# UNI-DUCT®

## *Duct System Design Service*

United McGill® products




McGill AirFlow LLC

McGill AirFlow can save you money with our UNI-DUCT® duct system design service. We use our state-of-the-art UNI-DUCT software to perform time-consuming design work for you. It designs duct systems that have the lowest possible material and operating costs. UNI-DUCT software provides the most efficiently balanced and sized duct system designs available.

The UNI-DUCT design service is available free to qualified customers. We can work with you from the start of your project, designing duct systems from an engineer's drawings or architect's layouts. If a finished design already exists, we can analyze the system to find ways to improve efficiency and reduce costs. We also use UNI-DUCT software to analyze existing systems in retrofit projects.

Contact a McGill AirFlow sales representative at a location near you for more information.

## UNI-DUCT Supply Program

The UNI-DUCT program employs the static regain design method enhanced by the total pressure method to design efficient supply systems. It can create static regain designs, analyze pressure requirements, and determine a system's design leg or critical path (the path of maximum static pressure requirement). Since nondesign legs and branches have excess static pressure, they need to be balanced. Unless a system is balanced, air will not be distributed properly; some outlets will receive too much air, while others will not receive enough.

The UNI-DUCT program uses a complex iterative procedure to reduce duct and fitting sizes in the nondesign legs so that the available total pressure balances the system. The program also evaluates each fitting to determine whether it can be replaced with a less expensive fitting that will perform the same function. These new fittings will use additional available total pressure, further balancing the system. By reducing duct and fitting sizes to balance a system, the UNI-DUCT program provides duct system designs with low material costs.

The UNI-DUCT program will also design balanced duct systems for a preselected system target pressure. Once all program data have been entered into the computer, a duct system design can be revised simply by changing the initial parameters. This makes it easy to redesign a duct system for the lowest operating costs over the system's lifetime.

## Acoustical Analysis

Another major feature of the UNI-DUCT program is that it provides an eight-octave-band analysis of a duct system design. The program produces an acoustical report that tells you if the design meets your noise criteria (NC level) requirements or if it needs additional noise control. This acoustical analysis accounts for natural attenuation of duct and fittings, sound power splits, end reflection, insertion loss of insulated duct and fittings, and generated noise. The UNI-DUCT program also allows entry of insertion loss and generated noise level data for silencers and fan sound power level data for any manufacturer's equipment used in the system.

## UNI-DUCT Exhaust Program

Particulate or fume exhaust systems should be designed for specific minimum carrying velocities to prevent the material from settling and plugging the duct. With the UNI-DUCT program, these velocities can be entered for each type of particulate or fume where it enters a system. The program will then design the system to maintain all carrying velocities that are specified. A section with more that one carrying velocity requirement will be sized to maintain the highest velocity requirement.

After designing the system to meet all carrying velocity requirements, the UNI-DUCT program will analyze the pressure requirements and determine the design leg. Since nondesign legs and branches have excess pressure, they need to be balanced. Like the supply program, the exhaust program uses a complex iterative procedure to reduce duct and fitting sizes so that the available total pressure balances the system without increasing its design pressure. Optimizing a design in this way can reduce duct and fitting costs considerably.

An exhaust system designed with the UNI-DUCT program will operate at the lowest pressure required to maintain the design carrying velocities. Initial costs will be lower because smaller sizes of duct are used and because blast gates, cutoffs, and dampers often are not required.

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