ThermCool - a Hybrid Cooling Solution

ThermCool™ is a leading provider of cost and energy saving solutions for air-cooled HVAC systems. ThermCool's Peak Reduction Technology™ reduces an air-cooled HVAC system's energy consumption by upwards of 30% and peak usage by upwards of 50%, both extending the life of the HVAC system and significantly reducing its carbon footprint.

The main principle behind ThermCool's Peak Reduction Technology™ is its use of Hybrid Cooling, which combines air and evaporative condensing to offer the cost advantages of conventional air-cooled systems with the energy efficiency of evaporative condensing.

At the heart of ThermCool's Peak Reduction Technology™ is its Demand Buster™ evaporative fluid cooler retrofit. The Demand Buster™ retrofit solution converts air-cooled HVAC systems to Hybrid Cooling, significantly increasing the system's efficiency and extending its life.

Customized Hybrid Cooling Solutions

ThermCool offers custom Hybrid Cooling solutions designed to meet the specific needs of each customer regardless of the age and size of their air-cooled HVAC system. By retrofitting their existing system, customers can expect an annual energy savings upwards of 30% and peak savings upwards of 50%. Also, customers can postpone the costly expense of purchasing a new HVAC system, making ThermCool's Demand Buster™ retrofit a cost effective alternative to full system replacement.

ThermCool currently offers two Hybrid Cooling solutions:

Demand Buster™ Retrofit + Compressor Downsize – provides the maximum energy savings and extension of an HVAC system's life. By replacing the existing compressor with a new, smaller more efficient one, this hybrid cooling solution offers the best deal in energy savings and postponement of purchasing a new HVAC system.

Demand Buster™ Retrofit to Existing HVAC system– increases the efficiency of existing HVAC systems by as much as 30%, reducing power consumption and extending the life of the compressor. Regardless of the HVAC system's age, this solution offers significant savings, with payback periods of 2 to 4 years.

Demand Buster's™ Innovative Design

ThermCool's engineers have refined the design of the Demand Buster™ in order to maximize its performance and to minimize its cost of operation and maintenance. Its large copper tube bundle and specially designed media maximize the efficiency gains provided by the Demand Buster™. Additionally, the innovative design of the Demand Buster™, features elements that eliminate organic growth and scaling, provide freeze protection, and reduce water consumption.

Here is a more detailed description of the Demand Buster's™ features, and how they make it the industry leading solution for increasing the efficiency of air-cooled HVAC systems:

Tube Bundle + Media in One - The most energy efficient feature of Demand Buster™ fluid cooler is the all copper tube bundle mated with a full evaporative media deck. No other manufacturer in the industry utilizes both a copper bare tube bundle and media in one machine. The media provides full phase change capacity added to the evaporative surface area of the generous tube bundle. The combination results in significant fan and pump energy savings.

No Water Treatment Required - The Demand Buster's design significantly reduces its required maintenance relative to other cooling towers. In many cases the Demand Buster's water needs can be met through recovering condensate water. Because this is purified water, it eliminates the build up of minerals within the tower and the need to add chemicals. In the event that makeup water must be used, the cooler water temperatures produced by the media dramatically reduce the potential for scaling. Furthermore, the Demand Buster™ is equipped with an auto purge/clean function which enhances the towers ability to minimize scaling without treating the water with chemicals. Finally, the design eliminates the need for algaecides through the use of its special light blocking feature that prevents sunlight from reaching the wet sections of the system.

Efficient Use of Water – The Demand Buster™ conserves water by recycling the condensate from the existing HVAC system. By reclaiming water that is typically wasted, the Demand Buster™ minimizes its need for makeup water. Additionally, utilizing the condensate minimizes the need to purge the system to prevent particle build-up.

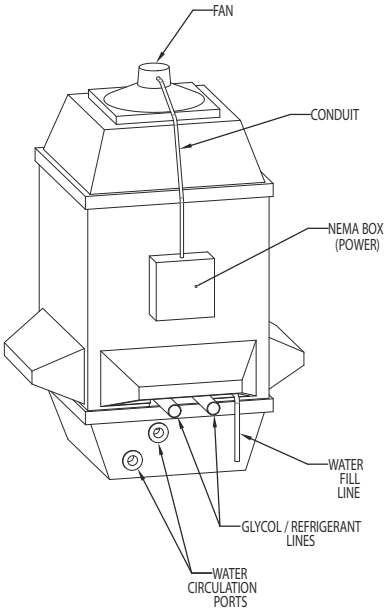
Modulating Fans -The Demand Buster's design can include fans with electronically modulated motors (ECMs). These fans vary their speed to optimize their operating efficiency and the evaporation of water to service the cooling load; minimizing the Demand Buster's consumption of both water and electricity

Freeze Protection -The sloped water basin is designed to freeze without damage to the tower, thus eliminating the need for an electric basin heater and the task of draining the basin before the winter season.

