Characteristic Curves

A characteristic curve is a graphical presentation of fan performance of the relation between capacity, static and horsepower at a fixed speed. On all characteristic curves the capacities should be abscissae and static pressures and horsepowers ordinates.

Data Sheet Size

A standard size sheet, 8½ by 11 in., shall be adopted for the compilation of performance tables and characteristic curves.

Drawings

Proposal drawings shall show only limiting dimensions and shall not be used for construction purposes.

GUARANTEE

How Interpreted

The guarantee of a fan duty should be understood to cover the performance based on the capacity and pressure developed at the fan discharge.

How Demonstrated

If the conditions of the installation do not permit of an accurate field test, a laboratory test shall be made on a fan of similar type and proportions but not of a larger size.

The expense of tests to demonstrate a guarantee shall be paid by the party requesting the test unless the test demonstrates that the guarantee has not been met.

Rules Governing Fan Tested

Fan tests and the determination of the results of tests shall be governed by, and be in accordance with, the code proposed by the joint committee of the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS and the *National Association of Fan Manufacturers*, and as later adopted by the *American Society of Mechanical Engineers*.

CHAPTER XXVIII

VENTILATORS AND NATURAL VENTILATION

OF the two methods of ventilating available, namely by mechanical means, and by the so-called natural forces, the later is often favored, because it is not dependent upon fans, blowers and motive power apparatus, any of which may get out of order; it requires no supervision, and it costs nothing for power to operate. It is dependent upon the operation of natural laws and is not subject to the requirements of control possible with mechanical ventilation.

Natural ventilation utilizes two separate agencies, (1) the buoyancy of the air caused by temperature difference between inside and outside of the building, and (2) the energy of the wind. The former is the same action that produces draft in a chimney. The two forces are entirely distinct and separate, and may either co-operate or oppose each other, depending upon the design of the ventilator.

A ventilator is an opening in the roof, properly protected against rain, snow and down draft; and surrounded by a hood or cowl intended to utilize the force of even the slightest breeze from any direction whatsoever, in such a manner as to assist and increase air movement within an enclosure. Occasionally a damper is required to prevent over-ventilation in cold, stormy weather. In any event, openings near the floor of the building which is to be ventilated are necessary to allow the ventilators to act.

Ventilators may be classified in general as stationary and rotary, and each of these may be divided into siphoning and non-siphoning, the rotary ventilator being one which always presents the same face to the wind, and the siphoning ventilator being one which is so constructed as to use the force of the wind to siphon the air out of the ventilator, usually allowing some of the external air to pass through the head.

Engineers, architects and contractors who must make a selection should be guided by the following four general points, (1) quality of material, (2) design, (3) construction and (4) capacity (conditions should be stated, otherwise a fair comparison of this item is impossible).

What is generally desired more specifically is, the greatest amount of reliable ventilation for a given cost of equipment. The following facts affect ventilation and ventilator capacity:

1. Temperature difference between inside and outside of building.
2. Height of ventilator above air inlet openings.
3. Wind velocity.
4. Design, shape and proportions of ventilator.

Material for this section furnished especially for THE GUIDE by Frank Kelley, Pittsburgh, Pa., C. T. Palmer, Akron, Ohio and Thornton Lewis, Philadelphia, Pa.