

Basic production machine of Bakery Industry

Prepared by
Jimpi Deka
FPQM

BAKING INDUSTRY

Objectives:

Principle of Baking

Instrument used in Baking process

Baking items classification

PRINCIPLE OF BAKING:

- Mixing of ingredients(sugar, oil, flour, eggs)
- Forming the dough.
- Developing the dough

MIXING:

- 1) To increase the homogeneity of material in bulk.
- 2) To bring about intimate contact between different species in order for a chemical reaction to occur.
- 3) To change the texture.

Application of mixing

- 1) Liquid blending
- 2) Solids suspension
- 3) Gas dispersion
- 4) Dissolving Solids
- 5) Preparation of creams, pastes

Kneading:

- 1) It is a process in the making of bread or dough, used to mix the ingredients and add strength to the final product.
- 2) When flour and water are mixed and kneaded, the gliadin and glutenin proteins in the flour expands and forms strands of gluten, which gives bread its texture.

INSTRUMENTS:

1) MIXER with spiral ribbon:

Movement of groups of particles because of the direct action of an impeller or moving device.

2) Simple Barrel Mixer:



Mixer with spiral ribbon



Planetary mixers

- It consist of a single or double blade with a high-speed dispersion blade (Emulsifier / Homogenizer).
- Intimate & homogeneous mixing of products is achieved by planetary motion of beaters & centrally located high-speed dispersion blade for vacuum jacketed mixer units.



Fig: planetary mixer

Spiral Mixture:

Mixing principles of a spiral shaped (helical) mixer element Mixing gases and liquids without moving parts takes place in continuous or semi batch processes within the food process industry.



Fig: Spiral Mixture



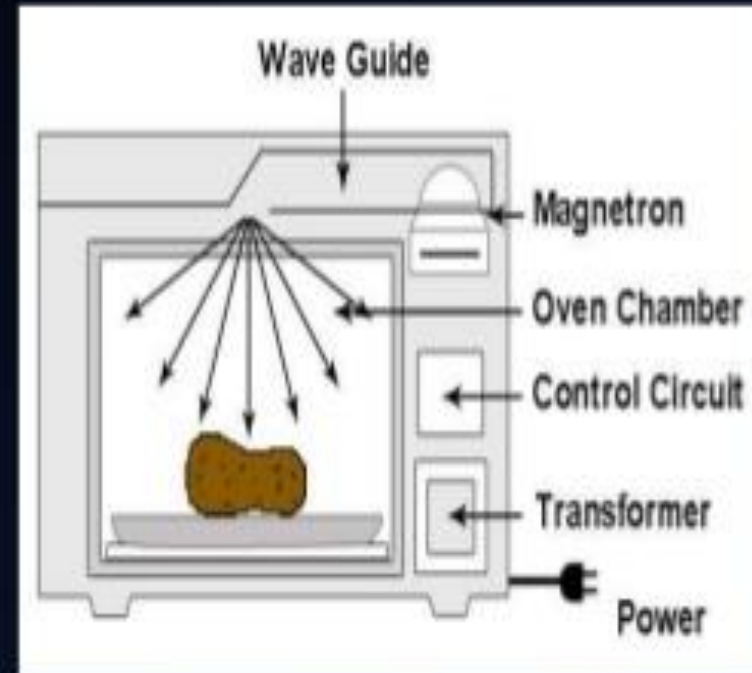
Fig: Hand mixture

Oven:

An oven is a thermally insulated chamber used for the heating, baking, or drying of a substance and most commonly used for cooking.

Working Principle of Microwave Oven

- Magnetron takes electricity from the power outlet and converts it into high-powered radio waves.
- Magnetron blasts these waves into the food compartment.
- Microwaves bounce back and forth off the reflective metal walls.
- Microwaves travel through food, they make the molecules inside it vibrate more quickly.





HOT AIR OVEN

- A hot air oven is a laboratory instrument that uses dry heat to sterilize laboratory equipment and other materials.
- Some examples of material which can not be sterilized by employing a hot air oven such as surgical dressings, rubber items, or plastic material.
- The widely used temperature-time relationship in hot air ovens to destroy microorganisms are 170 degrees Celsius for 30 minutes, 160 degrees Celsius for 60 minutes, and 150 degrees Celsius for 150 minutes.

Working Principle of Hot air oven

- Sterilization by dry heat is performed by conduction. The temperature is consumed by the surface of the objects, then moves towards the core of the object, coating by coating. The whole object will ultimately attain the temperature needed for sterilization to take place.
- Dry heat causes most of the injury by oxidizing particles. The primary cell components are damaged and the organism dies. The temperature is kept for about an hour to eliminate the most ambitious of the resistant spores.