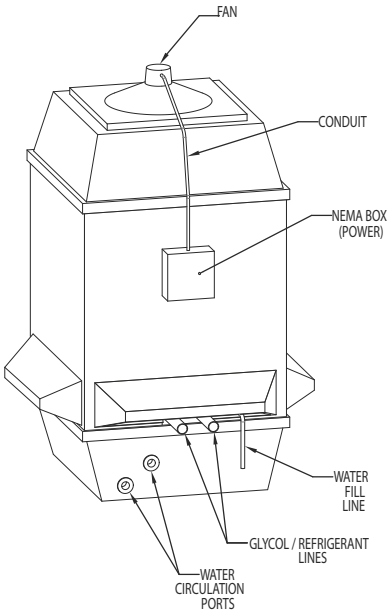
Low Ambient Controls – The Demand Buster™ comes fully equipped with a programmable low ambient control that turns off the Demand Buster™ when ambient conditions are not favorable to run the Demand Buster™.

ThermCool Demand Buster™

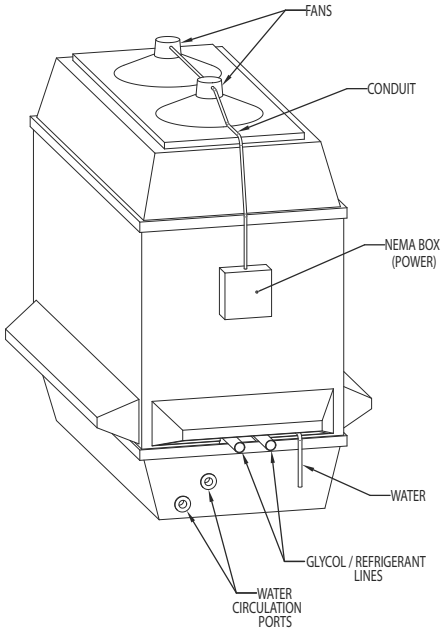
10 Ton



15 Ton



25 Ton



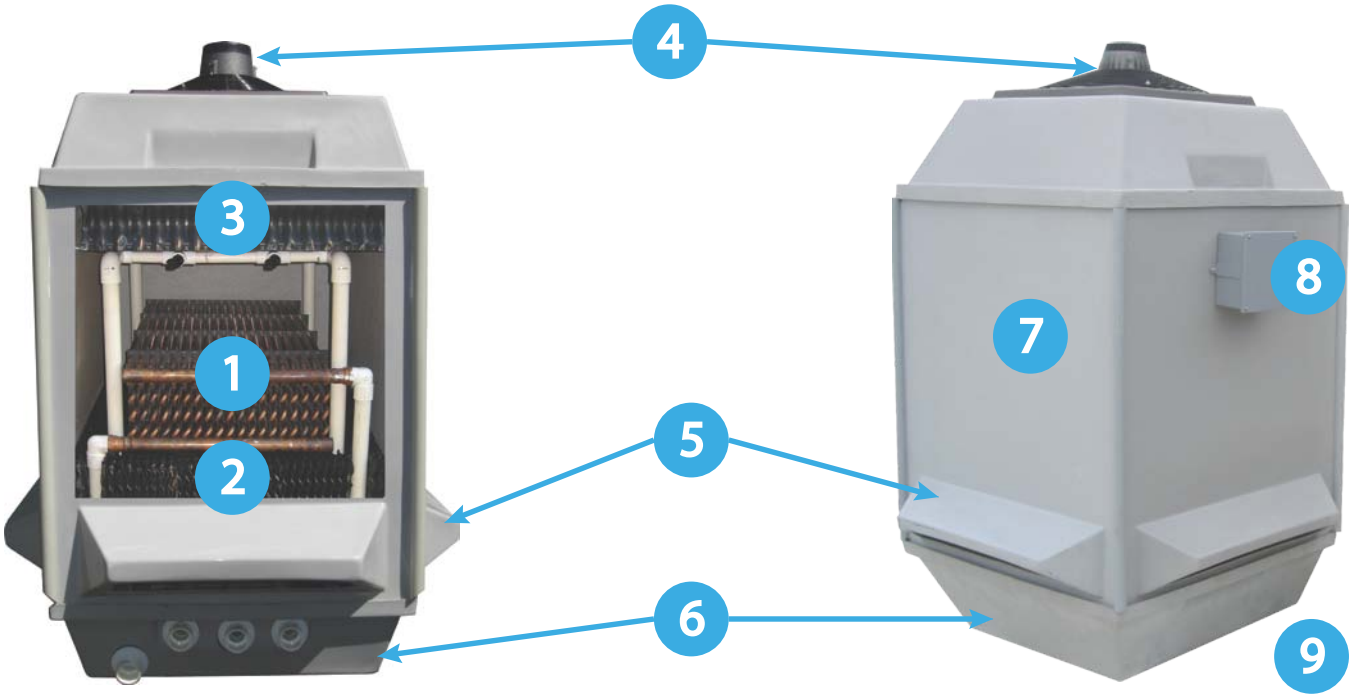
Materials of Construction

Body	Fiber Glass / Aluminum
