approximately 40 times the amount of water it uses.

Reduced Carbon Footprint

By reducing AC electrical demand by more than 25%, the **PreChill™ System** also reduces, by an equal amount, the carbon emissions produced at the power plant.

Worry Free Low Maintenance

All the components in the **PreChill™ System** are durable and designed to last year after year without any problems. The only regular maintenance required is to shut off the water in the winter and to replace the Scale Shield™ Screens. The Scale Shield™ filter screens prevent any dirt, debris or hard water deposits from reaching the condenser coils, eliminating any need for regular cleaning of the coils and preserving maximum heat exchange efficiency.

Increased Cooling Capacity of Air Conditioning Equipment

By lowering the temperature of the air that is cooling the AC condenser, the heat exchange is greatly improved. The resulting larger temperature differential allows more heat per hour to be transferred from the building. The cooling capacity of the AC equipment can be increased by as much as 15%.

Extend the Life of Air Conditioning Equipment

The **PreChill™ System** enables the AC equipment to run with a much lower head pressure and for a shorter period of time. This extends the life of AC equipment by 10% or more.

Rapid Return-on-Investment

The **PreChill™ System** is inexpensive to install and maintain and almost always pays for itself in one or two seasons from reduced power costs. Other money saving benefits include extending the life of your cooling equipment and cost savings from never having to clean condenser coils.



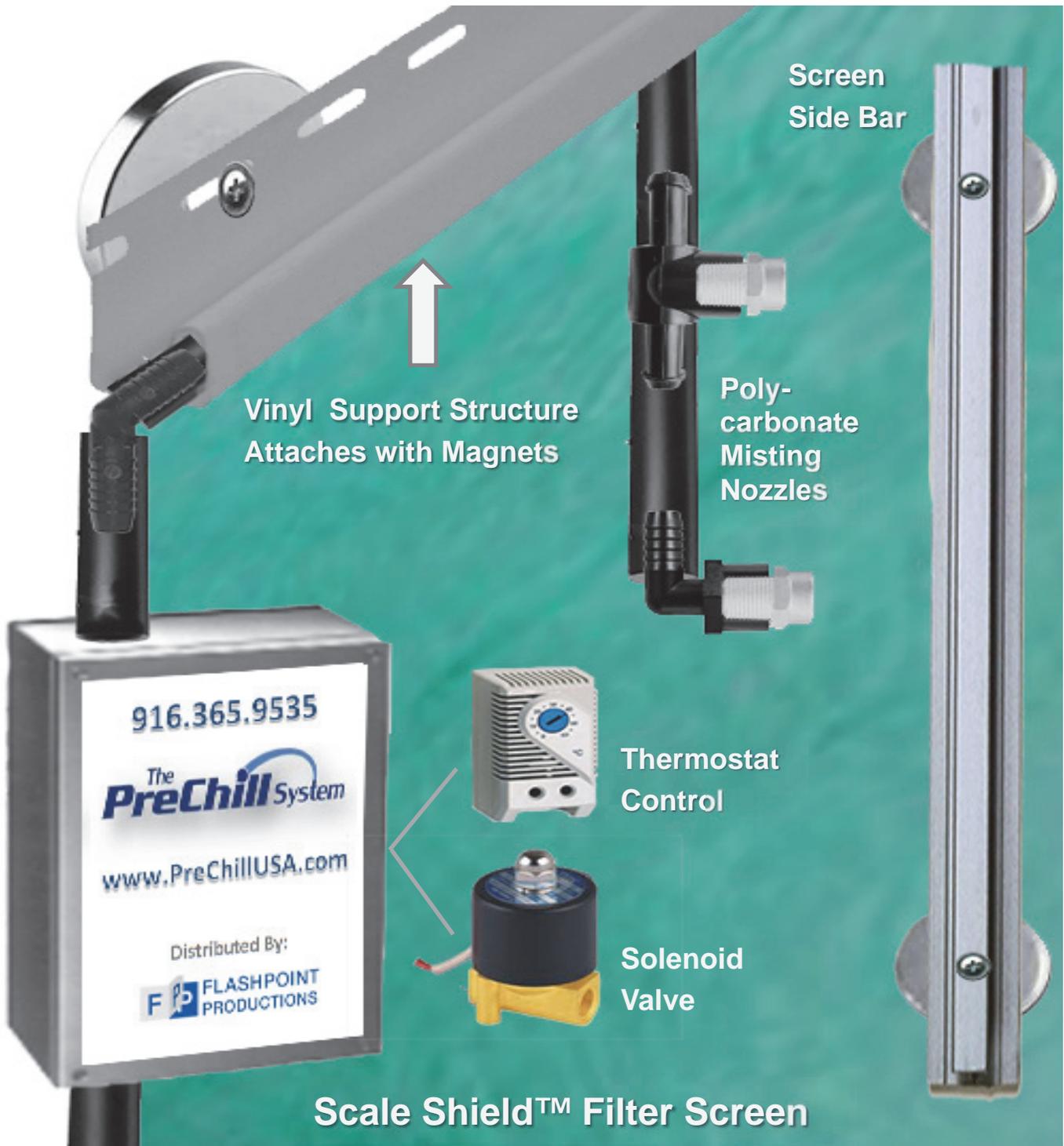
For More Information
(916) 365-9535
www.prechillusa.com

