

TekTips

Subject: Stack Height + Downwash

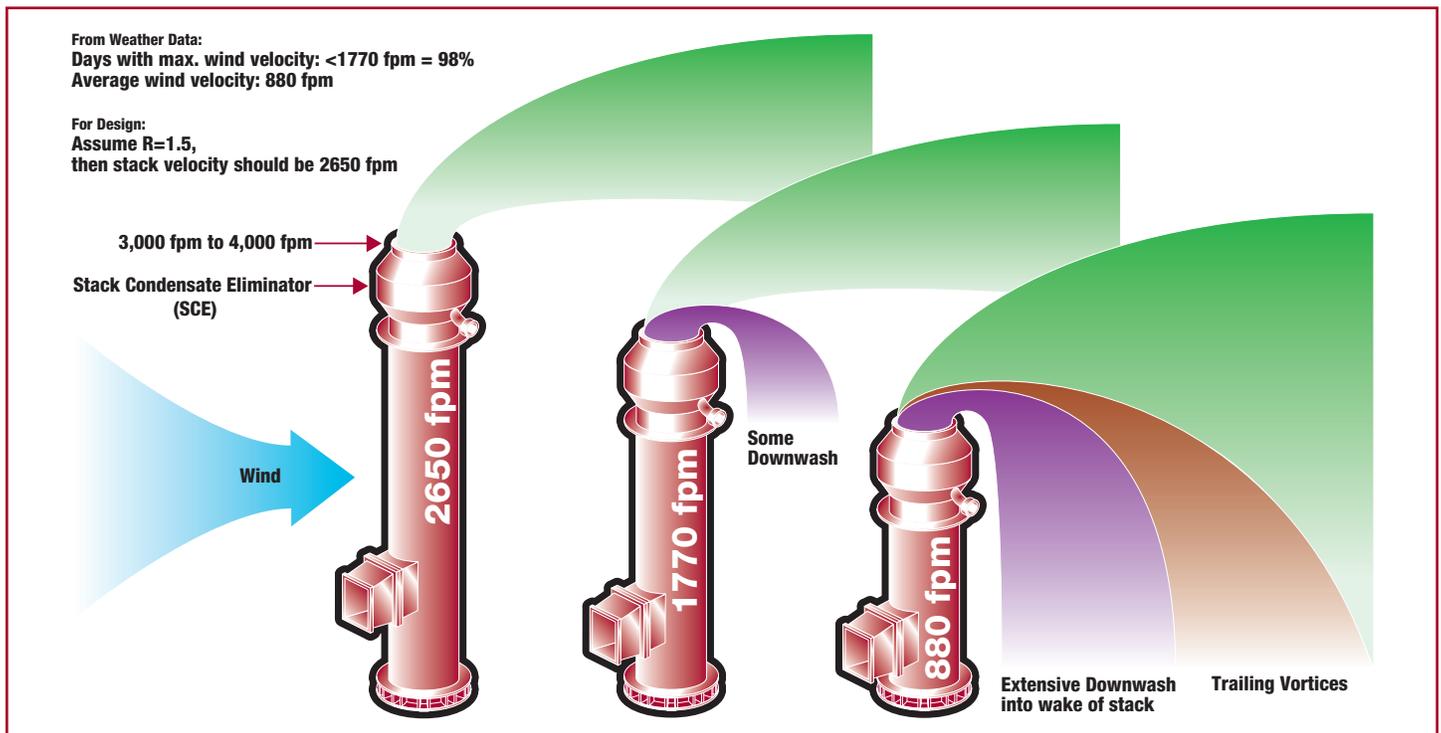
Detailed descriptions of how to select a stack with regard to dilution, downwash and recirculation can be found in the Industrial Ventilation Manual of Recommended Practice (published by the American Conference of Governmental Industrial Hygienists or go to www.acgih.org). When selecting height and location, refer to these recommendations. For example, it is generally accepted that exit velocities over 3,000 fpm reduce the potential to downwash.

Several Considerations are:

- Stack velocity should be at least 1.5 times wind velocity to reduce downwash.
- 3,000 fpm is usually a satisfactory stack velocity because it reduces downwash in winds up to 22 mph.
- A 3,000 fpm stack velocity also increase "effective" stack height and provides conveying velocity for any dust in the airstream. If the effluent is oil mist, lower velocity may be used.

- The terminal velocity of rain is about 2,000 fpm. Thus a stack velocity of 2,600 fpm or more will prevent rain from entering the stack when the fan is operating.
- Locate stacks at the highest practical location.
- The best shape of stack is cylindrical.
- Rain caps should not be used. They are not often effective at keeping rain out and may result in a downwash of air to the roof of the building.
- A combined approach of vertical discharge, proper stack height, remote air intakes, and an efficient cleaning device can be effective in reducing reentry of stack exhaust.

Remember, a good selection results from careful planning. Tall stacks are not a good substitute for good emissions control. For more complex situations, it is wise to hire an experienced engineer or make careful reference to texts, such as the Industrial Ventilation Manual of Recommended Practice (published by ACGIH, 1330 Kemper Meadow Drive, Cincinnati, Ohio 45240), the source of this information and data.



Mailing Address: P.O. Box 15541 • Pittsburgh, PA 15244-0541 • USA
 Street Address: 5100 Casteel Drive • Coraopolis, PA 15108-9767 • USA
 TEL: (412) 788-7100 • FAX: (412) 788-7110 • E-mail: rperryman@swindelldressler.com

