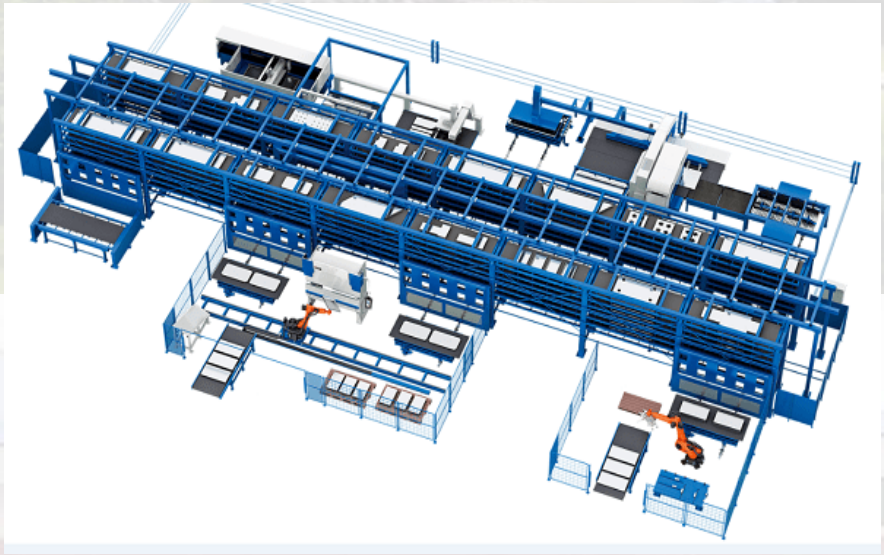
SNS COLLEGE OF TECHNOLOGY
(AN AUTONOMOUS INSTITUTION)

Department of Mechanical Engineering

19MEB301/CADA

FMS Layout



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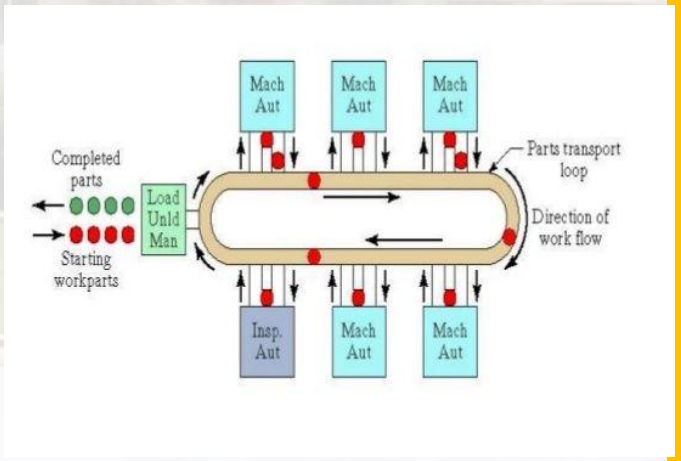

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FMS Layout

FMS Layout Configurations.

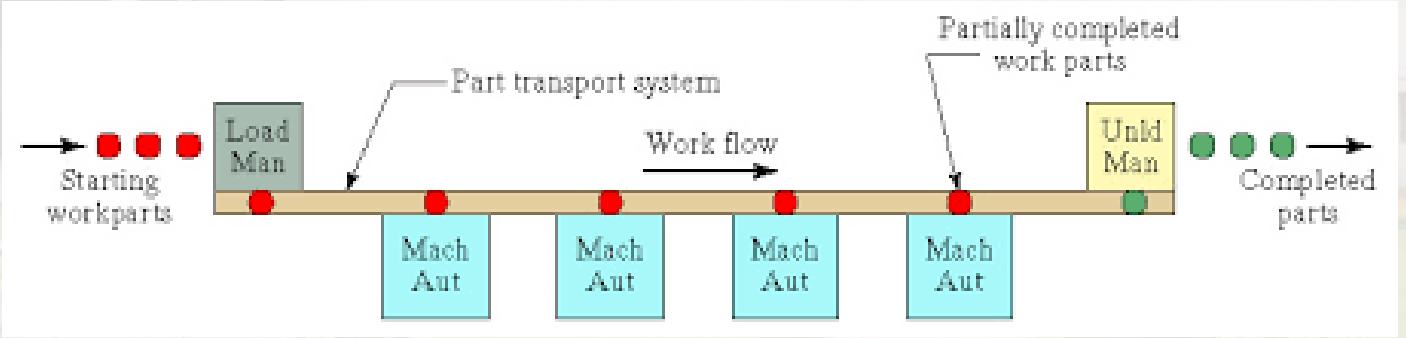
In-line layout

Loop layout

Ladder layout

open field layout

Robot-centered cell.



