

exhausted from a hood cannot change without a change in hood suction reading.

The Pitot tube can be used for routine check purposes instead of the static pressure method.

Difficulty from plugging may be encountered where heavy dust loads or moist air is encountered. In any case, the hood suction method of checking can more readily be delegated to an assistant having no technical training, whereas the Pitot tube method requires care in reading velocity pressures in an exact position with the tube paralleling the flow of air. U-gages have been standard plant equipment long enough to eliminate any feeling of uncertainty in their use.

Since pressure readings vary as the square of the velocity or volume of flow, a slight change in flow is magnified by a comparison of gage readings. Normally, a reduction of volume or velocity of 10 to 15 percent will not be sufficient to reduce the effectiveness of the exhaust system. This range is equivalent to a reduction in static pressure readings of 19 to 30 percent.

A marked reduction in hood suction can often be traced to one or more of the following items:

1. Reduced performance by the exhaust fan caused by reduced speed due to belt slippage, wear on rotor or casing, or an accumulation of material in the rotor or casing, obstructing the air flow.
2. Incorrect direction of exhauster rotation.
3. Reduced performance caused by defects in the exhaust piping, such as accumulations of material in branch or main ducts due to insufficient conveying velocities, condensation of oil or water vapors on duct walls, adhesive characteristics of material exhausted.
4. Leakage losses caused by loose clean-out doors, broken joints, holes worn in duct (most frequently in elbows), or poor connection to the exhauster inlet.
5. Losses in suction due to additional exhaust points added to the system or a change of setting of blast gates in branch lines.
6. Increased pressure loss through the dust collector due to lack of maintenance, improper operation, wear, etc.

MATERIALS REQUIRED FOR CORROSION RESISTANCE

In many cases, exhaust systems including hoods, ducts, air flow producing equipment, and air cleaning equipment will require protective coatings if carbon steel is used, or other materials of construction will be required. Need for such materials will be determined by (a) the corrosion rates on interior or exterior duct surfaces, (b) protection against product contamination, and (c) explosion hazards.

Of the above groups, construction for corrosion protection is the most difficult due to the complex factors that influence rate of corrosion. It is seldom possible to predict the concentration, composition, and dry- and dew-point temperatures that will exist in actual operations. A guide for selecting corrosive resistant materials based on a survey of actual experiences has been reproduced in Tables 7 and 8.⁴⁰

REFERENCES

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