

Industrial Conveyor Systems

Streamlining Material Handling



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I. Introduction

Brief History of Conveyor Systems –

- Conveyors are designed to move materials to improve materials or products to improve efficiency and throughput.
- 1908 – Inventor Hymle Goddard patented the first roller conveyor.
- 1913 – Automobile manufacturer and inventor Henry Ford started incorporating conveyor belts into his company's assembly line system.
- 1920s – Conveyors began replacing locomotive and rail lines in the quarrying, mining and mineral processing industries.

II. Types of Industrial Conveyor Systems

Industrial conveyor systems are available in various types, each suited for specific applications and material handling requirements. Here are some common types of industrial conveyor systems:

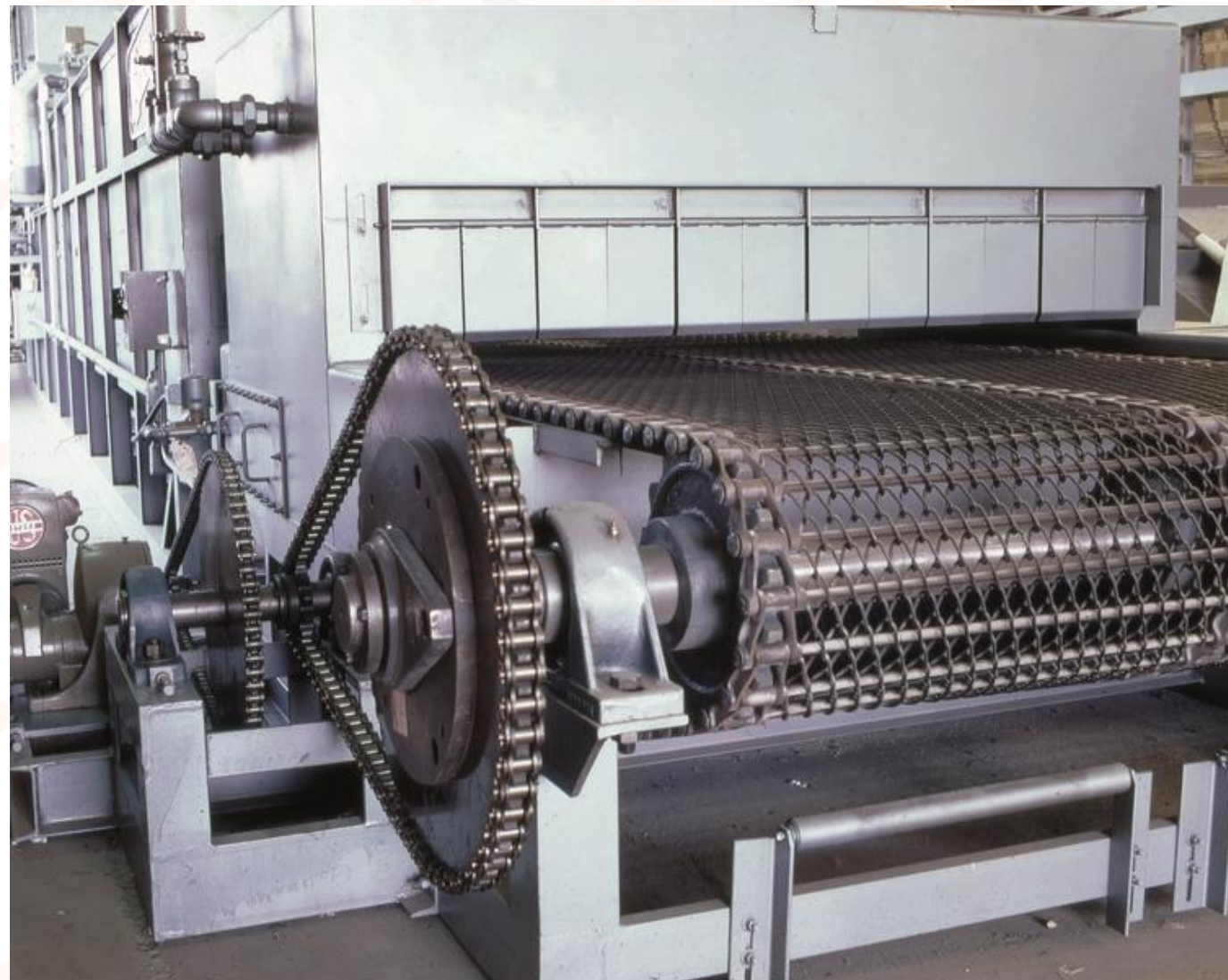
- A. Belt Conveyor:** Belt conveyors consist of a continuous loop of material, such as rubber or plastic, which is used to move materials from one point to another. Used to transport heavy or bulky materials, such as bulk products or aggregates.



B. Roller Conveyor: Roller conveyors use a series of rollers to transport materials along a fixed path. Used in material handling applications that require accumulation and sorting of products.



- C. Chain Conveyor:** Chain conveyors use chains to transport materials along a fixed path. Used in applications that require heavy-duty transport of materials, such as in mining or construction.



D. Screw Conveyor: Screw conveyors use a rotating screw to move materials along a fixed path. Used in applications that require the transport of materials in a vertical or inclined direction.



- E. Overhead Conveyor:** Overhead conveyors use a track system to transport materials along an elevated path. Used in assembly or storage applications to maximize floor space and efficiency.