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Typical Material Handling System

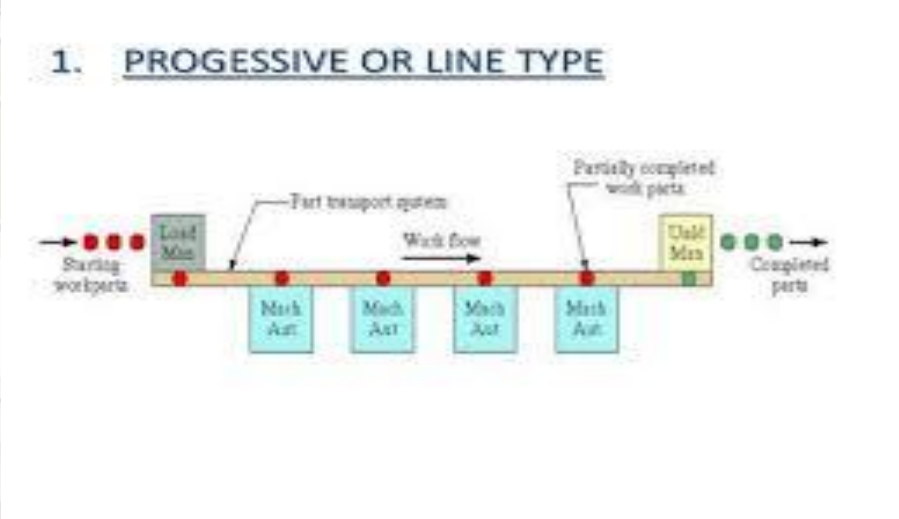
Material Handling Equipment Typically Used as the Primary Handling System for the Five FMS Layouts *(Chapter or Section Identified in Parentheses)*

Layout Configuration	*Typical Material Handling System (Chapter or Section)*
In-line layout	In-line transfer system (Section 18.1.2) Conveyor system (Section 10.4) Rail guided vehicle system (Section 10.3)
Loop layout	Conveyor system (Section 10.4) In-floor towline carts (Section 10.4)
Ladder layout	Conveyor system (Section 10.4) Automated guided vehicle system (Section 10.2) Rail guided vehicle system (Section 10.3)
Open field layout	Automated guided vehicle system (Section 10.2) In–floor towline carts (Section 10.4)
Robot-centered layout	Industrial robot (Chapter 7)

Product flexibility	Ease with which design changes can be accommodated. Ease with which new products can be introduced.	How closely the new part design matches the existing part family. Off-line part program preparation. Machine flexibility.

In Line Layout

- In the in-line layout, the machines and handling system are arranged in a straight line.
- In its simplest form. the parts progress from one workstation to the next in a well-defined sequence, with work always moving in one direction and no back flow.
- The operation of this type of system is similar to a transfer line, except that a variety of work parts are processed in the system.



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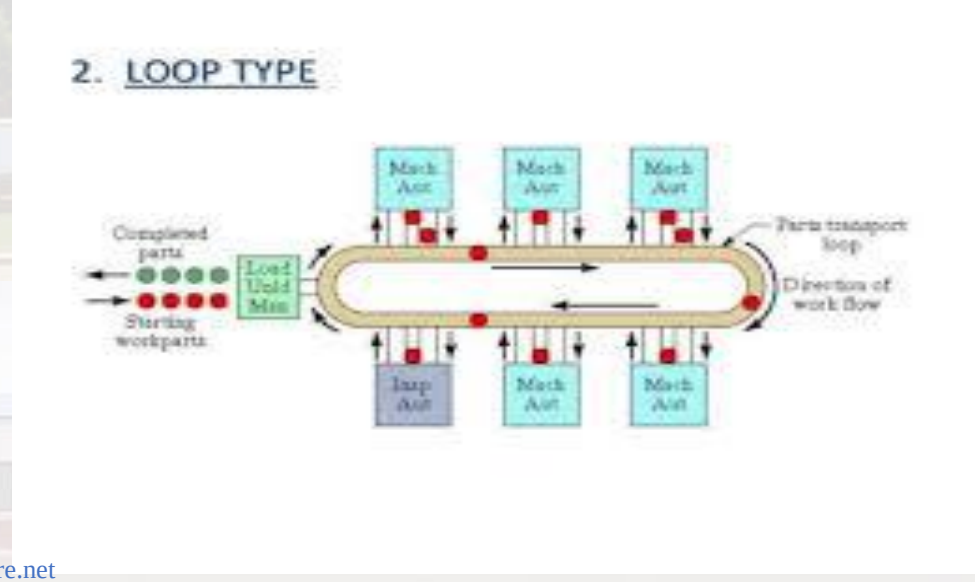
Loop Layout

