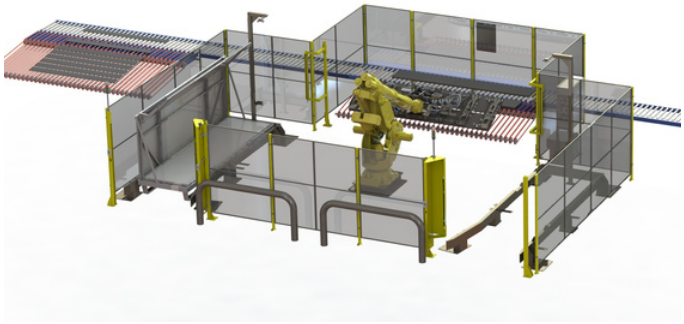
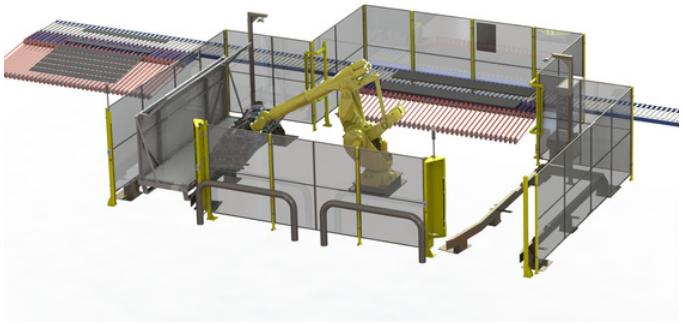
Automatic Tread Booking System

Storage of treads from conveyor to multi-tray trolleys

The purpose of this solution is to handle the treads from conveyor to multi-tray trucks placed for this purpose near the robot.



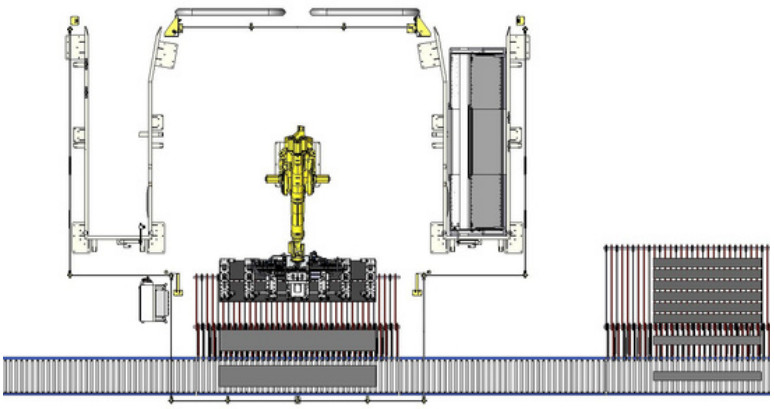


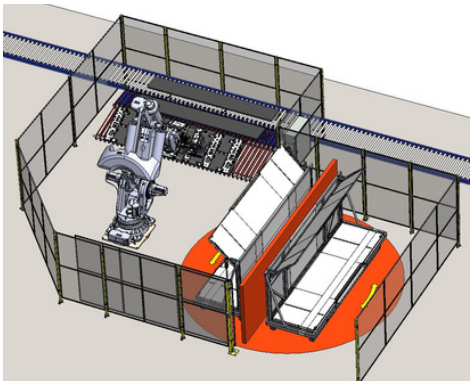
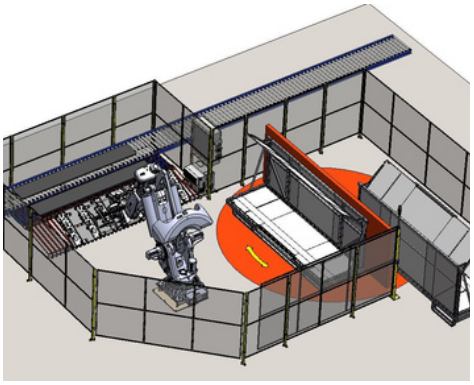
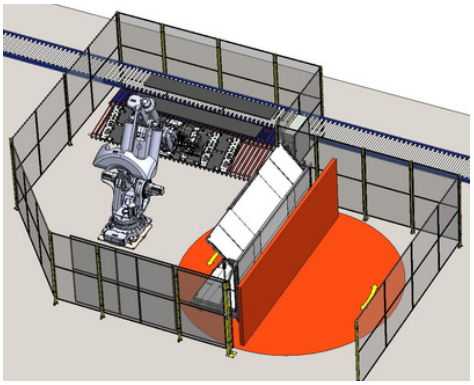
FEATURES:

- Capacity to handle 2, 3 or 4 treads (depending on production)
- Working with two trucks alternatively.
- Robot equipped with tray folding system.
- Height control and trays identification.
- Safe robot position control using Dual Check Safety (DCS) and Ethernet IP safety.
- Communication with IT or MES system.
- Automatic handling and adjustment for different treads lengths.

The robot can manage the trolleys from when they are empty until they are fully filled. To detect closed or open trays, external sensors have been installed to the robot, which measures the distance to the last closed tray.

The system comes with a perimentral security fence, safety light curtains and with prescanner detection in the loading and unloading truck area.



SYSTEM COMPONENTS:

- In feed conveyor:
  - Roller conveyor.
  - Speed synchronized with the last conveyor of the extrusion line.
- Vacuum sucker turning device:
  - Metal Vacuum caps frame to turn the tread 180º, placing the base up.
- Belt accumulator:
  - To collect the treads into one batch for the next sheet to be loaded.
  - Belts would be supported with metal sheets (executed in stainless steel) or plastic sheets to avoid sag of the transfer belts.
- Charging unit:
  - Robot.
  - Vacuum caps robot gripper.
  - Robot equipped with tray folding system.
  - Height control and trays/sheets identification.
- Truck Loading station:
  - 2 loading station to avoid downtimes for changing the trucks, always having a truck available, so accumulation of the treads is no needed.
  - Turning table.
  - 3 station automatic line truck change.
- Sensors to detect the 3 different truck sizes, to modify the booking program accordingly.
- Turning table between the buffer conveyor and the robot:
  - The turning table will have a “comb” frame (to fit between the buffering belts) with a vertical movement. The frame would be placed under the buffer conveyor and once the treads are ready the frame will move up lifting the treads and turning 180º to face the robot.