

### AEROFIN INTEGRAL REHEAT LOOP COIL

Typical chilled water cooling coils dehumidify the air as well as cool the air. Depending on the inlet air conditions, the relative humidity will sometimes approach 100% as the air exits the coil. The saturated outlet air vapor may condense on downstream surfaces such as duct work, fans, filters and other equipment. While thermodynamics predicts this occurrence, condensation is undesirable in HVAC systems.

Aerofin's solution is an integral reheat loop coil. By introducing the integral reheat loop into the system, you can avoid saturated air without jeopardizing the footprint of the unit, adding extra piping or having to provide an additional heat source, all of which, can break the budget.

Here is how it works. Aerofin modifies a standard chilled water coil by integrating a reheat loop within the same casing, providing a single coil that takes the place of a standard cooling coil and extra heating coil. By utilizing the heated water leaving the cooling loop of the coil, the air leaving the coil is slightly re-heated. As shown in **Figure 1**, the entering water will enter the coil through the supply connection located at the leaving face of the cooling loop, maintaining counter flow. The heated water that would normally leave the coil at the entering face, where the return connection is typically located, is circuted back to the leaving face of the cooling loop. This is where the reheat loop takes the conditioned air and heats it using the heated water from the cooling loop. By heating the air 2°F to 3°F, you move to the right of the saturation curve, resulting in air with 95% relative humidity as noted in **Figure 2**.

SEVEN ROW FULL CIRCUIT COOLING LOOP WITH A ONE ROW FULL CIRCUIT REHEAT

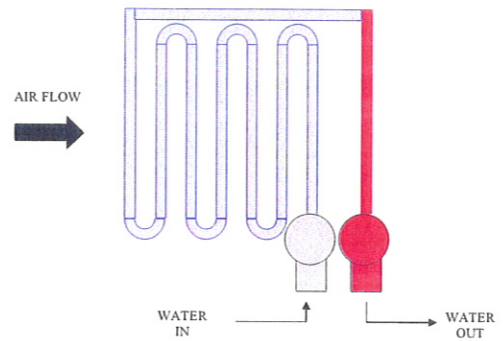


FIGURE 1.

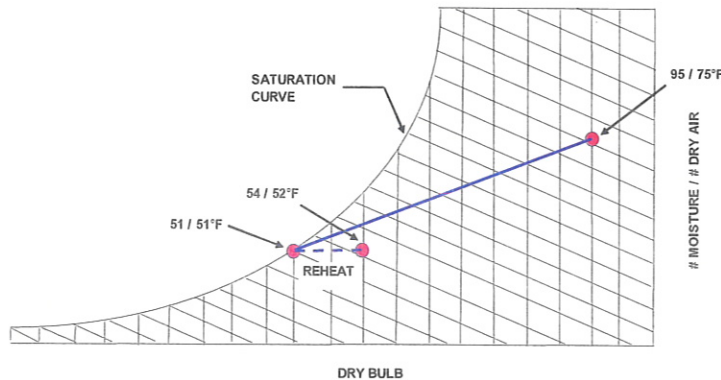


FIGURE 2

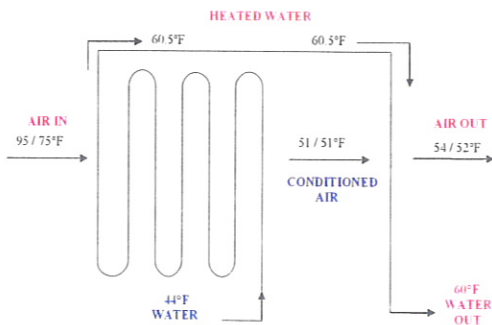


FIGURE 3

**Example:** For entering air conditions of 95 / 75°F deliver 54°F leaving air to satisfy your building load requirements and avoid downstream condensation. With a water temperature of 44°F, a standard cooling coil will deliver a saturated leaving air temperature of 54 / 54°F which could create condensation problems downstream. The Aerofin integral reheat loop coil will deliver 54 / 52°F air preventing condensation. The key is to control the leaving water temperature from the cooling loop which should be 10°F higher than the leaving air off the cooling loop. As shown in **Figure 3**, the air is cooled from 95 / 75°F down to 51 / 51°F using 44°F entering water. The water is heated to 60.5°F leaving the cooling loop which is circuted back to the downstream side of the coil, heating the air from 51 / 51°F to 54 / 52°F. The 60.5°F water is cooled to 60°F leaving.