Dust Collector Sizing

How-to guide: what the workbook does, how to use it and what every number means. mfgcalcs.com

Dust Collector Sizing

Add up the airflow each dust collector must move from its pickup points with a reserve, and size the filter media area and element count at your qualified air-to-cloth ratio.

For: Plant, facilities and EHS engineers, ventilation designers and project managers sizing or checking dust and fume collectors.

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Quick start

1. On Setup, type the site name and list each collector with its airflow reserve, qualified air-to-cloth ratio, media online during cleaning and the area of one filter element.
2. On Pickups, add one row per group of identical hoods or pickup point that runs at the same time: collector, hoods, airflow per hood and any other airflow.
3. Fix anything the Check column names.
4. Open the Dashboard: design airflow, installed media area and filter elements for every collector.

What is in the workbook

Start Here	Read this first: what the workbook does and how to use it.
Setup	Site name, and each collector's reserve, qualified air-to-cloth ratio, media online during cleaning and element area.
Pickups	One row per group of identical hoods or pickup point running at the same time: hoods and airflow in; simultaneous airflow out.
Dashboard	Design airflow, filter media area and element count for every collector, from its pickup points.
Method	How every number is calculated, with assumptions, limits and sources.
Verify	Self-check: the workbook's formulas recomputed on fixed inputs against an independent reference.

What each number means

Quantity	How it is calculated	Units
Simultaneous airflow (per row)	Hoods x airflow per hood + other airflow.	CFM
Pickup airflow	Sum of the collector's rows.	CFM
Reserve, design airflow	Pickup airflow x reserve %; design airflow = pickup + reserve.	CFM
Online media	Design airflow / qualified air-to-cloth ratio.	ft^2

Quantity	How it is calculated	Units
Installed media	Online media / share of media available during cleaning.	ft^2
Offline allowance	Installed media - online media.	ft^2
Filter elements	Installed media / area of one element, rounded up.	elements
Air-to-cloth, elements fitted	Design airflow / (elements x element area x media available).	CFM/ft^2

Assumptions, limitations, sources and the self-check (the Verify sheet, which recomputes the workbook's formulas on fixed test inputs) are in the workbook. The last page shows the Dashboard with the example data for Ridgeway Fabrication, a fictional business.

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Engineering estimates for planning and improvement work. Verify the results against your own process, data and standards before you rely on them.

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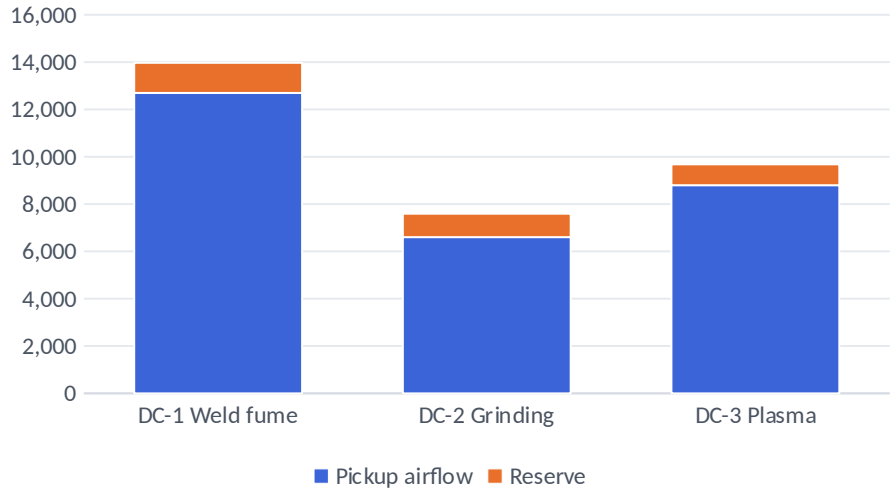
Design airflow, filter media area and element count for every collector, from its pickup points.

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Ridgeway Fabrication (example): 3 collectors, 11 pickup points. Airflow in CFM, media area in ft².

DESIGN AIRFLOW, ALL COLLECTORS (CFM)	INSTALLED MEDIA AREA (FT²)	FILTER ELEMENTS	PICKUP POINTS
31,240	**14,881**	**131**	**11**
Pickup airflow plus reserve	At each collector's air-to-cloth ratio	Installed area / element area, rounded up	Rows on Pickups

Design airflow by collector (CFM)



Filter media area by collector (ft²)

