



Replacing Central Station Air Handling Units

Installations of large multi-sectional central station air handling units rarely take into consideration that the units someday may need to be replaced. For every unit that sits next to a very accessible space within a building there may be ten more that have virtually no access and half the mechanical room needs to be broken down to move a new unit into place. Some units have no building access in upper floors except maybe freight elevators. This whole situation really needs to be reviewed in detail and the proper professionals such as engineers, installers and unitary manufacturers need to be selected. The process is specialized and not many in the industry understand it totally.

Performance Engineering

The first review is to figure out the size and capacity information of the old existing unit. Sometimes you have as built drawings and submittals but even then the unit drives and components may have been changed over the years and you have to make sure that you are updating a new unit to what the unit is providing presently and not 25 years ago. Without this past information [We have found that 75% of old units don't have the original information] then it becomes a bit more of a problem trying to meet the intended performance. There are a few methods to do this and one is knowing the manufacturer and model number of the old unit. Knowing coil model numbers and filter numbers etc. all help in the analysis. There are some units that just do not have any information and here we can still figure information that will help. Most units cool as well as heat. If you measure the face area of the cooling coil and then multiply times 500 [500 feet per minute face velocity] then you will be very close to the system CFM airflow. After finding out the cfm and then knowing the motor HP you can look at fan curves and figure rather closely the total static pressure of the units. You can also make a cross check with filters by taking the filter area x 450 fpm and see if the two numbers come close.

Coils are replaced all the time without knowing the performance and replacing an entire air handling unit isn't any different. Matching coil face area, rows and fins per inch, tube diameter and circuitry almost always is a performance match. Today's coil design is far in advance of past designs and you easily have a 5% advantage with heat transfer.

Once you have determined the fan and coil side then you have the guts of any unit to be replaced and all of the other components work themselves into the design. Basically, the fan and the coils form the overall unit size.

Central Station - Did You Know?

Did you know ?

Our standard unit availability is 8-9 weeks and we can expedite most units in 4 or 2 week schedules . We have a schedule that will meet your need!!!

Did You know ?

When you change out an older style unit with a new USA Coil unit that you can change the degree of filtration, damper upgrades, heavier coil construction, stainless steel pans, double wall construction, high efficiency motors and VFD's, access and lighting and many more upgrades to that existing system.

Did You know ?

A new unit will almost always deliver more air flow and more BTU heat exchange because of the difference in today's fans and cleaner coils. We have found that existing coils can be less 10% to 15% in efficiency.

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Overall Size and Sectional Review

The overall size of a unit to be replaced is very important because the majority of units replaced need to fit into the box dimensions of the old unit. Every unit has a height x width x length in direction of air flow. Let's go over all three. Height is established by taking into consideration the overall height of existing unit to include any external base rails and vibration isolators and even motors sometimes sitting on top of units. Please remember that new units today have motors, drives and spring isolation mounted inside the cabinet. The width always has to be 90 degrees to the air flow or in the same direction the tubes run in the coil. The in direction of air flow length is simple once you have established height and width.

The sectional review is an easy one. Start with the inlet air side of the unit and be careful to figure what was supplied as an integral part of the unit and what may have been supplied as a sheet metal section by the original installer. Most units begin with a mix box or a filter section. If a mixing box, then you need to establish the damper locations [usually top, back or bottom]. If the mix box includes an integral filter section then a combination mix box and filter section needs to be supplied. Let's move to the filter and remember today's MERV driven filter ratings are much more efficient than the older filter designs. It is here that you can now change that efficiency and bring your filtration up to date with codes and requirements of today. Other sections can be face and bypass damper sections, preheat coil sections, cooling coil and reheat coil sections, humidifiers and then fan sections. If sections will need to be delivered separately [new unit] then the manufacturer needs the dimensions of each one of these sections.

Building Access Review

This is one of the most important parts of the review to replace an air handling unit. A new unit is outside the building and now its sections need to be secured and delivered to the existing pad site of the old unit. Cutting up the old unit is usually not that big a problem but the new unit is a whole new ball game. We have found that most sections will fit into a building, elevator or stairway except mixing boxes and fan sections and the reason there is they are almost always wider than a 36 inch door. Then there are buildings that all of the sections can't fit because of lack of access.

If any or all of the sections have no access into the building then you must select a unitary manufacturer that has a unit design whereby all of the sections and components can be broken down further and brought into the building that way and then reassembled at pad site. Most installers do not have an expertise so that installer probably needs factory help with the disassembling and reassembling process.

The Timing Issue

All buildings where major air handler replacement happens have their own schedules. Some are much more stringent than others. We have worked on many projects where air handlers had to be replaced in a number of hours and that was from Friday sundown to Monday sun-up. Hospitals, schools, office buildings are all types of facilities that may need this type of replacement. The coordination between owner, installer and manufacturer is very important.

We talk with owners all the time that have looked at air handlers and have been told they can't replace an old design because of the problems related here. That simply is not true. The proper selection of the manufacturer and installer that knows how all of this works and has a proven track record will get the job done. Many times the new unit is quieter, more efficient and better quality. It is a win, win, win for the owner!!!!

Did you Know ?

USA will send a factory supervisor to the job site to help coordinate disassembling and reassembling of factory sections for those projects that require this type of breakdown.

Did you know ?

We are very competitive with other semi-custom air handler unit manufacturers. Try us on your next project.

Ever Try To Fit An Elephant Through A Doorway?



USA central station units are designed for the replacement market. Fitting through doorways, into elevators and around mechanical rooms is every bit as important as our high quality double wall construction and ability to design a unit that meets your needs.

- 25 standard sizes ranging from 1,000 TO 50,000 CFM.
- Single zone, Multizone, Indoor or Outdoor.
- Flexible dimensioning allows for custom sizing at production prices.
- Sectional shipping and total section breakdown available including USA field service to show you how it is done.
- Hundreds of options that create unit compatibility and an up-to-date design.



USA Coil & Air, Inc.
11 General Warren Blvd.
Malvern, PA 19355

Phone: 800-USA-COIL
(800-872-2645)
Fax: 610-296-9763

www.usacoil.com

USA Coil & Air is the largest and oldest replacement coil company in our industry. Over the years, we have developed other great lines of HVAC equipment to include direct drive and belt drive fan coil units, central station units with emphasis on the replacement market and also replacement chillers, water cooled condensers and tube bundles as well.

Every one of our lines is specific to the quick shipment and requirements of the replacement market. You will find that we make this process simple and easy. We have stocking and expedited schedules for all of our equipment and know how to deal with existing facilities and the problems related to shipment and delivery. We also pride ourselves with great application engineering so that you don't replace equipment without having a true understanding of why the original might have failed and what can be provided in replacement to increase longevity.

Many of you may already be USA Coil & Air customers and we thank you for your current and past business. If you are not a customer yet, we hope you will be in the very near future. We believe that this newsletter will give you keen insight into our equipment, typical applications and will answer service questions as well. We hope you enjoy.



Tom Jacobs - President
USA Coil & Air, Inc.

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USA Coil & Air, Inc.
(800) 872-2645
sales@usacoil.com

