

SYSTEM CONTROL TECHNOLOGY PRELIMINARY ROUND ON-SITE DESIGN CHALLENGE



MIDDLE SCHOOL

PROBLEM

Your company specializes in creating industrial automation systems. It has been hired to design a system to move rectangular blocks off an assembly line conveyer belt into a bin. The blocks must be ejected from the line at least 90 degrees from their direction of travel. The bin can only hold three (3) blocks at a time and there must be a light that signals the operator to empty the bin. The conveyer belt must stop when the bin is full and not reactivate until the operator signals the bin has been emptied.

REQUIREMENTS

- The solution must be contained within an area of 2 feet by 2 feet.
- At least four (4) rectangular blocks must be used.
- The design must eject the blocks 90 degrees from their direction of travel.
- The conveyer belt must move blocks continuously toward the bin until the bin has two (3) blocks in it.
- When three (3) items are in the bin, the conveyer belt must stop until the bin is emptied. The operator will indicate when the bin is empty and in place.
- Human interaction is limited to loading the blocks on the conveyer belt, emptying the bin, and restarting the conveyer belt.
- The bin must be fully loaded and emptied two (2) times in under three (3) minutes.