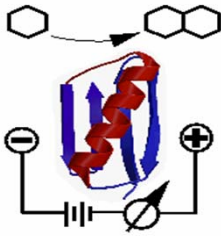


PROCESSING OF FOODS



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PROCESSING

RAW PRODUCT

PROCESS

PROCESSED PRODUCT



FOOD PROCESSING OPERATIONS



Food Processing is the conversion of agricultural product to consumable substances which have particular textural, sensory and nutritional properties using commercially feasible methods



PROCESSING OF FOOD

PRIMARY PROCESSING:

- conversion of raw materials to food commodities

Eg: milling, chilling, drying, etc.

SECONDARY PROCESSING:

- conversion of ingredients into edible products

- this involves combining foods in a particular way to change properties.
Eg: processed meats, dairy products, beverages and alcoholic drinks, food packaging, baking, freezing, dehydrating, canning and bottling.



WHY PROCESS?

- to convert to edible products
- to preserve
- to extend availability and provide accessibility
- to provide variety and choice
- to provide convenience
- to add value



FOOD PRODUCTS

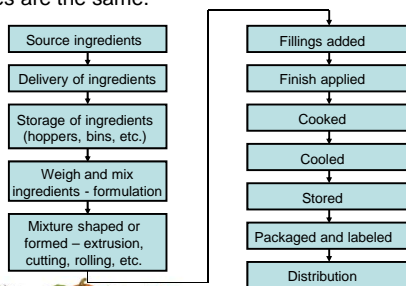
Products may be made by several processes. Interactions between product and processes differ.

- Starch products
 - a. Bread
 - b. Cakes and biscuits
 - c. Pasta
 - d. Rice products
 - e. Corn products
- Meat products
 - a. Products from cattle
 - b. Products from pigs
- Fish products
- Milk products
- Chocolate manufacture
- Drinks
- Oil products
 - a. Margarine
 - b. low fat spreads)



TYPICAL FOOD PROCESSES

Several steps are required to manufacture food products. The specific details of each may differ, but the basic principles are the same.



UNIT OPERATIONS

Unique steps or operations taken to prepare food products

These operations can stand alone

- Material Handling
- Cleaning
- Separating
- Size reduction
- Fluid Flow
- Mixing
- Heat transfer
- Concentration
- Drying
- Forming
- Packaging
- Controlling



TERMS

- **Process Design:** the design of food processes and manufacturing methods, including process flowsheets, design of processing and control equipment, and economic evaluation of the process.
- **Plant Design:** the design of whole processing plant, including the processing/control equipment, the utilities, the plant buildings, and the waste treatment units.



PROCESS FLOWSHEETS

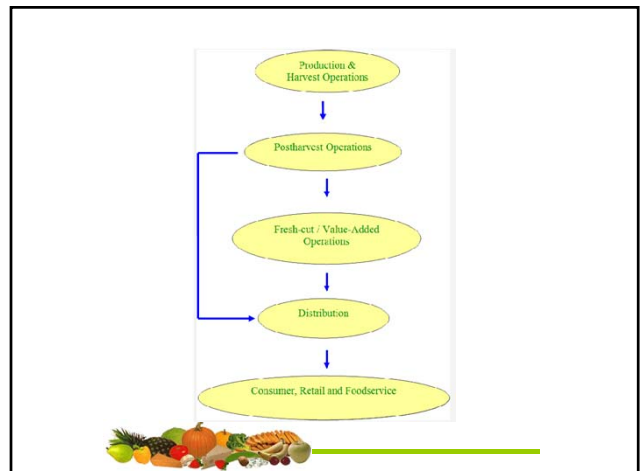
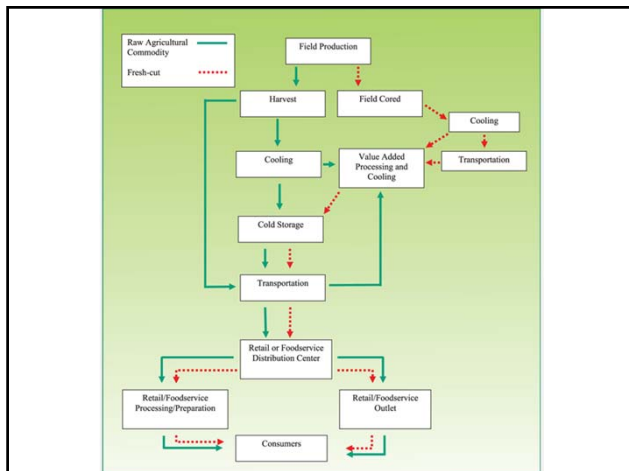
Process flowsheets are graphical representations of the layout and flow of equipment and materials in the plant.

