Storage is usually accomplished by means of by-passing water from the flow to the return mains and thereby storing heat in the return main for future use, or by accumulators. Systems which experience normal peaks can obtain as much as 15 percent added capacity through this heat storage. Where peaks are more severe, this storage or thermal flywheel will allow even greater savings.

Distribution

The conventional conduit or tunnel distribution systems are employed with similar techniques used for installation except that grading of the piping is not important. The mains may be run at different elevations at will, although the high points should be vented by the use of air collectors and the low points should be drained.

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CHAPTER 22

RADIATORS, CONVECTORS, BASEBOARD AND FINNED-TUBE UNITS

Definitions, Heat Emission, Radiators, Convectors, Baseboard, Finned-Tube, Ratings, Corrections for Non-Standard Conditions, Enclosed Radiators

RADIATORS, convectors, baseboard, and finned-tube are the types of heat-distributing units used in steam and hot water heating systems to supply heat to a room by radiation and convection. The function of these devices is the maintenance of the desired mean radiant and air temperatures in the area. Since heat losses through the various parts of the structure constantly tend to lower these temperatures, heat distributing units should be so placed and regulated that their output will replace the losses when and where they occur. If 80 percent of the room heat loss occurs through a cold wall or window area, then 80 percent of the input should be introduced in or directed toward that area.

The term *radiator* is generally confined to sectional cast-iron radiation. Cast-iron radiator types may be column, large-tube, small-tube or wall.

The term *convector* refers to a heat-distributing unit which operates with gravity-recirculated room air, is surrounded on all sides by an enclosure having an air-inlet opening below the heating element, and an air-outlet opening above the heating element.

The terms *baseboard* and *baseboard radiation* refer to steam or water heat-distributing units designed for installation along the bottom of the walls replacing the conventional baseboard. They operate with gravity-recirculated room air, and have a substantial portion of their frontal face surface directly exposed to the room.

The term *finned-tube* refers to steam or water heat-distributing units fabricated from metallic tubing with metallic fins bonded to the tube. They operate with gravity-recirculated room air and are designed for installation without enclosure, or with open-type grilles or covers, or with enclosures having top, front, or inclined outlets.

HEAT EMISSION

Steam or water heat-distributing units emit heat by radiation and convection. These heat-transfer processes and the factors that affect them are discussed in detail in Chapter 5. In general, those units having a large portion of their heated surface exposed emit a larger portion of heat by radiation than do units having their heating surfaces completely or partly concealed from view.

The output of a heat-distributing unit is expressed in units of Btu per