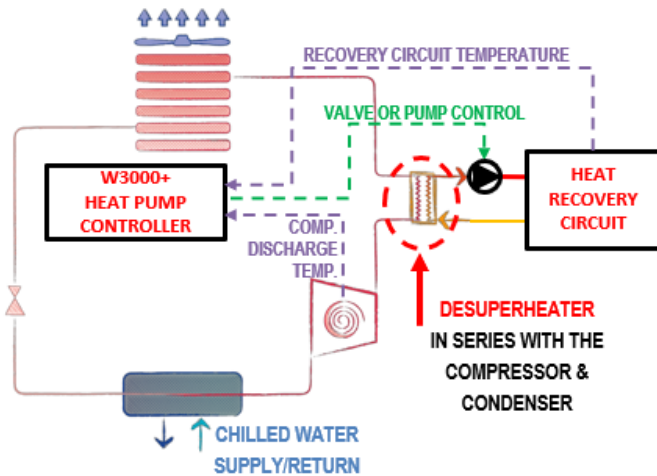


HOW it WORKS



Climaveneta NX-N Series: Desuperheater Logic

The Desuperheater feature available in the Climaveneta NX-N series of Air-to-Water Heat Pumps is a useful option that can be included in the unit to take advantage of “free” heat that would otherwise be rejected through the air-cooled condenser when the machine is operating in cooling mode. The Desuperheater function is simple to integrate into the hydronic system for preheating boiler return water in 4-pipe systems, or Domestic Hot Water pre-heating in 2-pipe seasonal changeover systems, while the machine is operating to produce chilled water during cooling season.



The Logic is Simple: While the machine produces Chilled Water, the W3000+ Heat Pump Controller monitors the recovery circuit storage temperature and compares it to the compressor discharge temperature. If the Recovery storage temperature is below the Compressor’s discharge temperature, Recovery Mode is enabled and the W3000+ activates a dry-contact output to enable a control valve or circulating pump to recover heat that would otherwise be rejected outside. As the temperature in the Recovery buffer tank reaches the set point, recovery mode is disabled, and pumping energy is only consumed when there is a real opportunity to recover heat.

While **as much as 30%** of the units nominal cooling capacity can be recovered at a temperature of **up to 60 °C** with a Desuperheater, it is important to recognize in the design process that heat recovery will be influenced by the cooling load the machine is operating at, as it is based on compressor discharge temperature. Since the unit will operate at part load cooling for most of the summer, it may not be feasible to always recover heat at 60 °C. For this reason, the total energy recovered annually can be drastically increased by selecting a lower recovery setpoint and factoring this into the design, because a lower heat recovery setpoint means heat recovery mode can be enabled for more time throughout the year. **Domestic Hot Water Preheat** is a great application for a Desuperheater because it reduces the energy consumption of the DHW system by preheating incoming cold water to a medium temperature, which flows into the DHW storage tank and reduces the energy consumption of the DHW boiler since the incoming water has been pre-heated for free.

