Radiation Protection Systems, Inc.
P.O. Box 890, Groton, CT 06340
T888.637.7779 - F860.446.1876
www.radprosys.com - Email: support@radprosys.com

Converting air flow velocity "V" to cubic feet per minute "CFM" is easy. You will need one of our Kestral Wind Speed instruments set to indicate air speed in Feet per Minute (FPM). Additionally, you must determine the size of the Area (A) of the opening through which the air is flowing. For example, the inlet on suction duct/hose, the open area of a funnel or hood, or the opening in the air discharge of the blower, if measuring discharge air flow.

1) Determine the Area (A) of the opening and convert it to square feet (sq. ft.).
    a) Area for Square or Rectangular openings: Determine the area of the opening by measuring the Height and Width in inches and multiplying them (H x W).
        i) Convert the opening size to square feet by dividing the Area by 144 (144 is the area of 1 square foot in inches).
            (1) Example:
                (a) Height 10" x Width 12" = (10 x 12) = 120 square inches.
                (b) Convert the opening area to square feet: 120" / 144 = 0.8333 sq. ft., round to 0.84 sq. ft.
    b) Area for Circular openings: Area (A) =Pi x R2 (Pi=3.1416).
        i) Measure the diameter of the opening in inches to get (D) diameter,
        ii) Divide diameter by 2 to get Radius (D / 2 = R),
        iii) Multiply R times itself, to square it, (R x R = R2),
        iv) Multiply R2 times 3.1416 to get area (A) in square inches.
        v) Convert the opening size to square feet by dividing the area by 144.
            (1) Example:
                (a) D = 8",
                (b) R= (8/2) = 4",
                (c) R2= (4 x 4) = 16,
                (d) Area = R2 x 3.1416 (16 x 3.1416) = 50.26 square inches. Round off to 50.25 sq.in.,
                (e) Convert area square inches to area square feet: 50.25 / 144 = 0.348. Round off to 0.35 sq. ft. total area.
2) Determine air velocity through opening.
    a) Set the Kestral Wind Meter to readout in Feet per Minute (FPM) according to the instrument instructions.
    b) Place the instrument into the air flow, at the face of the opening, so it is reading the representative air flow through the opening and let the meter reading stabilize. Record the FPM reading. (See Note 1 below for large area openings).
3) Calculate Air Flow in Cubic Feet per Minute.
    a) Multiply the Area (A) determined from your measurements times the recorded velocity in FPM to get the approximate CFM.
        i) CFM Example (Assume a reading of 360 FPM was read on the meter):
            (1) Area 0.84 sq. ft. x 360 FPM = 302.4 CFM or;
            (2) Area 0.35 sq. ft. x 360 FPM = 126 CFM.

Notes

1. For large area openings, take several readings at different points on the face of the opening and record each reading. When a representative sample of readings has been recorded, average them and use the average reading as the FPM flow rate (not the highest or lowest).

2. The methods explained here will result in an approximate CFM, not an exact CFM flow rate. This is due to variables in air flow, turbulence, meter accuracy, and methodology.