SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
An Autonomous Institution

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DEPARTMENT OF MECHANICAL ENGINEERING

19MEE403 - Industrial Digitalization

IV YEAR / VII SEM

UNIT – 3

IOT AND ITS APPLICATIONS

1. Inventory Management in the Food Industry

Demand Forecasting: Predicting customer demand to ensure the right amount of inventory is stocked, avoiding both overstocking (which can lead to waste) and understocking (which can result in shortages).

Real-Time Tracking: Using technologies like RFID (Radio-Frequency Identification) and barcoding to monitor inventory levels in real time. This helps in keeping track of stock, expiration dates, and storage conditions.

Just-in-Time (JIT) Inventory: A strategy where inventory is replenished just in time for production or sale. This reduces the need for large storage spaces and minimizes the risk of spoilage.

Cold Chain Management: For perishable food items, maintaining a cold chain (a temperature-controlled supply chain) is crucial. This involves tracking and managing the temperature of products from the point of production to the final consumer.

Automated Reordering: Inventory management systems can automatically reorder supplies when levels drop below a certain threshold, ensuring continuous availability without manual intervention.

•**Warehouse Optimization**: Efficient storage layout and inventory management software optimize warehouse space, reducing retrieval times and enhancing the overall efficiency of operations.

•**Supplier Collaboration**: Close collaboration with suppliers ensures timely deliveries and allows for better management of lead times and inventory levels.

HACCP (Hazard Analysis and Critical Control Points): A systematic approach to identifying, evaluating, and controlling food safety hazards. Critical control points (CCPs) are identified in the production process where risks of contamination are highest, and measures are put in place to mitigate these risks.

Good Manufacturing Practices (GMP): Standards that ensure products are consistently produced and controlled according to quality standards. GMP covers all aspects of production, from raw materials to hygiene practices in the factory.

Regular Testing: Food products are regularly tested for quality parameters such as taste, texture, nutritional content, and safety. Microbiological testing ensures that products are free from harmful bacteria, viruses, and other pathogens.

Traceability: The ability to trace the history, application, or location of a food product. Traceability systems help in identifying and recalling products that may pose a risk to consumers.

Compliance with Regulations: Ensuring that all food products meet local, national, and international regulatory standards. This includes labeling, nutritional information, and safety certifications.

INTEGRATION OF INVENTORY MANAGEMENT & QUALITY CONTROL

Integrated Systems: Many modern food companies use integrated software systems that combine inventory management and quality control. This allows for seamless tracking of both stock levels and quality metrics.

Continuous Monitoring: Sensors and IoT devices can continuously monitor storage conditions, ensuring that products are stored at the correct temperatures and humidity levels to maintain quality.

Data Analytics: Advanced analytics tools help companies analyze trends in inventory and quality, allowing them to make data-driven decisions to improve efficiency and product quality.
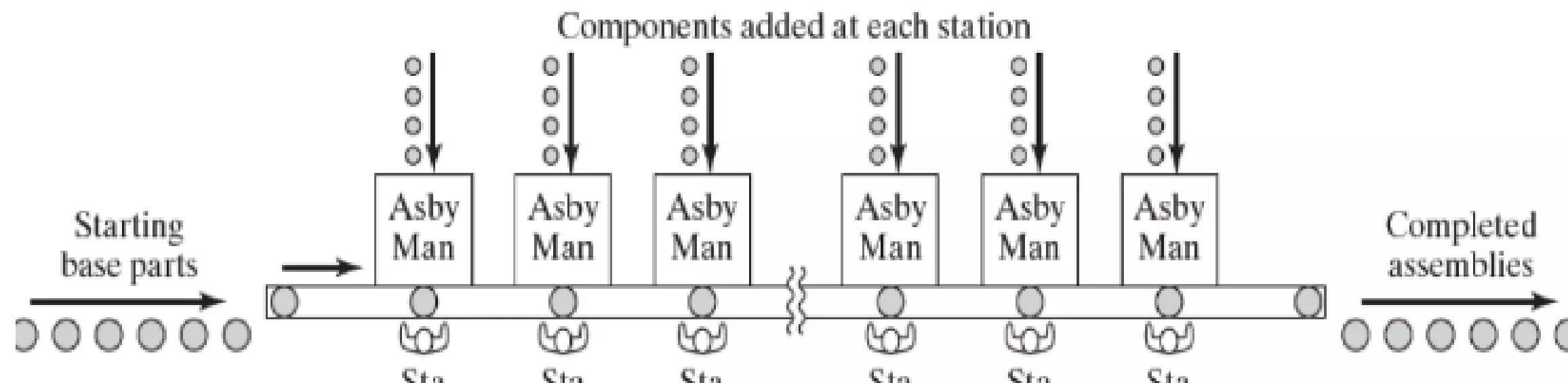
TABLE 15.1 Products Usually Made on Manual Assembly Lines

Audio equipment	Electric motors	Pumps
Automobiles	Furniture	Refrigerators
Cameras	Lamps	Stoves
Cell phones and smart phones	Luggage	Tablet computers
Cooking ranges	Microwave ovens	Telephones
Dishwashers	Personal computers and peripherals (keyboards, printers, monitors, etc.)	Toasters and toaster ovens
Dryers (laundry)		Trucks, light and heavy
DVD players		Video game consoles
E-Book readers	Power tools (drills, saws, etc.)	Washing machines (laundry)

Thank You