

DualCool

Save energy and maintain comfort
add DualCool to your Rooftop HVAC Unit.

DualCool Implementation Requirements

The Customer is responsible for providing the following required elements in support of a DualCool project.

Electrical Requirements: A 115v single phase outlet inside the controls cabinet of each rooftop unit where a DualCool unit is installed.

Water Requirements: Water connection for the DualCool makeup water. The makeup water line must deliver at least 1.5 gpm at 20 psi and should be valved so that it can be drained in winter, if necessary. ICI will provide a backflow preventer, and water distribution piping to each DualCool unit as required.

Product Description/Overview

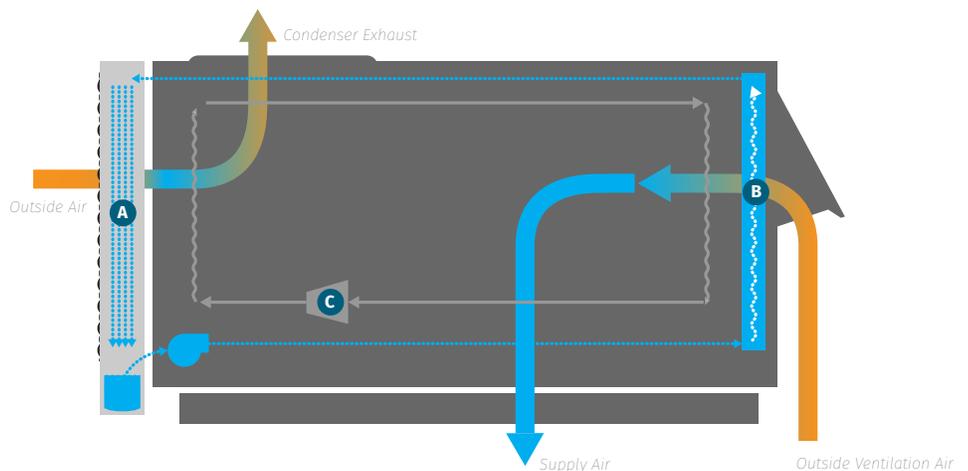
DualCool system components include stainless steel pre-cooler frames, rigid evaporative cooling media, a pump, and an appropriately sized ventilation air pre-cooling coil. The DualCool pump circulates water through the pre-cooling coil and over the evaporative media. A bleed system discharges a small portion of the water returning from the vent air coil to maintain water quality in hard water areas. To save water and energy, condensate from the evaporator coil drains to the DualCool sump.

Service & Warranty

The service plan, carried out by trained service crews, includes three scheduled site visits per season: Within the warranty period, ICI will replace any defective components at no charge to the customer. As a "wear component" the evaporative media will be replaced if necessary on a pro-rated basis in comparison with its 5 year expected life. The warranty does not cover:

- Damage to pumps if the water supply has been interrupted by a customer's agent
- Failure of the evaporative media if a customer's agent has reduced the required bleed flow rate

DualCool Schematic



A. Evaporative Condenser Pre-cooler reduces the workload for the compressor

B. Water Coil uses cold sump water to cool incoming ventilation air

C. The vapor compression system uses less energy to meet comfort demands

Included Materials Overview

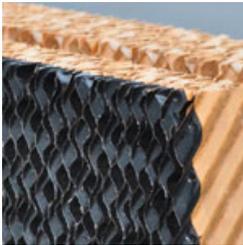
The Pre-Cooler Enclosure: is made from stainless steel and is custom-fit to each rooftop unit. The design facilitates an affordable “lifetime” enclosure that will outlast the rooftop unit to which it is attached. The design also facilitates easy removal of the evaporative media yet holds the media securely in windy conditions.



A Submersible Pump: moves cool water from the reservoir beneath the evaporative media to, and through, the vent air pre-cooling coil, and then back to a distribution tube above the evaporative media. Water flowing through the coil cools the warm incoming fresh air stream, and water flowing by gravity downward through the media cools the air entering the large condenser coil through which refrigerant is discharging heat to the outside air.



Evaporative Media: These 8” thick blocks of “cross-corrugated” treated cellulose are the highest quality evaporative media available, squeezing near-maximum cooling from the evaporative process. Both the airstream and the water are cooled evaporatively as water flows evenly downward from the stainless steel reflector above the perforated media.



Ventilation Air Coil: This radiator-like heat exchanger cools the fresh air stream required by building codes to maintain indoor air quality in commercial buildings. It is also the feature that distinguishes the patented DualCool product from condenser-only air pre-coolers. Cool water is pumped directly from the DualCool reservoir through this efficient coil, typically cooling outdoor air almost to indoor air temperature. Water leaving the coil flows to the evaporative pre-cooler.



Controls Solutions: The Standard DualCool control is a thermostat that activates the pump when outdoor temperature exceeds a preset value (typically 70°F to 75°F). Upgraded Controls options provide Fault Detection and greater integration with the RTU, including interlocks with Blowers, Fans, and Economizers.



Bleed System: The DualCool “bleed” system limits the concentration of hardness minerals in the DualCool water loop. Without the bleed system, minerals can build up on all surfaces that the water contacts, compromising both appearance and function of the system.

