BASICS OF FOOD PLANT DESIGN



Food plant design refers to the physical facility, that is, the building and supporting utilities, and to the enclosed process equipment.

- **It moves through several stages before it is completed:**

1. **Identification and selection of the product to be manufactured**
2. **Feasibility analysis and appraisal,**
3. **Design**
4. **Economic evaluation**
5. **Design report preparation**
6. **Procurement of materials including plant and machinery**
7. **Construction**
8. **Installation and commissioning**

PRINCIPLES

1. Material Flow

- **The flow of material (primarily raw material), work during the process, and finished goods, low of packaging materials and waste disposal are the guiding principles in food plant design.**

- **The governing concept is to reduce the distance over which material is moved while also having some logic in the direction and order of operations.**

2. Sanitary Design

- **Most aspects of sanitary design are architectural details aimed at making plants easy to clean and less inclined to contaminate foods.**
- **Material of construction of food equipments; Stainless steel, Aluminium, Nickel and Monel, Plastic Materials**

3. Site Location

- **Markets or raw materials govern the location of food plants, which is usually determined by the relative density of the products and raw materials.**

- **Labor and utility costs, taxes, environmental regulations, and incentives provided by communities, states, and regions also have an impact.**

4. Design for People

- **The question should be asked: What sort of place is it in which to work and what sort of neighbor is it?**

- **Efforts should be made to reduce sources of discomfort and injury.**

Plant Layout

“plant layout is a plan of, or the act of planning, an optimum arrangement of facilities, including personnel, operating equipment storage space, materials handling equipment, and all other supporting services, along with the design of the best structure to contain these facilities”. Moore (1962)

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