Heat Exchanger	Copper
Media	PVC Fill
Piping	PVC
Fan Motor	Epoxy Coated Cast Aluminum
Fan Blades	Plastic

Dimensions and Fan Information

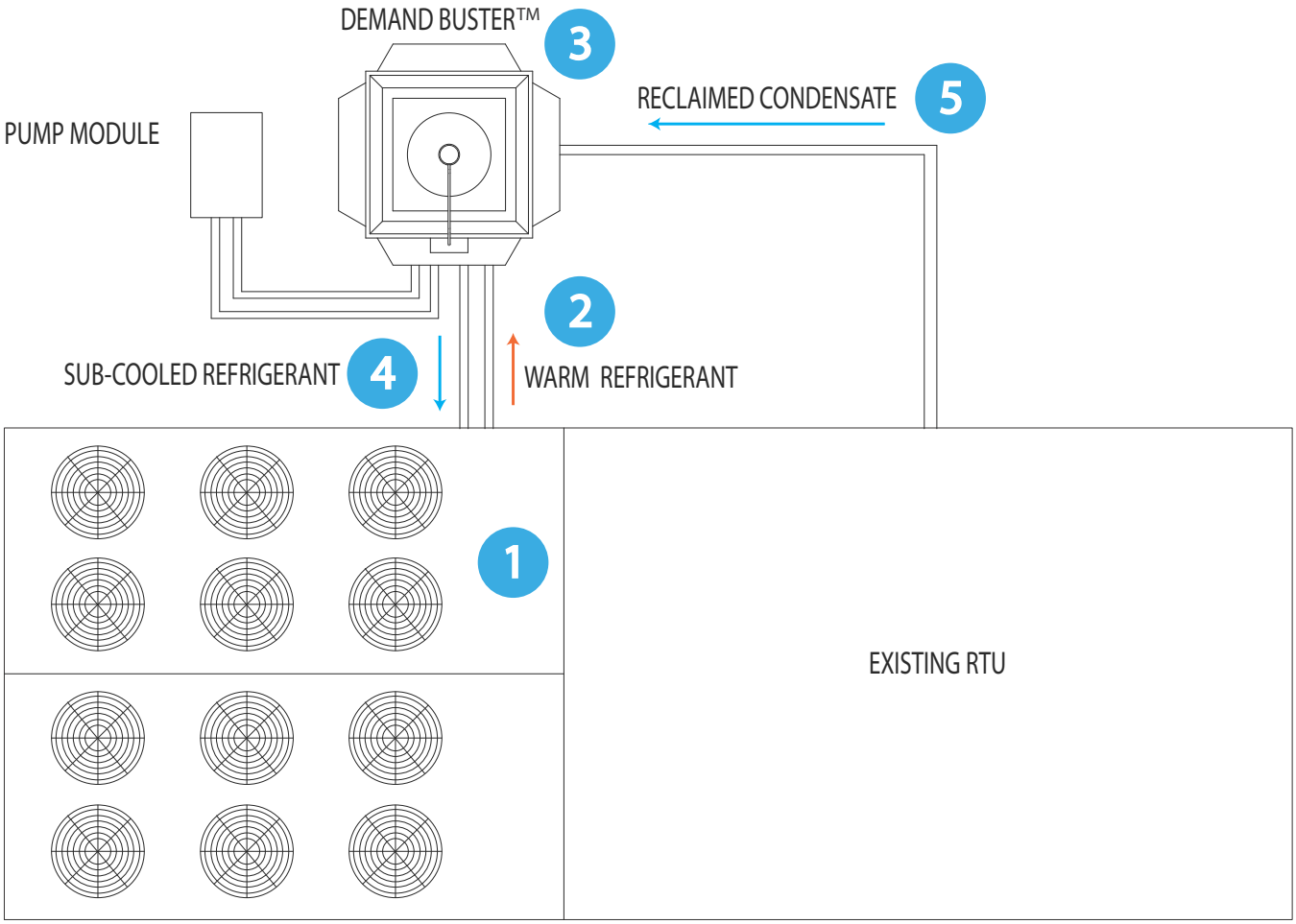
		Dimensions			Fan		
Capacity	Weight	Length	Width	Height	Blade Size	Voltage	Power
10 Ton	460 lbs	42 in	42 in	60 in	14 in	240 V / 60 Hz	170 W
15 Ton	500 lbs	53 in	53 in	78 in	18 in	240 V / 60 Hz	310 W
25 Ton	1000 lbs	92 in	53 in	78 in	2 x 18 in	240 V / 60 Hz	620 W