F. Pneumatic Conveyor: Pneumatic conveyors use air pressure to transport materials through a pipeline. Used in applications that require the transport of powders, granules, or other bulk materials.



G. Vibrating Conveyor: Vibrating conveyors use vibrations to move materials along a fixed path. Used in applications that require the transport of fragile or delicate materials.



III. Components of Industrial Conveyor Systems

- Drive Units
- Belts and Chains
- Idlers and Rollers
- Pulleys and Drums
- Frames and Supports



Idlers and Rollers

IV. Applications of Industrial Conveyor Systems

Manufacturing and Assembly: Conveyor systems are widely used in manufacturing and assembly operations to move raw materials, work-in-progress, and finished products through various stages of production. They can also be used to automate assembly processes and reduce labor costs.

Packaging and Shipping: Conveyor systems are commonly used in packaging and shipping operations to move products from one location to another. They can also be used to sort and route packages based on destination or other criteria.

Mining and Quarrying: Conveyor systems are widely used in the mining and quarrying industry to move raw materials such as coal, ores, and minerals. They can be used to transport materials over long distances and up steep inclines.

Agriculture and Farming:

Conveyor systems are used in the agriculture and farming industry to move crops, livestock feed, and other materials. They can also be used to automate sorting and grading processes.

Food and Beverage Processing:

Conveyor systems are widely used in the food and beverage industry to transport raw materials, finished products, and packaging materials. They can also be used to automate processes such as mixing, cooking, and packaging.

Automotive Industry:

Conveyor systems are commonly used in the automotive industry to move parts and components through various stages of production. They can also be used to automate assembly processes and reduce labor costs.

V. Benefits of Industrial Conveyor Systems

Increased Efficiency: Conveyor systems can move materials and products at a consistent speed, which helps to increase the overall efficiency of material handling operations. This can result in faster production times, reduced labour costs, and higher throughput.

Cost Savings: Conveyor systems can help to reduce labour costs and increase productivity, which can lead to significant cost savings over time. They can also help to minimize material waste and damage, which can result in further cost savings.

Improved Safety: Conveyor systems can help to improve safety in material handling operations by reducing the need for manual handling of heavy or awkward items. This can reduce the risk of workplace injuries and accidents.

Better Product Quality: Conveyor systems can help to improve the quality of products by ensuring consistent handling and processing. This can result in fewer defects, less waste, and higher customer satisfaction.

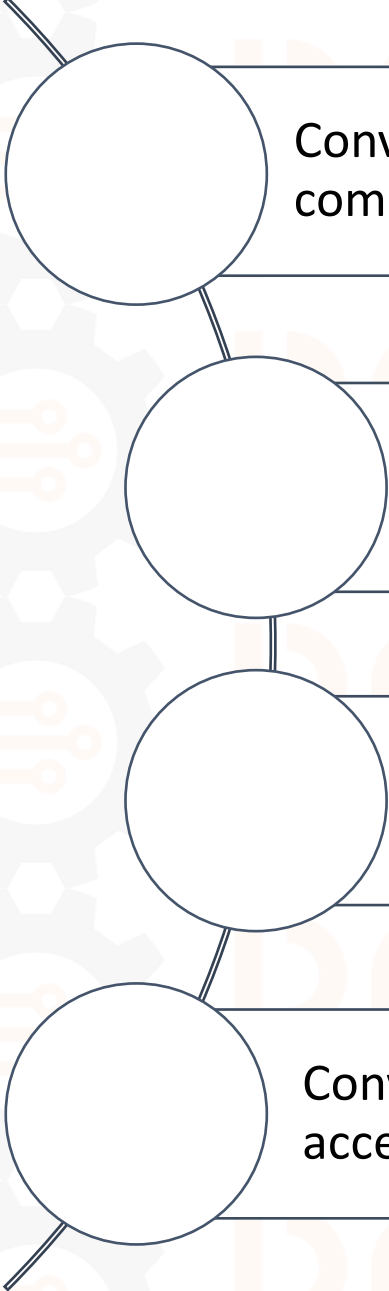
Scalability and Customization: Conveyor systems can be designed to meet the specific needs of different industries and applications. They can also be easily scaled up or down to accommodate changes in production volume or product lines.

VI. Maintenance and Safety Considerations for Industrial Conveyor Systems

Maintenance and safety considerations are essential for ensuring the optimal performance and longevity of industrial conveyor systems. Here are some key considerations:

- Regular Inspection and Cleaning
- Proper Lubrication
- Training and Safety Guidelines
- Emergency Shutdown Procedures
- Conveyor Guarding and Protection

VII. Conclusion

A vertical sequence of four white circles connected by thin black lines. The top circle is connected to the second, the second to the third, and the third to the fourth. The top and bottom circles have short diagonal lines extending from their left sides.

Conveyor belt is a material handling system designed to move supplies, materials, and components using an efficient and effortless process that saves time, energy, and cost.

The efficiency of conveyor belt systems assists in improving productivity saves on labour costs and decreases lead times.

Regardless of the materials used to produce a conveyor belt, all types are designed to move products, materials, supplies, and components efficiently and smoothly from one point to another.

Conveyors can be equipped with a variety of motor and controller options, stand options and accessories. Conveyors are often integrated with robots for maximized automation.

VIII. References

- Conveyor Equipment Manufacturers Association (CEMA)
- Occupational Safety and Health Administration (OSHA)
- Materials Handling and Logistics Society (MHLS)
- Manufacturing Automation and Robotics Research Lab (MARR)

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