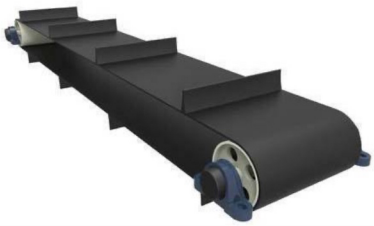
ELECTROMAGNETICS

Unit 4
Session 5

Introduction to -
- Hands-on AC DC Motors
- Different Characteristics Uses
- Different Control of Motor



Lesson Aims:
1. Summarized working principle of AC & DC
2. Identify different Motors Specifications
3. Illustrate the principle of a conveyor belt

- What to know about Motors
- Which component in the AC motor?
- Which component in the DC motor?

Brainstorming

A 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 design of conveyor belts includes two motorized pulleys with the conveyor material looped over them. The pulleys operate at the same speed and move in the same direction to activate the motion of the conveyor belt.

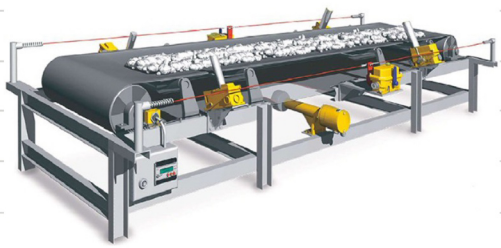
There is an endless number of types and uses for conveyor belts. All of the varieties serve the purpose of transporting materials and goods along a continuously moving path. Though motorized conveyor belts are the traditional form of a conveying system, there are systems that use rollers without a motor to move materials.

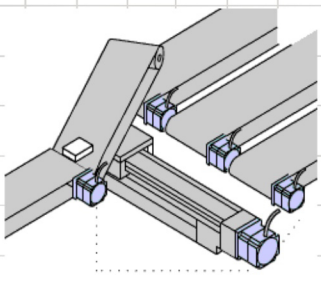
Benefits:

- Easy & fast transportation of materials from one location to another.
- Reduce labor costs and improves productivity. Prevent human injury and product damage while transporting.
- The multi-floor material movement made easy.
- Very helpful in truck loading and unloading.

Application of Conveyor Belt

- Mainly a conveyor system is helpful to move safely both regular or irregular-shaped, large or small size, light or heavy weight objects, from one location to another.
- A conveyor belt system can be installed in industries like Aerospace, Food, Manufacturing, Pharmaceuticals, etc at a very economical cost.
- For example, a conveyor belt system can be successfully used to load or unload passengers' luggage. While in the manufacturing sector, bulky materials are being transported efficiently within the plant area, without human error.
- Each conveyor belt system has its own applications and advantages, depending upon the type of industry it has to be implemented.





Types of Conveyer Belt:

The range and uses of conveyor belts cover several industrial settings and applications. The efficiency of conveyor belt systems assists in improving productivity saves on labor costs and decreases lead times. Conveyor belts move large quantities of goods quickly and reliably for transport, further assembly, or storage.

The principal reasons so many conveyor systems are in use are the savings in labor costs, efficient movement of goods, and their ability to keep products and materials from damage. They provide the best possible service at the lowest possible cost.

Roller Bed Conveyor Belt

The surface of a roller bed conveyor belt is a set of rollers that match the weight and speed required by the product. The length of the roller bed conveyor belt determines the number of rollers used.

A roller bed conveyor belt is designed for applications where materials are loaded by gravity. They are an ideal solution for conditions where materials have to be moved over long distances since they are designed to reduce friction.

Flat Belt Conveyor Belt

A flat belt conveyor belt uses a series of pulleys to move materials and supplies. Its belt is made of natural or synthetic materials; this makes it versatile and adaptable to varying conditions and applications. In some instances, a flat belt conveyor belt may have a center drive and nose bars.

Modular Conveyor Belt

A modular belt conveyor consists of interlocked pieces made of hard plastic with segments that can be easily removed and replaced. The design of modular belt conveyors makes them easier to clean, and the material is resistant to sharp and abrasive substances. Modular belt conveyors come in varying configurations and use a single belt to go around corners, in a straight line, up inclines, and down declines.

Cleated Conveyor Belt

Cleated belt conveyors have sections, pockets, or dividers that secure granular products when the belt declines or inclines. The cleats have equal spacing between them and come in various styles and shapes depending on the product to be moved and the design of the belt.

Curved Conveyor Belt

The curves in conveyor belts are used to carry products around corners, make transfers, and make efficient use of floor space. Curved conveyor belts can make "U" turns to face the direction from which they came. They are made with flat belts and can make turns at 45, 90, 135, and 180 degrees angles.

Incline Conveyor Belt

Incline conveyor belts have a rough, uneven surface to hold materials and prevent them from slipping or falling back. The underside of the belt is smooth to allow the belt to glide smoothly along the bed. Modular belts and timing belt conveyors can be used for this purpose. Depending on the material to be moved, cleats may be included for increased slippage prevention.

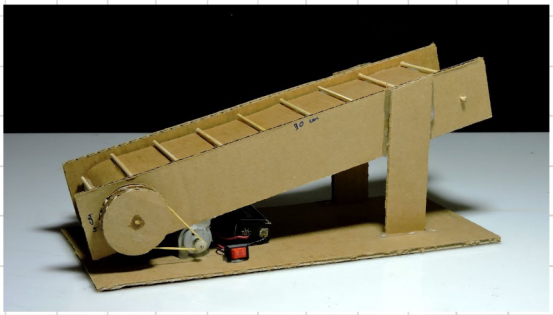
Decline Conveyor Belt

The purpose of a decline conveyor belt is to move products or materials down or change their height. As with the incline version of conveyor belts, a decline conveyor belt has a rough surface or cleats to prevent materials from slipping or falling.

Activity

Start making the conveyer belt project with the below steps

1. Cut the aluminum profile to the size we can do for you.
2. Lay out the parts and assemble angle brackets ...We can supply angle brackets.
3. Assemble the aluminum profile belt base using the angle brackets and profile.
4. Measure the spacing of brackets and make sure they are square then tighten them with an Allen key.
5. Balance on a table or pre-made legs and slide on the idler and drive end drums... square up and secure using the fittings provided. If you would like to build the idler and drive drum from scratch you can see our other video's in this series.
6. Place and secure using double-sided tape the metal sheet used for the belt bed.
7. Build the aluminum legs using fittings measure and square up then tighten.
8. Screw in the feet.
9. Add the leg bracket which enables you to angle the conveyor if required.
10. Put end caps on the profile legs
11. Place the top bed with the drums on the legs then carefully slide on the belt.
12. Then secure using the brackets.
13. Place the motor on the drive drum end and secure it.
14. If you require a start-stop with a variable speed you will need to mount the inverter.
15. Wire up the Inverter and motor.
16. Place ends on the idler drum and fix.
17. Then simply plug in and switch it on.



Reflection

1) What is a mini conveyor belt?
2) What do you need to make a conveyor belt?
3) Which motor is used in a small conveyor belt?
4) How does a conveyor belt system work?
5) What are the types of belt conveyors?
6) What are the different parts of the conveyor belt?

For more information -