

## ROCIS 24/7 Air Handler Checklist

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**In order to operate the fan in continuous mode, the following conditions should be met in a typical residential system**

- 1) The fan watt-draw <150 watts, ideally <100 watts, in the continuous mode.
- 2) The air flow is adjusted to 300 - 400 cfm in the continuous mode, while air flow is also in the optimum flow rate for both heating and cooling.
- 3) The TESP (total external static pressure) is lower than the maximum on the manufacture's name plate.
- 4) A MERV 13 fat (usually 4") high quality filter within a filter slot that provides a good seal to minimize bypass. The fat, high quality filter will not be as subject to clogging and will not offer as much resistance to air flow.
- 5) Duct system is primarily within the conditioned space of the building, with little evidence of duct leakage to the outside.

The checklist is followed to identify deficiencies in the system as is, and improvements which need to be made. The intervention varies in response to the performance of the individual HVAC system.

### **The primary actions we take to achieve the conditions in the checklist**

- 1) ECM change-out to achieve lower watt-draw.
  - Caveat – If the TESP is high, the ECM may perform worse in terms of watt-draw than the original PSC motor
  - Therefore, the ECM change-out is only advisable if the static pressure of the system is lower than the name plate, and also if we can use a fat filter with a minimum change of becoming clogged
- 2) Replace the return drop with a larger return that include a horizontal filter slot for a larger filter, as well as a second filter.
  - Over 50% of the systems checked have restrictions in the return side ductwork. In many cases, a larger, and better design for air flow in the return drop can improve the static pressure. In addition, by moving the filter slot to a horizontal position, and making it larger and deeper in dimensions (usually 20" x 25", instead of 16" x 25), the static pressure over the filter is lower. The 90 degree angle at the bottom of the vertical duct is fabricated with a curve on both the throat and the heel to minimize static at this location.
- 3) Adjust the fan setting for optimum air flow for the continuous, heating, and cooling mode. In most cases, the fan is wired to default to continuous mode. This can also be controlled at the thermostat.
  - An added benefit of this intervention is that with lower face velocity over a larger filter, the filter will more effectively reduce small particles.