

BEAUTY SHOPS AND BARBER SHOPS

The primary need for hot water in a beauty parlor is for the hair-washing operation. (Sterilization of equipment is most commonly accomplished by either chemical means or small self-contained steam sterilizers.) Hot water requirements for this type of application are generally based on the number of hair-washings that are accomplished in any 1-hour period. Since a busy day may require continuous usage for a 6- to 8-hour period, the recovery capacity of the system should be based on the amount of water used per hour. Water used for cleaning the shop is consumed at an off-peak hour and is not considered in the calculations.

REQUIREMENTS

Hot water for beauty parlor use should be both stored and delivered to the hair-washing sinks at 140°F. There, it is mixed with cold water in the spray head to suit the individual. The mixed water temperature most commonly used is approximately 100°F. Assume that the average shampoo takes approximately 7 minutes and consumes 16 gallons of 100°F water with a maximum of eight shampoos given at each basin in any 1-hour period. In most beauty parlors, one to three wash basins are devoted to hair washing. Each of these should be calculated for full-flow operation. This sizing allows for the small amount of hot water used in the hair-setting operation. Due to the intermittent, high GPM flow rates that can be encountered, a storage tank should be employed to give this system the required degree of temperature stability.

The hot water load in a barber shop is calculated in much the same way as in a beauty parlor. Although less water is used to wash a man's hair than a woman's hair, more high-temperature hot water is consumed for hot towel applications and one approximately offsets the other. Therefore, the hot water needs of a barber shop may be estimated to be 16 gallons of 100°F water per shampoo.

The 16 gallons of 100°F water used per hair wash represents about 9.6 gallons of 140°F water. It is possible under periods of peak operation for each sink employed in hair washing to use approximately 75 gallons of 140°F water per hour. Recirculation of hot water, except in unusual conditions, is seldom used in this type of application. During the time of operation, there is enough hot water usage to keep the lines warm.

COMBUSTION AIR

In today's modern beauty parlors, it is necessary to give some thought to the location of heating and water heating equipment. The propellants used in hair sprays and the chlorine-base bleaches used in hair dyeing can very easily contaminate the combustion air supplied to the heating or water heating equipment. These contaminants have a very corrosive effect on the heat exchanger surfaces of any heating equipment. Because of the extensive use of air conditioning and recirculation of air within this type of establishment, it would be wise to supply outside fresh air to the room containing the heating and water heating equipment.

PHOTO PROCESSING LABORATORIES AND MEAT PROCESSING PLANTS

PHOTO PROCESSING LABORATORIES

The photoprocessing industry uses large quantities of warm water in its film and print development equipment. These water temperatures are low, but are very critical. To insure that there are no interruptions in production, adequate hot water equipment must be provided. Since each photoprocessing plant has its own individual requirements, it will be necessary to discuss these thoroughly with the operating personnel or to contact the equipment manufacturer.

Black and White processors use warm water usually ranging from 68°F to 78°F. Generally, a tolerance of two degrees plus or minus is acceptable. Color processing is done at many different temperatures from 68°F to 94°F, depending upon the film and the processing machine. A one-half degree plus or minus is the tolerance generally required for color work. Normally, each of these processing machines is equipped with a very sensitive mixing valve in order to maintain these close temperature tolerances. Photoprocessing applications are best served by a system having recovery capacity equal to the total hourly demand of all the processing equipment operating simultaneously, and a storage tank to act as a stabilizing medium in order to insure these mixing valves of a constant temperature at their hot

water connection. Hot water is usually stored at 120°F. This industry cannot tolerate even minute rust particles or foreign matter in the process water. Therefore, it is a must that an A. O. Smith glass-lined storage tank be used in the system.

Each processing machine in the plant will require water at its own individual temperature. Therefore, to determine the total demand, it will be necessary to reduce each of these loads to a common denominator such as equivalent to 120°F water or to Btu's required. By adding all the processors together, we can determine the recovery capacity of the water heating equipment necessary to produce sufficient hot water for this application. A nominal size storage tank should be selected as a stabilizing medium. Each of the automatic processors used in this industry is a standard piece of machinery for which the manufacturer publishes water and temperature requirements. This information can be obtained from the manufacturer's catalog or your nearest A. O. Smith office. Individually designed process machines must be checked out to determine their demand.

In northern climates, the design temperature of the cold water should be 35°F for this industry.

MEAT PROCESSING PLANTS

Sanitizing of work areas and equipment with 180°F water is a rigidly enforced requirement for meat processing plant. Since time allowed for this function can be critical, two factors must be considered in determining relationship of storage to recovery capacity of the hot water system.

1. Total gallon per minute flow rate that usually develops from some starting flow rate.
2. Length of time allotted to the clean-up.

Multiple hoses, generally used for washing down these areas, collectively create high draw rates when all are in use. The operation normally continues over a long period of time too long to be considered for a dump draw. With no interruptions occurring to permit stabilization of tank

temperatures, a draw through condition will develop in the tank. The normal drop in outlet temperature that is expected with general applications is not acceptable here. These installations, as with other sanitizing systems, have a designated minimum temperature of 180°F.

As covered previously for Industrial Plants, systems with high draw rate potential over extended periods should not be equipped with large storage tanks. This is true even though long recovery periods may exist between system usage. Most of these applications must function with a starting flow rate considerably less than that required for full operation. A small tank is applied to stabilize the system during time of minimum flow rates and recovery capacity must be available to heat water through the required temperature rise at times of full flow rate.