DesignFlow™ Precision Ventilation Air Control System

How can I continuously provide the minimum ventilation air requirements outlined in ASHRAE Standard 62.1-2004 and still keep my building project within budget?

Variable air volume (VAV) systems offer many performance and cost benefits. However, providing minimum ventilation air volumes prescribed by ASHRAE Standard 62.1-2004 can be a challenge. Up until now, the available options have been expensive and generally not effective, especially at maintaining minimum ventilation airflow under part-load conditions.

Now there is a solution: the patented DesignFlow precision ventilation air control system from McQuay. DesignFlow provides the ultimate in accurate ventilation control for rooftop VAV systems to help comply with the minimum ventilation requirements of ASHRAE Standard 62.1-2004. Its cataloged performance has been verified in tests witnessed by an independent laboratory: Intertek Testing Services, Inc.

McQuay's patented DesignFlow control system is available today, factory-installed in RoofPak™ applied rooftop systems and rooftop air handlers. Whether your requirements are for a 45,000 CFM packaged DX system, or an 8,000 CFM roof-mounted air handler, DesignFlow is the efficient, effective solution to your ventilation control needs.

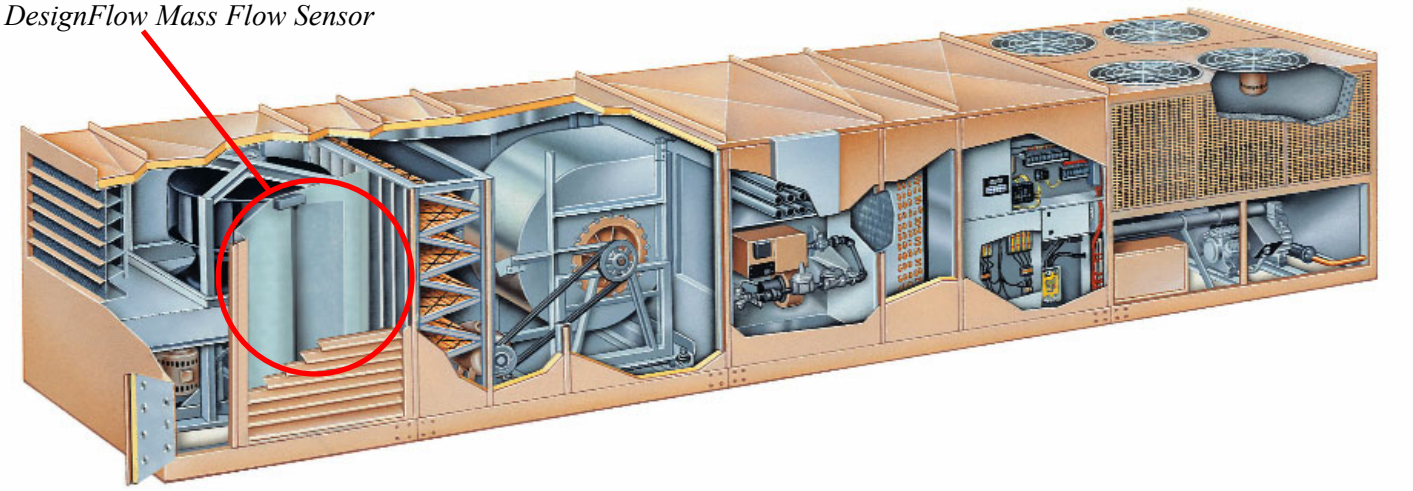
DesignFlow Features

- Repeatable, minimum ventilation airflow control accuracy of ±5% from 10% to 30% of design air, as verified by independent, third-party performance testing.
- Unique, patented, precision mass flow sensor assemblies directly measure the total mass volume of air flowing through the ventilation air intakes.
- Fully engineered, factory-installed/calibrated components are integrated with McQuay's advanced MicroTech II® control system.
- MicroTech II logic automatically responds to mass flow sensor signals and adjusts the ventilation air damper position.

DesignFlow Benefits

- Minimum-ventilation air requirements are maintained for good indoor air quality (IAQ) and compliance with ASHRAE standard 62.1-2004.
- Improved system energy performance because only the minimum amount of ventilation air has to be treated.
- Requires no additional design engineering beyond specifying appropriate performance characteristics.
- Requires no additional field-installed devices.

