



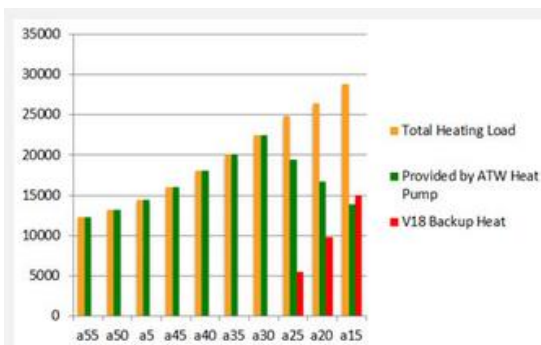
Chiltrix V18 Hydronic Backup Heater- Quick Overview

The fact is that in some air to water heat pump applications in very cold climates, users may need backup heat at some point in the year. This is generally accomplished by injecting additional heat into the loop from a resistance heater, typically a hot water heater installed in-line on the loop. When backup heat is needed, a backup heat source is enabled and the backup heater runs based on its own thermostat setting.

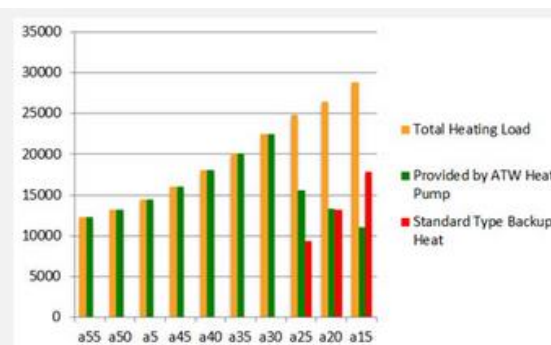
This is the way hydronic backup heating has always been done in Europe and Asia where hydronic heat pumps are the standard, as well as in the USA where hydronic heating is only recently gaining traction. This method works and is used this way all over the world, however it is not perfect.

Regardless of sophistication level, ultimately a hydronic heat pump cycles on/off (or adjusts its speed) in response to temperature measured in the buffer tank or somewhere else in the system. And when additional heat is injected into the system by an external source, typical capacity controls interpret this as a reduction of heating load which may then slow or cycle off the heat pump compressor. This produces a recursive loop that ultimately causes the backup source to provide a higher than needed percentage of total heat. Of course, when the lower efficiency source (resistance heat) is over-providing, the higher efficiency source (the heat pump) is not producing all that it is capable of, adversely affecting total COP.

The opportunity for improvement over the standard approach arises from the patent-pending variable capacity Chiltrix CX34 and its advanced capacity controls. Used with the CX34, the V18 does not chase and overshoot a thermostat setting to control backup heat, rather, the capacity and load aware CX34 itself controls the heating element in a variable manner to provide only the exact amount of backup heating power needed. This allows the CX34 compressor to always run at full speed when backup heat is active. V18 SSR technology allows the resistance element to fire at any of 100 or more different power levels between 0-100% matching it tightly to any shortfall while continuously adjusting the element power in real time to match shortfall as it changes. This high level of accuracy can raise combined COP by up to 21% during backup heat operation. See more: <http://www.chiltrix.com/hydronic-backup-heater/>



Above: Ref. building with V18 backup heater.



Above: Ref. building with standard tank backup heater.

Get a customized CX34 performance analysis and annual backup kWh projection for your application here: <http://www.chiltrix.com/air-to-water/>