

Project Summary

Introduction

Scope for the Daybreak Market in Wesley Chapel is to balance (1) RTU, (1) EF, and all associated air devices. Reason for the visit is to address concerns of negative building pressure and to ensure the equipment is properly balanced.

RTU-1

Initially the RTU was found running 50HZ and the airflow was measured as 4735 CFM (73% of design). The mechanical contractor indicated that there had been an issue in the past where the RTU had tripped off. The supply fan VFD had been set to 60 Hz which caused it to overamp and trip off. To keep the unit running they had set to 50Hz.

Fan speed was increased to 57Hz and at this speed the airflow was 89% of design. This airflow was validated with both flow hood and traverse readings. At 58Hz, the airflow was at and sometimes exceeding the full load rating of the motor. Left at 57 Hz to prevent the unit from tripping off again.

The diffusers are unbalanced and the airflow to the employee areas is low. There is a branch damper that was found that is not on the plans and it was confirmed to be fully open. Also verified that all individual volume dampers are fully open. Unable to push air to the employee area without dropping the total flow below design and being a possible detriment to the overall unit performance.

The outside air damper was initially found set to a 3V setpoint which was nearly closed so it was bringing almost 0 CFM of outside air. The damper was opened to a setting of 4.1 V to achieve design airflow of 817 CFM.

EF-1

The exhaust fan was initially found operating at 660 CFM (146% of design). This was reduced and balanced to 444 CFM (98% of design).

Building pressure

Final building pressure was measured as +0.0165" and calculated as net +373 CFM which is slightly positive.

Final Remarks:

Overall the airflow and balance of the space was greatly improved. Key points and findings are described below.

1. Building was initially around -800 CFM negative due to the exhaust fan being high on flow and the OA damper for the RTU being nearly closed.
2. After completion of balancing the net airflow in the building was balanced to +373 CFM and 0.0165" which is slightly positive.
3. The RTU was initially 73% of design was improved to 89% of design. (ideally would be at least 90%). Unable to increase airflow further without causing the motor overamp. Captive Aire confirmed the unit should operate fine at 89% and they can adjust the discharge temperature remotely if needed.
4. The diffusers in the employee area are low on overall flow. All dampers are fully open in this area. Unable to push air to them without decreasing the total flow of the RTU below design.