Initial Resistance

Here is a length of empty ductwork.

This manometer measures pressure, typically expressed in inches of water gauge. ($\Delta P$ in wg)
Initial Resistance

The manometer now shows higher pressure downstream of the fan.

Now, we’ll add a fan and turn it on.
Air encounters resistance at the filter and the pressure drops downstream as the airflow is restricted.

This is the **Initial Resistance** (aka pressure drop) of a filter.

Next, include a filter and see what happens.
Demonstration pictures from a Camtester session done for customer convinced ring panels initial pressure drop of .3” w.g.
Once the filter begins to load with dirt, resistance increases even further; to the point where the required airflow is compromised.

To offset the resistance, many fans will increase speed to overcome the pressure drop to maintain airflow. The longer this can be delayed, while maintaining efficiency, capturing and holding dust, the better.
Camfil's Camtester demonstrates this using our filters and your current filter products?

Important: The CamTester will evaluate filters for initial pressure drop or pressure drop over time. Owners should always consider filtration construction components and whether the filter will maintain particle capture efficiency over time. Always review manufacturers data as to the filters MERV and MERV-A when tested in accordance with ASHRAE Test Standard 52.2.