Bulk Cap Loading Elevator & Inspection System
Maisie Jane's

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PROJECT OVERVIEW

Maisie Jane's California Sunshine Products, Inc. is a local company in Chico. The rapidly growing demand for their nut products has necessitated continual increases in efficiency of the production of their nut butter. Their limiting factor in production is that the current production packaging system requires too much human interaction.

The constraints of the project included:
- Design must increase capacity and reduce necessary interaction.
- Automate the removal of defects to reduce the burden on personnel.

SOLUTION:

Maisie Jane's will have two machines incorporated to increase production efficiency. A Bulk Cap Loading Elevator System will be installed to increase the time between refilling lids, and an Inspection System to remove the cross threaded jars.

OBJECTIVE OF THE PROJECT

Both systems must be:
- Water and alcohol resistant
- Food and Drug Administration (FDA) compliant
- Operate continuously for two shifts and run at line capacity

Bulk Cap Loading Elevator:
- Supply caps without emptying source of supply or overload it.

Inspection System:
- Reject jars before reaching quality control
- Provide storage for rejected jars
- Remain upright position
- Small footprint impact

Cross threaded jar

Properly closed jar

BULK CAP LOADING ELEVATOR

The Bulk Cap Loading Elevator will provide lids to the hopper and reduce interaction with Maisie Jane's personnel. A sensor reads how empty the hopper is and when it is nearly empty it is trigger the elevator to restock.
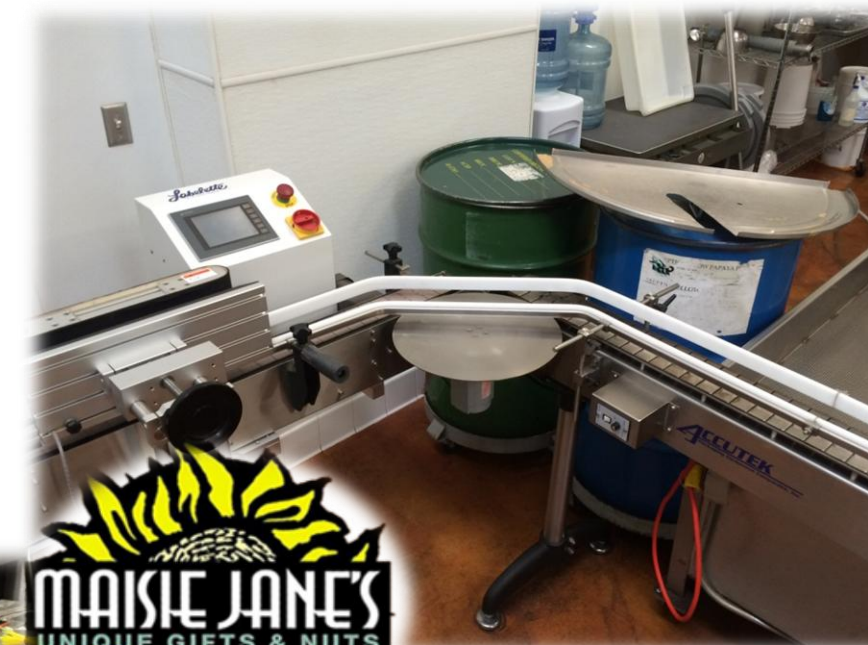
Elevator

