

SYSTEM CONTROL TECHNOLOGY PRELIMINARY ROUND ON-SITE DESIGN CHALLENGE



HIGH SCHOOL

DESIGN CHALLENGE

Your company specializes in creating industrial automation systems for manufacturing. You have been hired to design a system to move rectangular blocks off an assembly line conveyor belt into a bin. The bin can only hold three (3) blocks at a time. Once the bin is full, the system should pause the conveyor belt, empty the bin, and return the bin to its original position. A light should indicate whether the conveyor belt is stopped or moving, as well as a separate light must indicate that three blocks are in the bin. Once the bin is empty and has returned to the original position, the system should then restart the belt. An operator will load the blocks onto the conveyor belt.

REQUIREMENTS

- The solution must be contained within an area of 2' x 2'.
- At least three (6) rectangular blocks must be used.
- The conveyor belt should move blocks continuously into the bin until the bin has three blocks in it.
- When three (3) blocks are in the bin, the system should stop the belt, empty the bin, and then restart the belt.
- A light should indicate whether the conveyor belt is moving or stopped.
- A light should indicate that the bin has three items and is being emptied.
- The only human interaction is for an operator to load the blocks on the conveyor belt.
- The bins should be filled and emptied three (3) times in under five (5) minutes.

SYSTEM CONTROL TECHNOLOGY
PRELIMINARY ROUND
INVENTOR'S LOG



MIDDLE SCHOOL

Participant/Team ID# _____

Use only the space provided. This section must be completed **DURING** the process of problem analysis.

1. Description or interpretation of the given problem:

The two parts below must be completed **AFTER** the problem analysis session.

2. Description of the team solution (explain the unique features of the program and model):

3. Directions to evaluators to start the system: