

There are many different ways coil fins can be manufactured and incorporated into finned tube heat exchanger coils. These varied fin types have their own features and advantages, and when properly applied for the particular heating/cooling application, they can provide an economical coil with a long service life. SRC offers both plate type fin and spiral wrapped fin surfaces on tubes.

### Plate Fin

A continuous metal strip has holes for tubes punched for a particular tube OD, in a pattern (in-line or staggered), and at established distances between tube holes in the X and Y directions. Then each metal strip is cut to a desired coil fin height and rows deep. Each of these fins are then stacked together to create a fin bundle in the desired coil finned length direction and at a desired fins per inch density.

Fin Enhancements available: Flat, Embossed, Corrugated, Sine Wave, and X-Fin™

Fin-to-Tube Bond: This is achieved by sliding tubes through the extruded holes, with a collar, in the fin plates and increasing the tube outside diameter creating an interference fit. Results are a strong mechanical bond of the fin to the tube. The expansion of the tube is done by either filling the tubes with water and applying high pressure, or by pushing a metal ball through the tube that is larger than the tube inside diameter.

### Spiral Wrapped / Helical Fin

Unlike a plate fin which has multiple tubes going through a common fin, a spiral finned tube has its own individual fin “wrapped” onto the outside of the tube. This allows the finned tubes to be arranged in any desired pattern, and any X and Y distance apart. A flat strip of material is helically wound on to a tube, much like threads on a screw, at the desired fins per inch. The finned tube is then cut to the required coil finned length. Each finned tube is placed inside the coil casing to create the coil’s finned face area and rows deep.

Fin Enhancements available: Edge Wound, Crimped, “L” Footed, Plowed, and Embedded

Fin-to-Tube Bond: The bond is created by winding the fin strip under tension, onto the spinning tube. Depending on the fin and tube material, thickness, and winding method, the edge of the fin strip contacts the outside of the tube, or digs into the tube, or is placed into a groove on the tube. The tube and fin may also be coated with a lead-free tin solder or a corrosion protective coating to further maintain the bond of the tube and fin together.

Plate Fin	
Features	Advantages
Continuous Fin strip in fin height and direction of airflow (rows deep)	Lower air friction
	Easier to clean and traps less dirt
	Easier to apply coatings
	Tubes interlocked together
	Wide fin spacing
	Better vibration and tube sag strength
	Better ice and frost handling
	Tight bond – no fin movement
Tube Expansion Bond	Hydrostatic leak test on each tube (standard)

Spiral Wrapped Fin	
Features	Advantages
Each tube is individually finned	Increased thermal conductivity
	Less fin material used
	Ability to replace a single damaged tube
	More compact fin bundle
	Tube face and row centers can vary
	Allows coil to better fit with existing case height
	Pitch to drain a multi-row for vertical airflow
	Tension Bond
Embedded Fin	Maintain fin bond at high temperatures
Header	Accommodates header thermal expansion
	Allows longer header stubs

These two types of fin surfaces can be built into the same coil to make use of their features during the heating/cooling process. For example, a duplex coil could use embedded spiral aluminum fins to pre-cool a hot gas, and then switch to plate fins for cleanability.