

Flow chart of Conveyor machine

Start

While Conveyor Belt is Running:

 If Product Detected by Proximity Sensor:

 Track Product Position Using Encoder

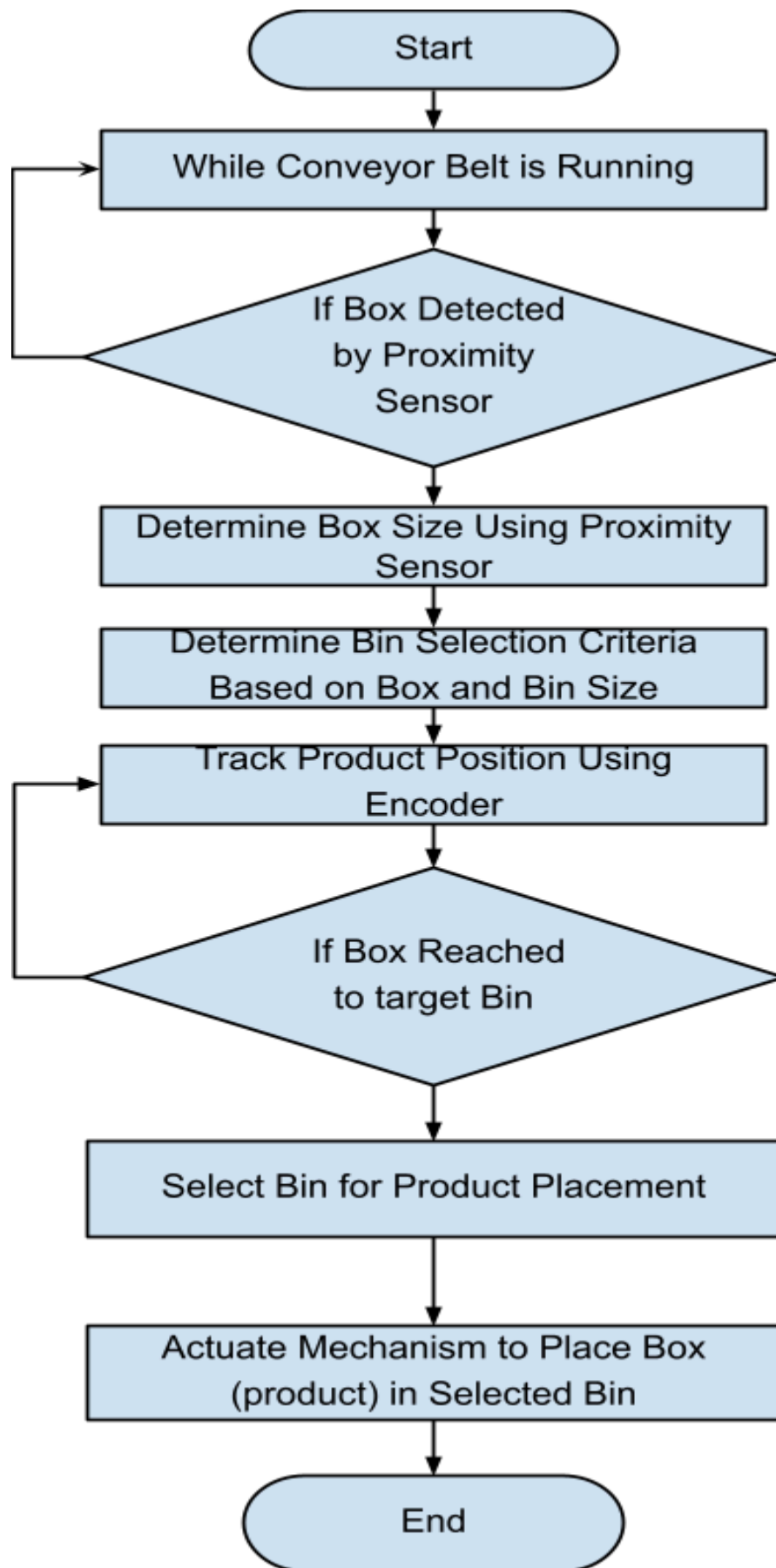
 Determine Box Size Using Proximity Sensor

 Determine Box Selection Criteria Based on Product and Box Size

 Select Box for Product Placement

 Actuate Mechanism to Place Product in Selected Box

End



Sorter Conveyor Belt System Design

The following document outlines the design and functionality of the sorter conveyor belt system, which is tasked with providing 6500 products per hour. The system utilizes two conveyor belts referred to as "Backbone 1" and "Backbone 2" for the supply of products. Additionally, it includes load management architecture to ensure the sorter remains full. The system operates in two modes: "Accumulation Mode" and "Slag Mode." Furthermore, it incorporates gap optimization functionalities to manage forward and backward gaps in product flow.

System Overview

The sorter conveyor belt system is designed to achieve a throughput of 6500 products per hour. This is accomplished through the utilization of Backbone 1 and Backbone 2 conveyor belts, which supply products to the sorter.

Load Management Architecture

To ensure the sorter remains full and operational, a load management architecture has to be implemented. This architecture monitors the product flow and adjusts the supply from Backbone 1 and Backbone 2 accordingly. During the Accumulation Mode, the system actively provides products from the backbone conveyor belts to maintain a consistent flow into the sorter.

Operating Modes

a. Accumulation Mode:

- In this mode, the system operates to provide a continuous flow of products from Backbone 1 and Backbone 2 conveyor belts into the sorter.
- The load management architecture adjusts the supply to maintain optimal sorter capacity without overwhelming it.

b. Slag Mode:

5. Gap Optimization

a. Forward Gap:

- To optimize forward gaps, the system increases the speed of Backbone 1 and/or Backbone 2 conveyor belts.
- This allows products to reach the sorter more quickly, reducing gaps in the product flow.

b. Backward Gap:

- For backward gaps, the system decreases the speed of Backbone 1 and/or Backbone 2 conveyor belts.
- By slowing down the supply, the system can align products efficiently and reduce gaps in the flow.

The sorter conveyor belt system is designed to efficiently handle a throughput of 6500 products per hour. With the implementation of load management architecture and gap optimization functionalities, the system ensures consistent and optimal product flow into the sorter. The two operating modes, Accumulation Mode and Slag Mode, allow for dynamic adjustments to meet varying demands and optimize the sorting process.