

TENUTA TECH

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Heavy Duty Industrial Coils

What makes an “industrial coil” different than a “standard HVAC coil”? The answer is pretty straight forward. Standard HVAC coils are copper tube/ aluminum fin and with galvanized steel casing construction. But, HVAC coils are built to handle standard water/steam and air conditions. When you change the conditions, often you must change the construction of the coil also. These changes make the “standard HVAC coil” now an “industrial coil”. What can cause this to happen?

- **High temperatures in the tubes or air** - High pressure steam or high temperature water often require changes in the materials or brazing procedures on coils. Rather than copper/aluminum, we need 90/10 cupronickel, carbon steel, or even 304/316 stainless steel construction.
- **High pressure through the tubes** - Standard copper is designed for pressure up to 200 psig. Above that pressure, changes in the materials might again be required.
- **Corrosion** - There are many different things that will shorten the life of a standard coil through corrosion on the tube and/or fins. Even the casing needs to be protected against corrosion.

COATINGS

There are multiple phenolic coatings that can be used on coils to prolong the life of the coil. But always remember, that a coating is never quite as good as changing the materials of construction. It certainly is more economical, however. Coatings are most often used in applications where there is a lot of salt air near the ocean. Often, you can extend the life of a coil significantly by getting the coil coated.

PERFORMANCE

Nothing you can use is equal to the performance given by a copper tube/aluminum fin coil construction. If you coat the coil, you need to slightly derate the performance, but

by only 1-2%. Everything is still within the testing tolerances. But when you change the materials of construction, then most times you will also significantly change the performance. The reason for this is stainless steel, carbon steel, or even 90/10 cupronickel are not as good heat transfer materials. There are plenty of free computer selection programs that do this for you, but know you will need more rows and fins or even a bigger coil to match a copper tube/ aluminum fin coil.

BRAZING/WELDING

When you change the materials on a coil, often the brazing procedures or welding procedures

change also. There is a host of different materials and how they are brazed or welded makes a huge difference.

When designing coils, there is always a balance between size, cost and performance. The materials of construction and whether you want to go the “industrial coil” route impacts all of the above. But there are many process or industrial applications that require this type of coil. You really need to talk to someone that has experience in the selection process and the costing process to work your way to the final answer. There are many options and you need to see them all before you can make a quality decision.