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Experiment No-5

* Name of the experiment - Demonstration of robot assisted automatic conveyor system.

* Aim - To study the conveyor systems and Robot-assisted material systems.

* objective - To understand the different parts and working of robot-assisted conveyor system.

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Summary

A conveyor system is a common piece of mechanical handling equipment that moves materials from one location to another. Conveyors are especially useful in applications involving the transport of heavy or bulky material. Conveyor systems allow quick and efficient transport for a wide variety of material, which make them very popular in the material handling and packaging industries. They also have popular consumer applications, as they are often found in supermarkets and airports, constituting the final leg of item / bag divery to customers. There are chain conveyors which consist of enclosed tracks, I-Beam, towline, power & free, and hand pushed trolleys. There are also Roller conveyor for carton transport in the apparel industry.

* Advantages of Conveyor Systems -

① Conveyor systems are used widespread across a range of industries due to the numerous benefits they provide.

② Conveyors are able to safely transport materials from one level to another, which when done by human labor would be strenuous and expensive.

③ They can be installed almost anywhere, and are much safer than using a forklift or other machine to move materials.

④ They can move ~~bet~~ loads of all shapes, sizes and weights. Also, many have advanced safety features that help prevent accidents

⑤ There are a variety of options available for running conveying systems, including the hydraulic, mechanical and fully automated systems, which are equipped to fit individual needs.

* Design and selection of Conveyor Systems

Conveyors can be linked together with other machinery to become an integral component of a processing or packaging line. All components within an assembly automation application, including conveyors, should work together to best augment the overall operation. Answering those questions will help to take a critical look at the conveyor system to determine where improvements in product flow and handling can be made.

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* Industry Applications:

Conveyor systems are commonly used in many industries, including the Mining, automotive, agricultural, computer, electronic, food processing, aerospace, pharmaceutical, chemical, bottling and canning, print finishing and packaging. Although a wide variety of materials can be conveyed, some of the most common include food items such as beans and nuts, bottles and cans, automotive components, scrap metal, pills and powders, wood and furniture and grain and animal feed. Conveyors are built to required specifications to improve efficiency and output of production line.

* Latest Trends in Conveyor Systems.

(1.) Conveyors for Flexible Assembly lines -

Modern production facilities show a growing trend of flexible assembly lines. Assembly lines need to be flexible to accomodate different applications.

(2) Conveyors are continuing to play a greater role in robotic applications. Robotic movements are precise and exact - conveyors need to operate to that same level of accuracy.

* Robotic Material Handling and Tending -

Robotic material handling and tending systems are commonplace in the industrial sector. Material handling refers to robotic arms moving production parts, typically on or off a conveyor belt or to hold a part in place for production. Machine tending is similar, but more specific, referring to a robotic arm to load and unload a stationary production machine.

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Questions

Q1) What are the advantages of robot assisted conveyor system over normal conveyor system?

→ The advantages are:-

① Conveyor systems are used widespread across a range of industries due to the numerous benefits they provide.

② Conveyors are able to safely transport materials from one level to another, which when done by human labor would be strenuous and expensive.

③ They can be installed almost anywhere and are much safer than using a forklift or other machine to move materials.

④ They can move loads of all shapes, sizes and weights. Also, many have advanced safety features that help prevent accidents.

⑤ There are a variety of options available for running conveying systems, including the hydraulic, mechanical and fully automated systems, which are equipped to fit individual needs.

Q2) Name two vendors for robotic conveyor system.

→ Vendors for Robotic Conveyor System are -
1. Mitsubishi Electric
2. ABB
3. Omron Adept Technologies
4. FANUC Robotics
5. Yaskawa.

Q3) What are the applications of robotic conveyor system?

→ The applications are -
1. Conveyors are continuing to play a greater role in robotic applications.
2. Robotic movements are precise and exact - conveyors need to operate to that same level of accuracy.
3. Robotic applications often require product to be in an exact spot on the conveyor at the right time.
4. But to do that sucessfully requires a conveyor system that is efficient, reliable and engineered to work in conjunction with robotics
5. It's important to select a conveyor to perfectly match the application requirements.