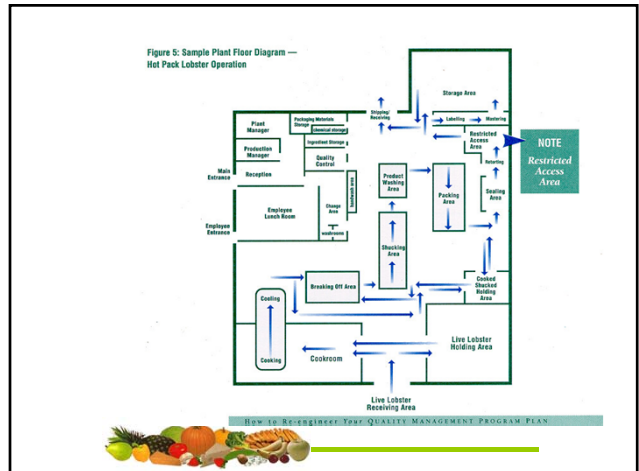
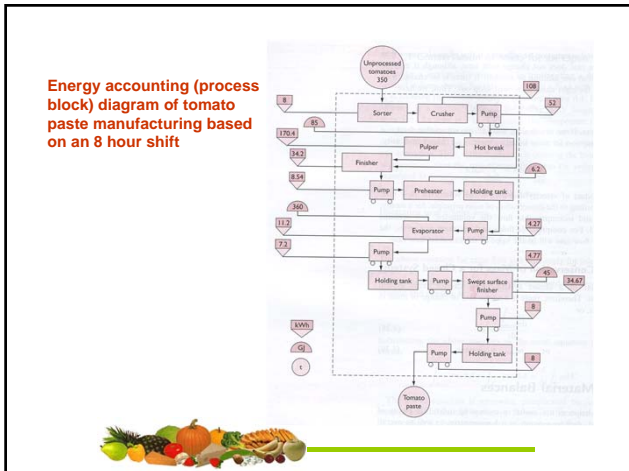
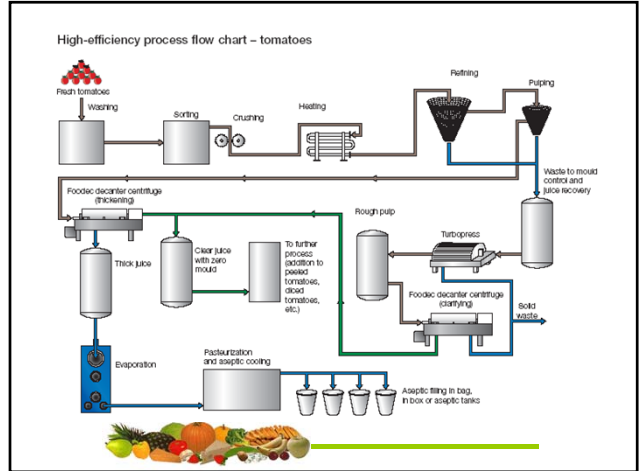
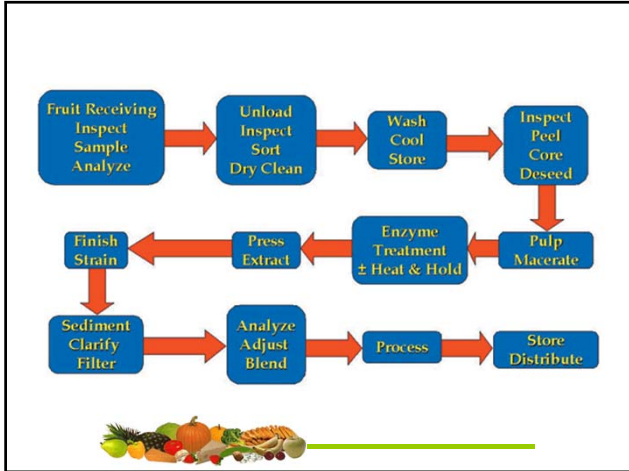
PBD: Process block diagram

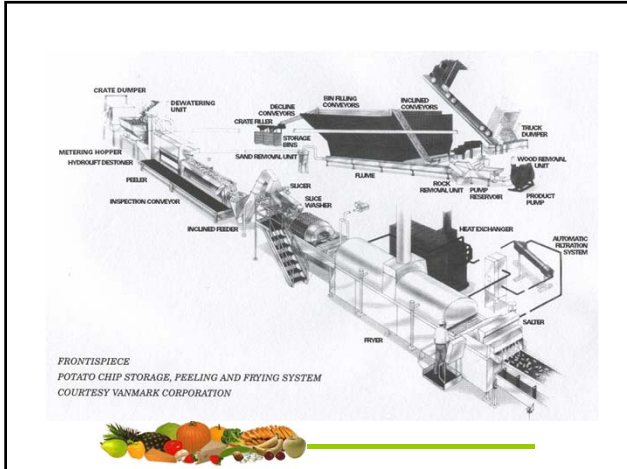
PFD: Process flowsheet diagram

PCD: Process control diagram

PID: Piping and instrumentation diagram







GOOD MANUFACTURING PRACTICES (GMPs)

GMPs are a combination of manufacturing and management practices aimed at ensuring that food products are consistently produced to meet specifications and customer expectations.

GMPs requirements related to the design and layout of food plants include:

- Single-floor versus multistory buildings
- Land space for future expansion
- Waste disposal
- Building details (drainage, doors, lighting, ventilation, plumbing)

FOOD SAFETY PROGRAMS AND HACCP

- ✓ Conduct a hazard analysis (biological, chemical, and physical)
- ✓ Determine the Critical Control Points (CCPs)
- ✓ Establish a critical limits for each CCP
- ✓ Establish a system to monitor each CCP
- ✓ Establish the corrective action to be taken when monitoring indicates that a particular CCP is not under control
- ✓ Establish procedures for verification to confirm that the HACCP system is working effectively
- ✓ Establish documentation concerning all procedures and record appropriate to these principles and their application