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EZ-CHANGE

Misting System Components



System Specifications

The PreChill™ EZ-CHANGE misting system is designed to increase the efficiency of air cooled condensers by lowering the ambient temperature of the air around the condenser and is designed for optimum convenience, performance and protection of the HVAC equipment.

The PreChill™ EZ-CHANGE System consists of the following components:

Water Supply and Misting Nozzles

A 200 mesh water pre-filter is connected to a water source with a normal hose pressure of 35 to 65 p.s.i. The **PreChill™ System** water supply line is a 1/4" UV resistant, reinforced rubber hose with a working pressure of 200 p.s.i. For larger AC units, 3/8" copper tubing can be used to provide additional water volume.

The **PreChill™ System** misting nozzles are a polycarbonate composite and include a built in filter screen. The composition of the nozzles resists clogging or scale deposition and the built in 200 mesh filter prevents particulates from interfering with low pressure misting.

Scale Shield

The PreChill Scale Shield™ is a three-dimensional fiberglass filter screen designed to prevent water droplets, dirt and debris from passing through, while not restricting the air flow to the condenser coils. The Scale Shield™ filter screen provides a pressure drop of less than 0.05 inches of water at a face velocity of 500 cu. ft./min. The fiberglass micro-fibers also provide a surface for microscopic water droplets to accumulate long enough to more completely evaporate. The arrangement and number of misting nozzles combined with the unique properties of the Scale Shield™ filter screen provide a system cooling efficiency of more than 85%.

Support Structure

The Misting Nozzles and Scale Shield™ are mounted and held in place with a magnetic framework for ease of installation and changing the Scale Shield™ as needed. The frame consists of UV resistant plastic components attached to the AC condenser unit with 6 to 10 magnets. Each has a pull of 50 to 100 lbs. More magnets can be added to larger condenser units to protect the Scale Shield from wind speeds up to 90 mph.

Control System

The **PreChill™ System** is thermostatically controlled to operate only during optimum temperature and humidity conditions. A 24V thermostat circuit controls an electronic solenoid water valve. This control turns on the water mist only when the AC condenser is running. The **PreChill™ System** has an additional control which only allows the water mist to be activated when the temperature and humidity levels will provide effective cooling. This additional enthalpy control prevents water waste or over cooling of the AC compressor.



For More Information
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Frequently Asked Questions



1. How will the PreChill™ System reduce my energy costs?

The PreChill EZ-CHANGE™ misting system is designed to increase the effectiveness of the air cooled condensers by lowering the ambient temperature of the air surrounding the air conditioner. It is simple science, the efficiency is improved by 1.4% for every degree that the air temperature can be reduced.

2. What is the impact on my AC Equipment?

The PreChill EZ-CHANGE™ is mounted and held in place using magnets for ease of installation allowing for access and serviceability. The Scale Shield protects the condenser coils keeping them free of moisture, dirt, debris and other contaminants. It increases the cooling capacity of your air conditioner while extending the life of your AC Equipment by 10%.