Spindle Hopper

ELECTRONICS

Inspection System
- **Micro switch**: Keeps track of where the jars are located in the carousel.
- **Optimal break beam sensor:** Reads height of the jars to determine if it is cross threaded
- **Solenoid:** Controls the rejection gate
- **Board:** Custom logic control and solenoid driver.
- **Power supply:** Powers entire system
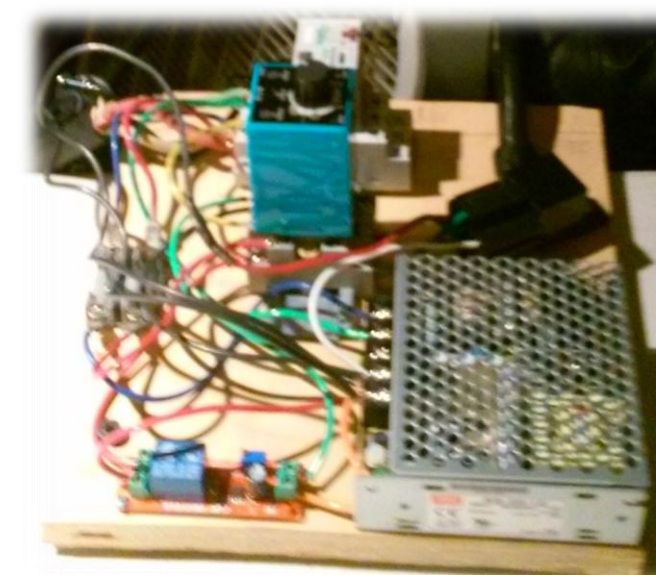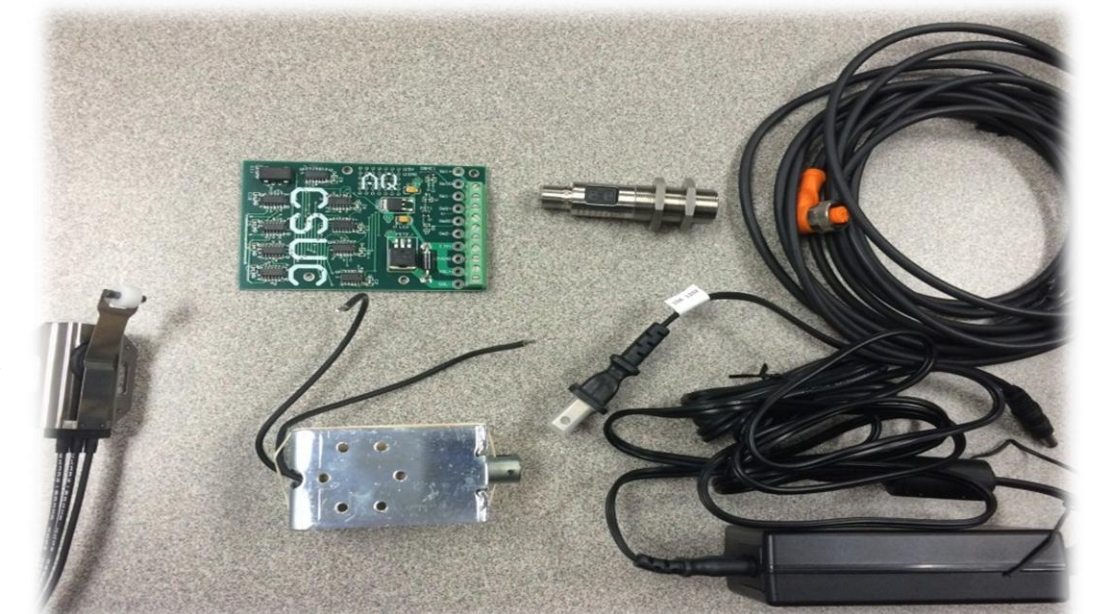
Bulk Cap Loading Elevator
- **Sensor:** Reads level of the lids in the spindle hopper
- **Relay:** Triggered by the sensor, controls the elevator
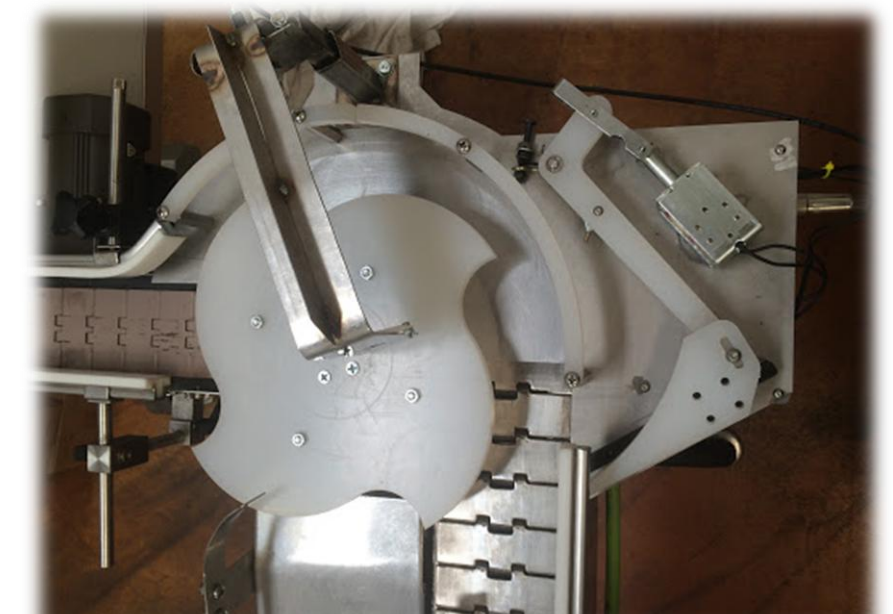- **Power supply**: Powers sensor.

INSPECTION SYSTEM

The Inspection System is fed by a conveyer belt that feed the carousel. The jar is evaluated to determine if the jar is cross threaded by a sensor. The results are sent to the rejection gate which ejects the cross threaded jar onto an inclined ramp.

Old System

New System