

STEAM GENERATION FOR FOOD PROCESSING





The term “steam” applies to the vapor-phase of water when reached by boiling.

- Steam generation plays a crucial role in food processing industries, as it is used for various purposes such as cooking, sterilization, pasteurization, heating, and cleaning.
- Steam offers several advantages including its ability to transfer heat efficiently and uniformly, its ability to maintain precise temperature control, and its sanitation properties.
- The choice of steam generator depends on factors such as the specific food processing requirements, energy source availability, and operational efficiency.

Types

- The first is called “culinary,” “sanitary” or “clean” steam, used for direct injection into the product or to clean or sterilize product contact surfaces.
- The second category of steam used by food processors is often referred to as “plant steam,” “utility steam” or just simply “steam.”

Processes that use Steam

1. Shell and Tube Heater

Used to heat a flowing liquid by condensing plant steam or a pumped heat transfer media.

2. Steam Injection Heater

Steam injection heating for food products is a direct-contact process in which culinary steam is mixed with a pumpable food (or ingredient).

3. Steam Infusion

Steam infusion is another method of steam heating where the food product is heated by relatively low-pressure, culinary steam.

4. Steam Sparger

Steam sparging is common in open tanks or kettles containing liquid products or water.

5. Steam Jacketed Kettle

Used to distribute steam over a wide surface area, consists of a thin space formed between two, parallel, metallic surfaces.

6. Drum Dryer

Internally heated, metallic drums on which a thin, uniform layer of wet material is applied.

7. Space or Air Heater

Used to achieve high temperatures and moisture levels required to sterilize enclosed surfaces in food processing equipment.