

Coil Replacement- 10 Helpful Hints

Below are ten miscellaneous things about coils that you probably need to know. They are interesting, because you are more knowledgeable about coils when you know these things.

- (1) If you built a coil with only tubes and eliminated the fins entirely, you would only get about 30% of the performance compared to the same coil with fins, It's hard to believe, but the fins are responsible for a lot more of the performance than the tubes.
- (2) You can't interchangeably use a water coil for steam. Steam coils have a whole different construction, because steam is erosive. Steam coils have a thicker tube wall and an upgraded brazing process. In addition, you can't have steam traveling through a coil in a serpentine manner like you can with water. Basically, it's two different kinds of coils for two different applications.
- (3) Hot water coils are identical to chilled water coils. The HVAC industry has arbitrarily named 1 and 2 row coils, "hot water" and 3 thru 10 row coils, "chilled water". The water doesn't really know the difference, because the construction is exactly the same. You need fewer rows when heating than you do when cooling. That's why hot water coils are only 1 and 2 rows.
- (4) There is only one difference between a chilled water coil and a DX coil. You can't feed refrigerant through a M.P.T. connection and header arrangement, so you have to substitute a distributor in lieu of the connection. Attached to the distributor is "spaghetti tubing" which actually feeds however many tubes you want to feed. Other than that, chilled water and DX coils are identical.
- (5) Fins are not flat. Unless you have "x-ray" vision, you can't see into the depth of a coil and you can't see that fins are stamped out with corrugations that run the entire height and depth of each fin. This makes the air bounce off the fins as the air travels through the coil. Hence, the coil is more efficient and you get better heat transfer.
- (6) Fins are rippled at the entering air side of the coil. Again, this breaks up the air and causes more turbulence when the air hits the coil. This causes more efficiency and better heat transfer. This is a feature that you can actually see when you look at the coil.
- (7) The "average" life of a coil is about 15 years. There are many coils that exist in systems for 25 or 30 years, however. Why do they last so long? This may not come as a shock to most you, but they are maintained properly. They are cleaned regularly, and the water and/or steam are treated properly. Do most maintenance people take good care of coils to make them last 25 or 30 years? Absolutely not!
- (8) There is not a major difference in performance between a 1/2" tube chilled water coil and a 5/8" tube chilled water coil. There is "some" difference, however. 1/2" tubes are spaced closer than 5/8" tubes so there are more tubes per row in a 1/2" coil. Even though there is less surface area for a 1/2" tube than a 5/8", there are more tubes. When you figure it all out, there is just about an equivalent surface area when you compare the two types of coils. That's why the performance comes out about equally.
- (9) 1/2" tube coils cost less than 5/8" tube coils. Even though the performance is just about the same, there are less pounds of copper in a 1/2" coil than a 5/8" coil. This is because the wall thickness of 1/2" is about 10% to 15% less than a comparable 5/8" tube. You pay for copper by the pound, so if there is less pounds then there will be less cost.
- (10) The cost of a coil is determined solely by the size of the coil and the number of rows and fins/inch. Things like casing dimensions, coil depth, connection size and header size have no impact on the cost of the coil. When a coil is bigger, then it costs more. When you change materials of construction or you make it more heavy-duty, then it costs more. All other stuff is just "icing on the cake", and it doesn't effect cost at all.

Knowing these things about coils won't improve your social life at all, or give you conversation for your next "hot date"! You won't be able to impress your kids with your vast knowledge of the HVAC industry. You will, however, be able to have an intelligent conversation about your next coil application and sometimes that's enough! USA Coil & Air has a toll free number, 800-872-2645. Please call us if you need any technical information or for any other way that we can help you.

