

possible to obtain better than 75 per cent perfection in hot sultry summer weather. In hotel, theater, etc., cooling work recirculation will conserve heat in winter and refrigeration in summer.

The development of the science of air conditioning has been rapid and the textile industry has derived great benefit from the adoption of adequate systems. Its applications are wide entering somewhere into every process in making of articles used every day, such as clothing, candy, meat products, and a host of others. Mass production of uniform quality products has been made possible and has placed manufacturing schedules on a year round basis for many industries. It has also improved conditions of comfort and permitted the operation of theaters and other assembly places every day of the year contributing greatly to the health comfort and wealth of the nation.

CHAPTER XXVI

SELECTION OF FANS FOR HEATING, VENTILATION, DRYING AND CONVEYING

Service Requirements, Fan Characteristics, Characteristic Fan Curves, Types of Fans, Selection of Fans, Designation of Fans, Arrangement of Drive.

IN order to properly select fans, it is necessary to know the requirements of the system and the operating characteristics of the various types of fans available. The items of requirements are:

1. Cubic feet of air to be moved per minute.
2. The static resistance of the system.
3. The type of motive power available.
4. The nature of the load such as variable air quantities or pressures.

The items of fan characteristics are:

1. Efficiency.
2. Noise.
3. First cost.
4. Space required.
5. Type of fan best suited to service required.

In order to facilitate the choice of apparatus, fan tables usually show the following factors for each size fan operating against a wide range of static pressures:

1. Volume of air in cubic feet per minute (68 deg. fahr.—50 per cent Relative Humidity —0.07488 lb. per cubic foot).
2. Outlet velocity.
3. Revolutions per minute.
4. Brake horsepower.
5. Tip or peripheral speed.
6. Static pressure.

The most efficient operating point of the fan is usually shown by either bold or italicized figures in the capacity tables.

Fans can be grouped into two general classes:

1. Disc and propeller fans, which produce motion of the air by the thrust effect of inclined blades.
2. Centrifugal fans or blowers, which produce air movement by the centrifugal force generated in a rotating column of air.

The material for this Chapter was prepared especially for THE GUIDE by the following committee: Henry Mathis, chairman; W. Gardner, John Howatt and H. F. Maier.