## Sengamala Thayaar Educational Trust Women’s College

## (Affiliated to Bharathidasan University)

**(Accredited with ‘A’ Grade {3.45/4.00} By NAAC) (An ISO 9001: 2015 Certified Institution)**

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**FOOD SERVICE FACILITY**

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Cook/Chill Systems

The cook/chill system is basically a food cooking "manufacturing process" that cooks food to a "just done" status then immediately chills it (but does not freeze it) for storage and reheating at a later time. Cook/chill offers today's food service operators a cost effective means of providing quality foods while reducing overhead costs.

The basic cook/chill concept centers on the fact that food-borne organisms that cause spoilage and poisoning grow rapidly between 40° and 140°F. Foods are cooked to the proper temperatures, killing most organisms and microbes, followed by rapidly chilling the product down through the temperature range of 140° to 40°F. The cooked food is then stored as close to the freezing point as practical without allowing it to actually freeze.

There are two methods for product cooling: blast chilling and water bath chilling. Blast chilling uses cold air blown over the food in containers (usually shallow pans) while the water bath chilling method submerses sealed casings of cooked food in very cold water. Blast chilling produces a shelf life of up to about five days while water bath chilling can yield shelf lives up to 45 days.

The primary difference of the cook/chill system compared to more common kitchen food preparation techniques is in the final cooking, chilling and storage methods. The goal is ideally to automate and control everything in these stages so that the prepared food manufacturing can occur as a steady process, rather than the more typical peak-and-valley method of most kitchens. This steady operation can fine-tune food quality through strict adherence to standardized recipes and procedures to ensure a consistent product. These systems may also permit "centralized" regional food service opportunities. This is proving extremely popular in school systems.

It is important that the kitchen be designed specifically for this food preparation concept. Conventional walk-in refrigeration units can not reduce food temperatures quickly enough. In addition, much of the equipment that will automatically transfer, portion control, and package finished food products is specialized.

Process Steps

Cook/chill systems start with the centralized bulk purchase and storage of ingredients. Remember, this is a production line operation, even if it only operates one shift per day. All pumpable recipes (foods with chunks smaller than about 1" in diameter) are fed to specially designed jacketed kettles with mixer/agitator attachments. Large non-pumpable foods such as cut up chicken and meat are either purchased in a ready-to-cook state or are processed into vacuum sealed packages for the "slow cook" process in the cook/chill tank. These tanks circulate hot water from 150° to 190°F to slow cook the food product.

Next, the "just finished cooked" pumpable products at 180 degrees are metered into special casings, sealed, and labeled without human or utensil contact, and immediately loaded into a tumble chiller for rapid cooling. Most casings hold 1to 2 gallons of product. The food product is brought below about 40°F in less than one hour and placed in standard walk-in refrigerators that will hold the food very close to, but just above, freezing.

Food is distributed from these holding areas to operating kitchens that will reheat (otherwise called "rethermalize") them as needed. This reheating can be done in convection ovens, combi-oven/steamers, convection steamers, pressure steamers, steam jacketed kettles, and/or tilting skillets and braising pans.

Specialized Equipment

* **Mixer Kettles**  
  Cook/chill mixer kettles are specially designed large mixer kettles equipped for cooking pumpable food products. They are usually steam heated and most kettles come equipped with temperature/time controllers and chart recorders to assure precise food preparation performance. Food is normally pumped from the kettle through a draw-off valve in the bottom. Food cubes as large as one-and-a-quarter inches can be safely cooked and pumped through these kettles.
* **Pump/Fill Stations**  
  A food pump is integral to the metering filling stations where cooked food up to one-and-a-quarter inches in diameter is pumped from the mixer kettles and accurately metered into special casings or an acceptable container. A casing clipper forms an air-tight seal.
* **Cook/Chill Tanks**  
  Cook/chill tanks are designed to cook vacuum packaged meats and other casing-packaged food in a hot water bath at relatively low temperatures of 150° to 190°F. This reduces shrinkage (especially in meats), increases tenderness, and retains more of the natural juices and flavors. The hot water is drained and replaced by ice water at the end of the cooking process to bring the food casings to the appropriate temperature below 40°F. Then the casings are sent to a standard walk-in refrigerator. Cook/chill tanks are normally equipped with automatic controls and chart recorders permitting them to be operated overnight, unattended.
* **Tumbler Chillers**  
  Tumble chillers are specifically designed to cool filled casings rapidly from 180°F to below 40°F in less than 60 minutes using ice water. The tumbling action is very gentle to avoid casing damage. Food casings are loaded through the entry chute either by hand or by a casing conveyer. The actual cool down speed depends upon the food product and casing size.
* **Tumble Chiller/Cook Tank**  
  This unit combines the operations of a cook/chill tank with those of a tumble chiller. The primary advantage is space savings plus the possibility of reduced food handling since the food is cooked and cooled in the same unit.
* **Ice Builders**  
  Ice builders normally make ice during the evening and night time when electric rates are lower and are then used to produce ice water for tumble chillers and cook/chill tanks during the processing time period.
* **Blast Chillers**  
  Blast chillers are designed to blow cold air over almost any kind of food product and are ideal for foods that cannot be handled by a tumble chiller. Cooked food is portioned into standard hotel pans of 2 inches or less depth and covered by film wrap or a lid. Cold air is blown over these pans to bring food below 38°F in 90 minutes or less.