Evergreen Motors

Hi guys, I need some help. I installed a PSC 3-ton furnace on an old duct system and the static pressure is at about 0.9-1.0. We’re in California and we are required to have 350 CFM per ton in order to pass a HERS test and currently we’re at 780 CFM (260 cfm per ton), which won’t pass. I switched the motor with a 1/2 HP evergreen ECM and still get the same CFM which is odd since I was under the impressions that the ECM would provide more CFM at higher draw. Any suggestions?

Evergreen motors are very efficient and offer a great deal of flexibility in the replacement market. However, they are referred to as a “variable speed, constant torque” motor, not a “constant CFM, constant torque” motor, such as one would find in a GenTeq 3.0 version motor. Evergreen motors can have their direction changed easily by the installer, who can also select the best speed tap to use for a specific application. However, they do not adjust RPM to provide a constant CFM. The static pressure you listed for your application is at the upper most range of performance for an Evergreen, Enduro Pro or a 3.0 motor. The most appropriate method of increasing airflow would be to reduce the external static pressure the motor must work against. This can be hard to accomplish in some applications, but all blowers and motors must adhere to the “fan laws” regardless of how efficient it might be. Changing motors to get more airflow sometimes works, but more often than not it’s only masking a problem that should be corrected.

There are several stock Evergreen motors. Some will only replace PSC motors, and others will replace PSC and some OEM ECM motors. The main advantage is increased efficiency compared to a PSC, on all speed selections. Some OEM motors are programmed for constant airflow, and may be able to provide some increase in maximum CFM. The stock Evergreen motors will not compensate for a system with high static pressure.

It seems like has a very high static pressure, which is restricting airflow. If that is the case, the technician needs to determine where most of the static pressure is coming from: supply, filter, coil, or return, and then address decreasing that “component” of the system. It is very common that returns are undersized and this may be his issue.