DesignFlow Mass Flow Sensor



DesignFlow Precision Ventilation Air Control For VAV Systems

Independently Tested & Verified Accuracy

The importance of providing adequate ventilation air for good IAQ has been extensively researched and documented. VAV systems face the added challenge of consistently maintaining minimum ventilation air requirements as system airflow modulates throughout the unit's operating range. This challenge has culminated into an almost universal recognition that direct ventilation air measurement is needed for consistent ventilation control in VAV systems.

Intertek Testing Services (ITS) has verified that the DesignFlow system consistently measures and controls minimum ventilation air intake volume with an accuracy of ±5% from 10% to 30% of design air. This is substantially better than the ±10% goal in the industry. DesignFlow also measures ventilation air during economizer operation, but tolerances may increase during this non-critical operating condition. ITS is a respected independent testing laboratory, known for its internationally accepted ETL product safety certification program.

Superior Design Features

The superior accuracy of the DesignFlow system is due to its superior design features:

- Mass air flow is sensed, not velocity or pressure. No air temperature or air pressure conversions are required.
- Mass air flow is sensed across the entire cross-sectional area of the ventilation air intake. Competitive designs sense airflow at various points, then calculate an average airflow number.
- The system is calibrated to account for changing airflow patterns caused by damper blade rotation.
- Airflow measurement is not compromised by turbulence. Competitive systems use hot wire anemometers that require straight, non-turbulent airflow entering and leaving the sensors. Or, they use fixed orifices, which generate measurable air pressure drops at full airflow but are not accurate for measuring minimum airflow in turbulent conditions.

Energy Efficient Operation

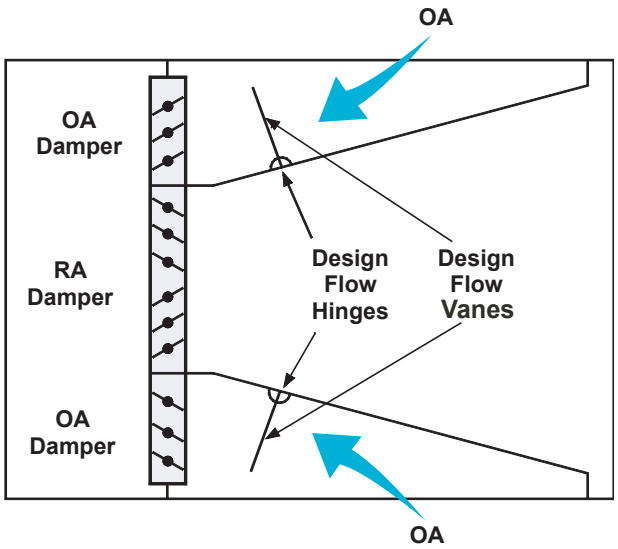
The reliability and accuracy of the DesignFlow system means ventilation air intake volumes can be set at just the right value for the most energy-efficient control. By supplying "just enough" ventilation air, the energy dollars needed to treat the ventilation air supply are minimized.

Reduced Design And Installation Costs

The DesignFlow system is fully engineered and factory-installed to provide optimum system operating performance while minimizing installation costs. No additional components or design engineering are needed. For the contractor, only customary commissioning is required, with no added installation expense.

How It Works

The DesignFlow system uses two hinged, spring-loaded, rectangular vanes to measure air flow. These are installed in the two ventilation air intakes on McQuay rooftop systems. The lower hinge is a specially designed, low-friction, watch-pin pivot. The upper hinge is a precisely calibrated assembly that includes a rotary potentiometer. Electrical resistance varies proportionately with the rotation of the vanes.



The vanes are connected to a set of cams such that the force on the spring is many times the force of the air velocity pressure on the vane. This allows measurable spring deflection (about 0.5") and reliable control at low airflow.

The system's MicroTech II controller monitors potentiometer resistance, compares it to an adjustable set point, and modulates the OA dampers to maintain minimum OA volume.

Contact your local McQuay Sales Representative or visit www.mcquay.com for more information on how your building environment can benefit from innovative McQuay rooftop systems.

McQuay® International