- In the loop layout, the workstations are organized in II loop that is served by II part handling system in the same shape
- Parts usually flow in one direction around the loop, with the capability to stop and be transferred to any stations. A secondary handling system is shown at each workstation to permit parts to move without obstruction around the loop
- The load/unload stations) arc typically located at one end of the loop. An alternative form of loop layout is the rectangular layout
- This arrangement might be used to return pallets to the starting position in a straight line machine arrangement



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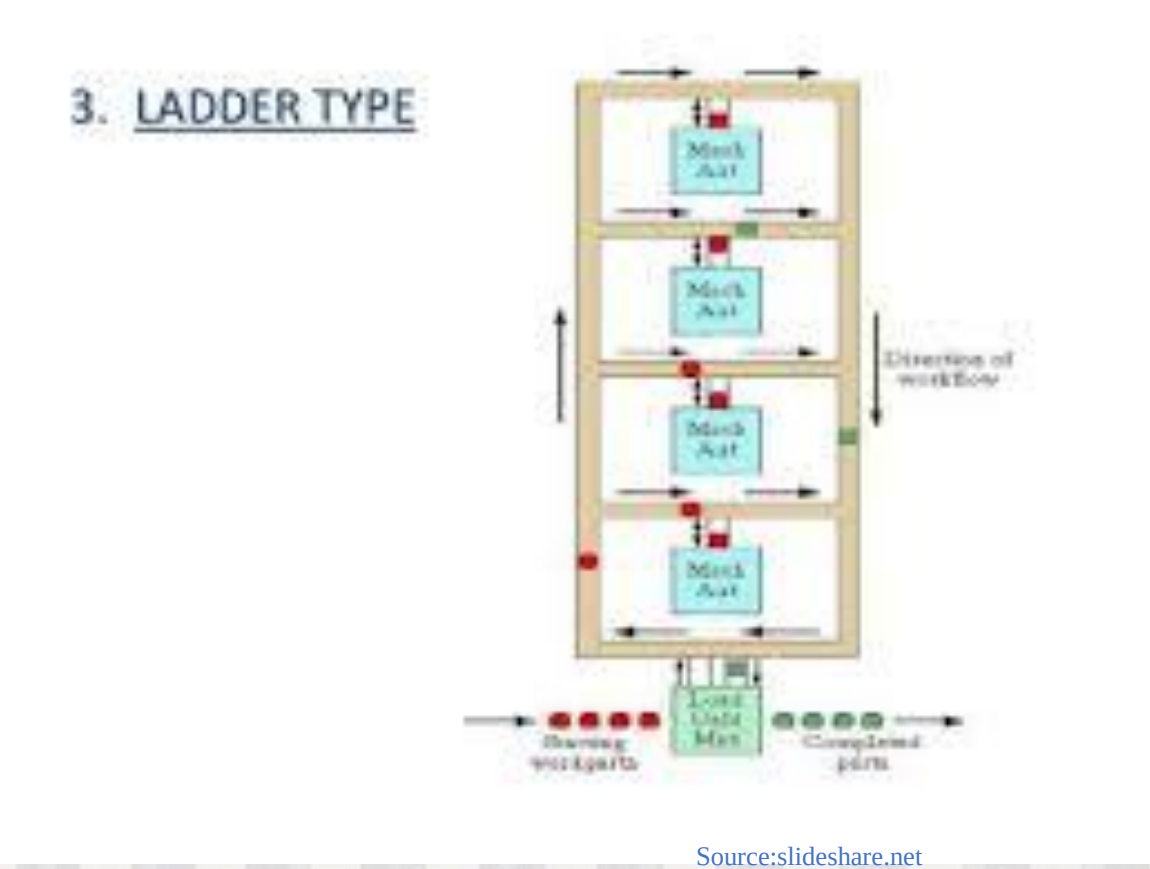
Ladder Layout

- The ladder layout consists of a loop with rungs between the straight sections of the loop ,on which workstations are located
- The rungs increase the possible ways of getting from one machine to the next, and obviate the need for a secondary handling system
- This reduces average travel distance and minimizes congestion in the handling system, thereby reducing transport time between workstations



