Welcome

Department Of Mechanical Engineering

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Semester: 5th

Subject Name: Manufacturing Process

Subject Code: 27055

Manufacturing process & System

Chapter:01

1. Introduction
2. definition of manufacturing process
3. Mention the different types of Manufacturing Process
4. Manufacturing process block diagram
5. Definition of Concurrent Engineering

Manufacturing process & System

1. Introduction: The evolution of manufacturing processes goes hand in hand with the evolution of civilization. With time, additional materials found usage in the manufacturing processes. Copper, Bronze, and Iron became the standard materials for use in tools, pottery items, weapons, and other products. Manufacturing methods evolved with the growth in possible materials.

The most rapid growth of manufacturing processes occurred in the industrial revolution. Processes traditionally done by hand transitioned to machinery. Technology like steam power and electricity further fueled the drive toward manufacturing innovations.

The development of computers led to the emergence of Computer Numerical Control (CNC) technology. It added the element of automation to the manufacturing industry. Modern manufacturing businesses use advanced machinery with highly automated operations for mass production.

Manufacturing process & System

2. definition of manufacturing process: A manufacturing process is the systematic conversion of raw materials or parts into finished goods using tools, human labor, machinery, and chemical processing

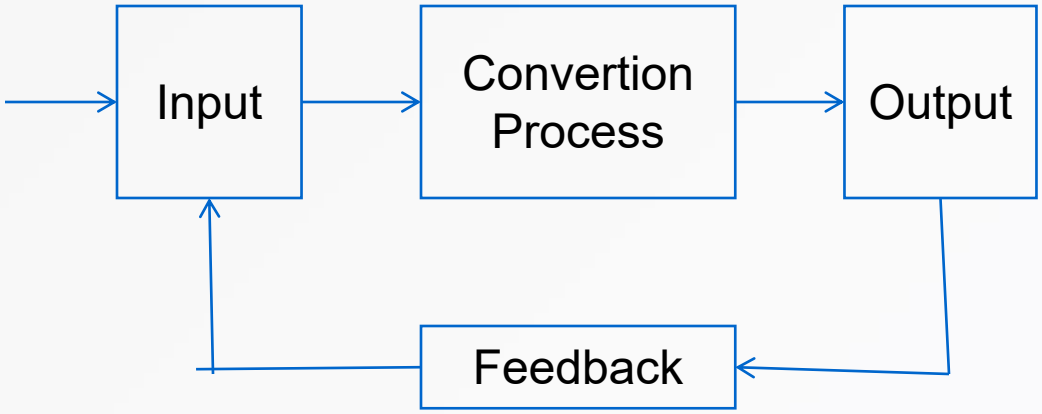
Manufacturing process & System

3. Mention the different types of Manufacturing Process: Five Types of Manufacturing Processes
Here are the five main types of manufacturing processes:

- Repetitive manufacturing
- Discrete manufacturing
- Job shop manufacturing
- Continuous process manufacturing
- Batch process manufacturing

Manufacturing process & System

4. Manufacturing process block diagram:



Manufacturing process & System

5. Definition of Concurrent Engineering: Concurrent engineering (CE) is defined as the simultaneous design and development of all the processes and information needed to manufacture a product, to sell it, to distribute it, and to service it. Other terms sometimes used in place of CE include “simultaneous engineering,” “design-for-manufacturability,” and “integrated product development.” Concurrent engineering represents an important evolution in new product development (NPD) practices. Two aspects that distinguish CE from conventional approaches to product development are cross-functional integration and concurrency. Conventional NPD programs execute concept exploration, product design, testing, and process design activities serially. Each of these development activities is typically under the control of one functional organization at a time (e.g., marketing, engineering, manufacturing).

Cold Working Process

Chapter:02

1. Introduction
2. definition of Cold Working process
3. Mention the different types of Cold Working process.

Cold Working Process

Chapter:02

1. Introduction: Cold working is a metalworking process that involves plastically deforming metal below its recrystallization temperature, typically at room temperature, resulting in increased strength and hardness, but also reduced ductility.

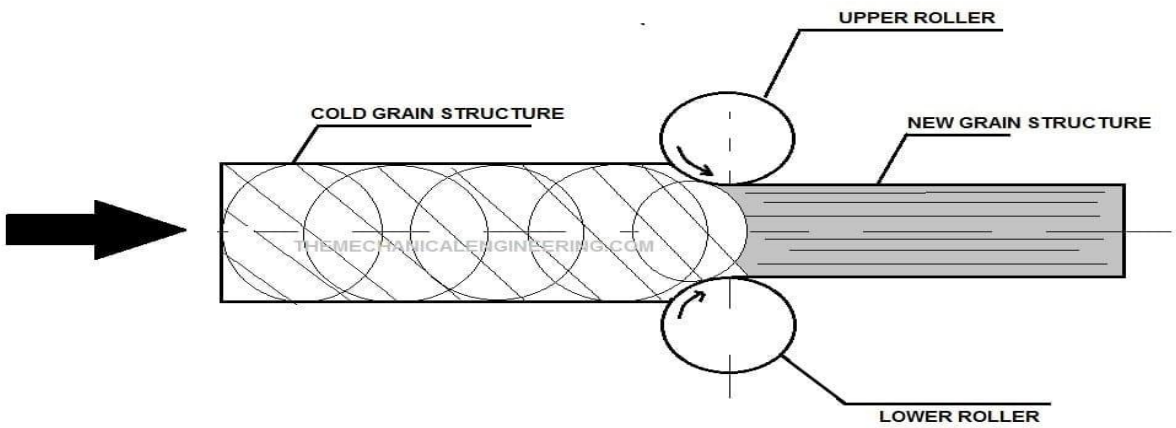
Cold Working Process

Chapter:02

1. definition of Cold Working process: Cold working is the plastic deformation of metals below the recrystallization temperature. In most cases, such cold forming is done at room temperature.

Cold Working Process

Cold Working Figure



COLD WORKING PROCESS

Cold Working Process

Chapter:02

3. Mention the different types of Cold Working process: There are Many types of cold working processes:

- Squeezing.
- Bending.
- Shearing.
- Drawing.

Hot Working Process

Chapter:04

1. Introduction
2. definition of Hot Working process
3. Mention the different types of Hot Working process.

Hot Working Process

Chapter:04

1. Introduction: hot working refers to a process in which slabs, billets, and blooms are heated to high temperatures (around 1000 to 1200° C) and then shaped into various forms such as strips, sheets, plates, bars, and rods through hot forming operations like hot-rolling. This process not only helps in achieving desired shapes but also imparts specific physical and chemical properties to the final product.

Hot Working Process

Chapter:04

1. definition of Hot Working process: Hot working is a metalworking process where metal is plastically deformed at temperatures above its recrystallization point, allowing for recrystallization during deformation and avoiding strain hardening, resulting in improved ductility and reduced strength.

Hot Working Process

Chapter:04

3. Mention the different types of Hot Working process: There are Many types of hot working processes:

- Rolling. Hot rolling.
- Hot spinning.
- Extrusion.
- Forging.
- Drawing.
- Rotary piercing.

Thanks