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Static Regain Sizing Method For this method, a section of the duct system is sized so that the increase in static pressure due to velocity reduction from its upstream section, offsets the friction loss in the section. As in the other sizing methods, the program starts sizing with the first section.

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Methods of ductwork design. There are many different methods used to design ventilation systems, the most common ways being: Velocity reduction method: (Residential or small commercial installations) Equal friction method: (Medium to large sized commercial installations) Static regain: Very large installations (concert halls, airports and industrial)

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*Static Regain: Forgotten HVAC Software Feature - Design ...*  
*DESIGN OF AN EFFETIVE LOW PRESSURE VAV AIR DISTRIUTION SYSTEM*

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*BACK TO BASICS: DUCT DESIGN - AIRAH*

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Titus Timeout Podcast - What is Static Regain? *Video 15: Methods*

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What is Static Regain? This design methodology sizes the supply duct system to obtain uniform static pressure at all branches and outlets. Much more complex than equal friction, static regain can be used to design systems of any pressure or velocity. Duct velocities are systematically reduced over the length of the distribution layout, which allows the velocity pressure to convert to static pressure, offsetting friction losses in the succeeding section of duct.

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Static regain is the third sizing method for ductwork included in Design Master HVAC. It is most often used in the high pressure ductwork between the main AHU and the VAV boxes. The calculation works by keeping the static pressure in the ductwork constant throughout the system. The air velocity is decreased so that the velocity pressure drop matches the total pressure drop in the system. Sizing ductwork using the static regain method results in small ducts and a system that is nearly ...

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#### *VAV System Duct Main Design - Taylor Engineering*

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#### *Ductwork sizing, calculation and design for efficiency ...*

The Static Regain method is widely used by practising HVAC engineers. Most duct design software packages incorporate this method and it is described in virtually every duct design text book 2, 3, 4, 5, 6, 7, 8, 9, 10. Conceptually it is easy to understand and the calculations can be done by hand.

#### *Problems with the Static Regain method - ScienceDirect*

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The Static Regain method of duct sizing is based on Bernoulli's equation, which states that when a reduction of velocities takes place, a conversion of dynamic pressure into static pressure occurs.

#### *Existing Duct Sizing Methods - Lawrence Berkeley National ...*

The basic principle of the static regain method is to size a duct run so that the increase in static pressure at each take off just offsets the loss due to friction in the succeeding section of duct. Static regain the air remains constant as it travels through a diverging section of duct from A to B. Now  $P_{total} = P_{static} + P_{velocity}$ .

#### *DESIGN OF AN EFFECTIVE LOW PRESSURE VAV AIR DISTRIBUTION*

## SYSTEM

This week's topic answers the question, "What is static regain?"

### *Titus Timeout Podcast - What is Static Regain? - YouTube*

The equal friction method for sizing air ducts is often preferred because it is quite easy to use. The method can be summarized to. Compute the necessary air volume flow (m<sup>3</sup>/s, cfm) in every room and branch of the system; Use 1) to compute the total air volume (m<sup>3</sup>/s, cfm) in the main system; Determine the maximum acceptable airflow velocity in the main duct

### *Duct Sizing - Equal Friction Method*

Uni-Duct software employs the static regain design method enhanced by the total pressure method to design efficient supply systems. It creates static regain designs, analyzes pressure requirements, and determines a system's design leg or critical path (path of maximum static pressure requirement).

### *McGill AirFlow LLC*

Static regain design provides a cost savings by efficiently moving air. Installation time is reduced compared to rectangular ductwork. Labor costs can be drastically reduced. See if static regain will increase your next project's Profit margins.

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The velocity and pressure classification of ductwork; Application of various materials and shapes that provide the most cost effective alternative; Various supply air duct configurations; The various duct sizing methods - velocity method, equal friction method or static regain method; The interaction between fan and duct system

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Problem Solving Sizing Rectangular Duct Based on Recommended Velocities **Duct Sizing (using equal friction method) Static Regain Method Duct Design**

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