3. How much water is used?

The PreChill EZ-CHANGE™ uses between 1/3 and ½ gallons of water per hour. The water is controlled by a valve and thermostat that only activates when the temperature is above 75 degrees and the AC is actually running, assuring optimum efficiency and no wasted water. The amount of water used is much less than the water needed to produce the power that it saves!

4. What makes the PreChill™ System different from other misting solutions?

The Scale Shield™ filter screen is the difference maker. One major problem with using water mist to cool air conditioning equipment has been that the water contains minerals, which soon form deposits on the condenser coils. Instead of attempting the complicated and expensive task of removing the minerals from the water, the PreChill™ System keeps all moisture away from the AC Equipment by using a specially treated 3-dimensional mono-filament fiberglass filter screen to trap any of the atomized water droplets that may remain and did not evaporate before they can reach the condenser coils.

5. How much money can I expect to save?

In the Northern Utah Climate Zone you should expect to reduce your cooling costs by 25% - 30%. A conservative estimate of \$35/per ton of AC can be used to estimate the potential annual savings.

6. What are the maintenance requirements?

All the components are durable and designed to last year-after-year without any problems. The only regular maintenance required is to shut off the water in the winter and the occasional replacement of the Scale Shield™ filter screens, which is provided through our Screen Maintenance Service.

7. Are there any prerequisites prior to installation?

Yes, there is one. We require a water source be available and located near one of the AC units. If not present, you will need to arrange for a plumber to install a standard faucet prior to the install date.

8. Are there incentives available to help pay for the system?

*Rocky Mountain Power is currently offering an incentive as part of their **wattsmart** Business Program. If you have another power provider, you will need to check with them to see if any incentives are available.*

9. Does the PreChill™ System work on residential AC Units?

Yes, you can expect the same percentage of energy reduction, however the labor costs involved in screen maintenance can erode the actual savings. The tipping point where the deployment of the PreChill™ System makes financial sense is at a 7-1/2 ton unit average.



Testimonials

In the spring of 2011, our 25,000 sq. ft. office/manufacturing facility in Las Vegas was in need of additional air conditioning to maintain a constant temperature for an upcoming project that summer. The building was being cooled by five 25 ton units which were unable to provide enough cooling in July and August. HVAC consultants recommended adding an additional 20 tons of cooling. Due to the cost and ducting complications of adding another AC unit, we installed a PreChill misting system on our current HVAC units to see if we could increase the cooling capacity. If it didn't work, we could add more air conditioning before it was needed in mid-July. By the middle of June it was apparent that our problem was solved. Not only did we have more than enough cooling capacity, but our power usage was at least 25% less. Not only did we avoid the expense of additional air conditioning, we also saved enough on our power bill that summer to more than pay for the cost of the PreChill equipment. Thank you, PreChill.

Ron B., President
Braxton Technologies

D N Property Management Group manages office and residential facilities in the Southern Utah area. As a property management company, one of our challenges is controlling utility costs, especially air conditioning expense in the summer. With this in mind, we installed a PreChill misting system on one of our office buildings in Salt Lake City in the spring of 2012. We carefully monitored the power usage as well as the demand charge and were pleased to find that our air conditioning power costs were reduced by 28% from the previous year and almost 30% from the previous 3 year average. This resulted in a return on investment from the PreChill System of less than one year! We have since installed the PreChill System on all of our properties with air cooled condensers with similar results.

Dave N., Partner
DN Property Management Group

One of my neighbors installed a PreChill misting system on his 5 ton residential air conditioner and was bragging about how much money it was saving him each month. So I decided to look into installing a PreChill System on my home air conditioner and learned that the PreChill was designed predominantly for commercial use. I had them come to the restaurant that I owned and give me a quote. The PreChill was installed that week and has saved me more than \$18,000 over the last 2 years. An additional benefit besides the lower power consumption is that the AC condenser coils never need cleaning with the PreChill System in place. I am so glad my neighbor was bragging about his AC.

Stan F.
Phoenix, AZ