

A run-around coil is a type of energy recovery heat exchanger that is positioned within the supply and exhaust air streams of a building or process. The coils are connected in a closed loop via counter flow piping through which an intermediate heat transfer fluid (typically water or an antifreeze solution) is pumped. Run around coils are used when, complete separation of air paths with no leakages between supply and exhaust air is required to comply with stringent hygienic requirements. These systems are also used when supply and exhaust air systems are separated due to space and technical constraints. This system is commonly used in laboratories and clean rooms where stringent hygienic standards must be maintained.

Heat pipe consists of a sealed pipe or tube made of a material with high thermal conductivity such as copper or aluminium. These tubes are evacuated and backfilled with a working fluid chosen to match the operating temperature of the systems. Using the combination of evaporation and condensation, the phase-changing working fluid transfers the energy between supply and exhaust air streams. The advantage of heat pipe system is that it has no cross contamination and low maintenance / operation cost due to absence of moving mechanical parts.

AHRI standard 1061, ASHRAE 90.1 Section 6.5.6 and ASHRAE 189.1 Section 7.4.3.7- Energy Recovery, provides additional guidance on exhaust energy recovery.

In addition to energy recovery systems, for Golden and Platinum Sa'fa, buildings with a cooling load of 1 MW or greater must collect condensate water and use it as described in *Regulation 601.03*. Project team should calculate the quantity of predicted condensate water production and design the condensate water recovery systems, accordingly.

Project teams need to ensure only minimal energy loss occurs, during storage and transportation of condensate water. Insulation systems can also be used, if required, to prevent energy loss. Thermal energy recovered from condensate water can be re-used either for cooling walking lanes in parking spaces or for cooling public places within plot building limits or for cooling of potable water.

COMPLIANCE DOCUMENTATION

Table 502.10(1): Documents Required

Project Stages	Submittal Documents
Design Permit Application	<ol style="list-style-type: none"> 1. Energy heat recovery system details. 2. Design layout indicating the location of energy recovery unit and capacity. 3. Exhaust air flow calculation and percentage of total exhausted air proposed for energy recovery. 4. DM BLDG AC unit schedule.
Construction Completion Application	<ol style="list-style-type: none"> 1. Final approved layout indicating the location of energy recovery unit and capacity. 2. Energy recovery system manufacturer data-sheet. 3. Delivery notes.
After Completion	<ol style="list-style-type: none"> 1. Performance and commissioning report.