ThermCool Demand Buster™ Features



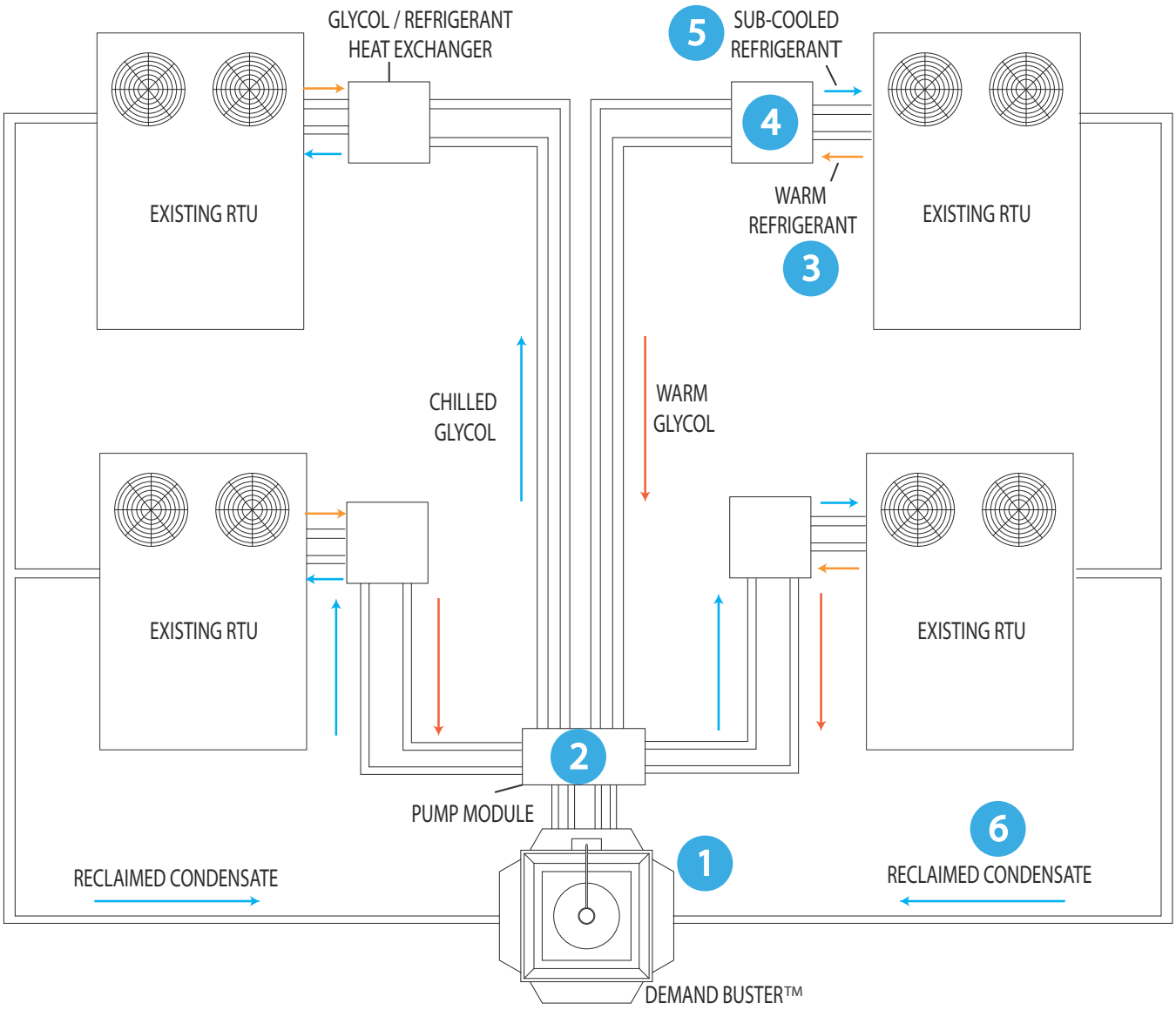
1. Large Copper Tube Bundle – The large copper tube bundle has lot of surface area for optimal performance. Moreover its copper construction makes it resistant to corrosive environments such as salt air found in coastal areas.
2. Media – The Demand Buster™ is the only evaporative condenser / fluid cooler on the market that mates a copper tube bundle with media. The media provides additional surface area for enhanced evaporation and performance.
3. Drift Eliminator – In addition to eliminating drift and protecting the fan from moisture the S-shaped design of the drift eliminator also blocks sunlight from entering into the wet area of the Demand Buster™ preventing organic growth.
4. Energy Efficient Fan – Designed to operate in corrosive areas with its epoxy coated cast aluminum motor, the fan we have selected to use in the Demand Buster™ is one of the most efficient on the market – pushing 12 to 12.5 CFM/watt.
5. Light Blockers – The air intakes of the Demand Buster™ were designed with hoods over the opening that block light from entering the wet area of the Demand Buster™ and preventing organic growth.
6. Basin – The basin has sloped sides like an ice cube tray. The sloped design allows water to freeze in the basin without causing damage to the Demand Buster™. Unlike other cooling towers, the Demand Buster™ does not need to be drained for winter storage. The water can simply freeze in the basin till the following season.
7. Easily Removable Side Panels – The side panels can be easily removed without tools, making the heat exchanger and media easily accessible for cleaning and maintenance.
8. Controls – Low ambient control ensures tower only operates above specified temperatures, and auto purge prevents mineral build up in hard water regions.