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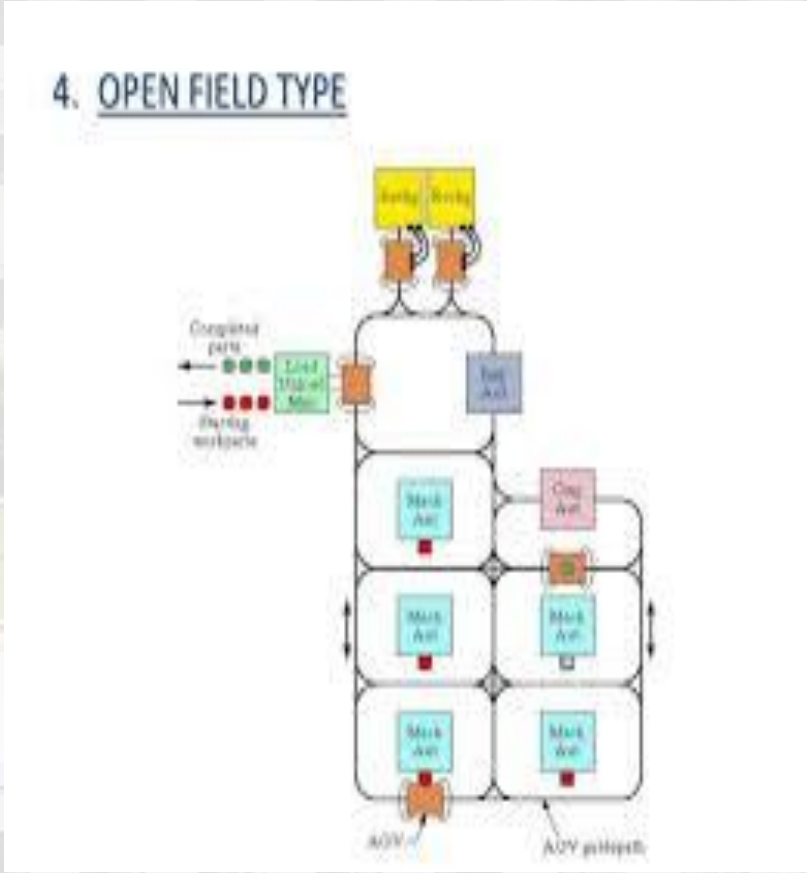
Open Field Layout

- The open field layout consists of multiple loops and ladders and may include sidings
- This layout type is generally appropriate for processing a large family of parts
- The number of different machine types may be limited, and parts are routed to different workstations depending on which one becomes available first



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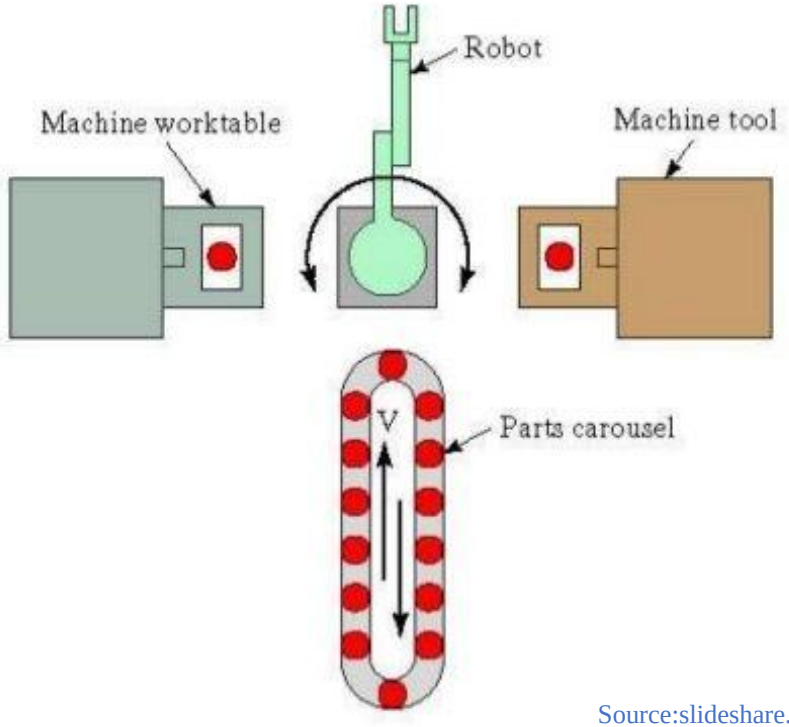
Robot Centered Layout

The robot-centered cell uses one or more robots as the material handling system. Industrial robots can be equipped with grippers that make them well suited for the handling of rotational parts, and robot-centered FMS layouts are often used to process cylindrical or disk-shaped parts



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THANK YOU

Assessment

https://create.kahoot.it/share/quiz-on-csg/5929c3cf-6a07-427d-ad01-23cc06ac1b38