



CAM

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COMPUTER AIDED MANUFACTURING

What is CAM means ?

Computer Aided Manufacturing (CAM) is the use of **software** and **computer-controlled machinery** to automate a **manufacturing** process.



CAD vs CAM

CAD (Computer Aided Drawing/Drafting) and CAM (Computer Aided Manufacturing) are computer technologies used for mainly product designing and manufacturing purposes where former is used in *designing of the product through some designing software* while latter involves *software for controlling the machines in the industries such as CNC machines*.



Computer + Designing Software = CAD

Manufacturing Tools + Computer = CAM

Key Differences Between CAD and CAM

- Computer-aided design (CAD) involves the use of computers for transforming the *elementary idea of product into a detailed engineering design*. The evolution includes the creation of product's geometric models, which can further be manipulated, analysed and refined. On the other hand, Computer-aided manufacturing (CAM) involves the use of computers for assisting managers, manufacturing engineers, and production workers by *automating production tasks and it also controls machines and systems*.
- CAD comprise of processes such as defining the geometric model and translating the definition, interface, design, and analysis algorithm, drafting, detailing and at last documentation. As against, CAM involves processes such as numerical control programs, interface algorithms, inspection, process planning, assembly and packing.
- The CAM system requires *control and coordination of the physical process, equipment, material, and labour whereas CAD requires product design conceptualization and analysis*.
- There is numerous CAD software, for example, AutoCAD, Autodesk Inventor, CATIA etcetera. In contrast, Siemens NX, Power MILL, WorkNC, SolidCAM are some the examples for CAM software.



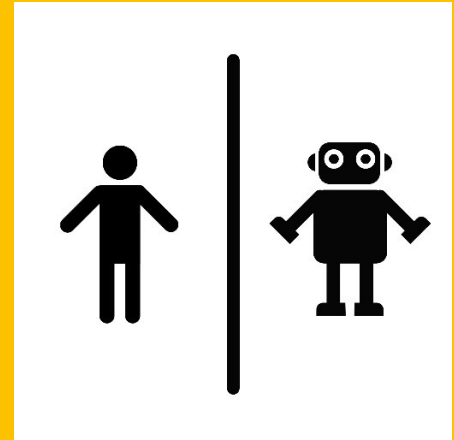
Automated Manufacturing system

What is automation ?

Automation, or **Labor-saving technology** is the technology by which a process or procedure is **performed with minimal human assistance**.

Or

Automation is a trend of science and technology which will cause a process to be carried out wholly or partly according to a previously set program without the intervention of human activity for its control.

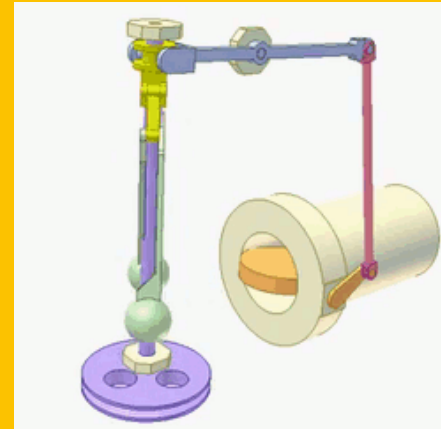


Essential characteristics of automation

- Ability to make decision
- Ability to carry out these decision with physical actions
- Ability to evaluate and control its own performance



Pressure Cooker



Governor



What is Automated Manufacturing system ?

An Automated Manufacturing System (AMS) is an **interconnected system of material processing stations** capable of automatically processing a wide variety of part types simultaneously under computer control.

They perform operations such as processing, assembly, inspection, or material handling, in some cases accomplishing more than one of these operations in the same system.

Examples of automated manufacturing systems include:

- automated assembly systems
- *transfer lines* that perform a series of machining operations
- automatic material handling and storage systems to integrate manufacturing operations
- automatic inspection systems for quality control

Need for automation (**Reason for automation**)

- **Increased productivity**
- **High cost of labour**
- **Labour shortage**
- **Trend of workforce towards service sector**
- **Safety**
- **High cost of raw materials**
- **Improved product quality**
- **Reduced manufacturing lead-time**
- **Reduction of in process inventory**
- **High cost of not automating**





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Stay safe

Stay healthy

Thank You