9. Light Weight – The 10 ton and 15 ton only weighs 460 lbs and500 lbs respectively. Both sizes are light enough for a roof top installation without any structural changes.

ThermCool Hybrid Cooling (Single System) – How it works



1. Hot refrigerant leaves the compressor and enters the condenser for cooling; however, because of the Peak Reduction System, the compressor does not need to maintain high pressures in the condenser – this is the source of ThermCool's energy savings.
2. After the air condenser partially cools the refrigerant the warm refrigerant enters into the Demand Buster's heat exchanger.
3. The Demand Buster further subcools the refrigerant to 5˚F to 8˚F above the wetbulb temperature.
4. The sub-cooled refrigerant leaves the Demand Buster and goes to the expansion valve. The expansion valve regulates the temperature of the refrigerant entering the evaporator to prevent liquid from entering the compressor.
5. Condensate from the existing RTU is reclaimed and piped into the Demand Buster to act as its primary source of water

ThermCool Hybrid (Multiple Systems)– How it works



1. The Demand Buster chills glycol in its copper tube bundle to 5˚F to 8˚F above the wetbulb.
2. The pump module distributes the chilled glycol to localized heat exchangers at each RTU.
3. Warm refrigerant leaves the existing RTU and enters the localized heat exchanger
4. The localized heat exchanger subcools the refrigerant to 10˚F to 13˚F above the wetbulb.
5. The sub-cooled refrigerant goes to the expansion valve. The expansion valve regulates the temperature of the refrigerant entering the evaporator to prevent liquid from entering the compressor. Condensate from the existing RTU's is reclaimed and piped into the Demand Buster to act as its primary source of water.