Automated Pouch Opener/Presenter (APOP)

SDSU | San Diego State University

Bondi

MASIMO

Project Overview

Problem: Masimo needs to streamline their current process of inserting adhesive sensors into pouches. Presently this process is completed by an operator that prepares an adhesive sensor, manually opens a pouch to insert the sensor, and then places the filled pouch into a bin.

Solution: To increase the production volume, speed, and accuracy Team Bondi has designed an automated pouch opener/presenter for Masimo to implement into their facilities that utilizes pneumatics to grab a pouch from a designated hopper and then opens and presents the pouch to an operator for sensor insert.

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CAD Models

System Assembly

Actuator Subassembly

Hopper Subassembly

Meet the Sponsor

Masimo is a global medical device company headquartered in Irvine, CA that creates over a hundred million adhesive sensors each year.

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Enclosure Diagram

ENCLOSURE LAYOUT

NON-ENCLOSURE COMPONENTS

LEGEND
120 VAC Components - YELLOW
24 VDC Components - RED
Control Components - GREEN
Ethernet Components - BLUE
Safety Components - ORANGE
Pneumatic Components - PURPLE
Sensors - DARK BLUE
External Interface - PINK

System Process

The hopper is filled with pouches.

The operator starts APOP system using HMI.

The linear actuator extends to suction on to pouch.

The linear actuator extends to the stationary suction cups.

The rotary actuator rotates the linear actuator assembly 90°.

The linear actuator retracts to remove pouch from the hopper.

As suction is applied to both sides of the pouch the linear actuator retracts to open the pouch.

The operator places a medical sensor in the opened pouch.

The filled pouch is dropped below into a bin.

System Level Diagram

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