

Central California Food Bank - Packing Line Project

Mechanical & Electrical Engineering

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Abstract

California Food Bank requires a packing line that takes up to 1,200-pound bins of fresh produce, sends the produce through a sorting station where volunteers can easily remove the bad produce, and lastly sends to either similar sized bins for packing or to more volunteers for individual packing in much smaller containers.

The desired output is at least 150,000 pounds per quarter. The line also needs to utilize up to 15 inexperienced volunteers. Costs are to be kept to a minimum since the budget is initially \$20,000 for the entire system. We are working with senior engineer Sam Parnagian from Fowler Packing to verify designs and for possible donations to the packing line, and with Central Valley Iron to help us with fabrication.

Packing Line



Restoration Of Equipment



Bin Dumper



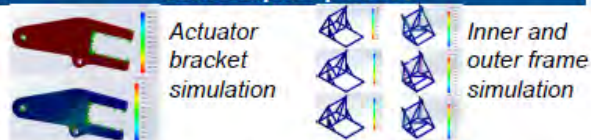
Inspection and Metering Belt



Restoration Processes

1. Disassemble all components to donated equipment
2. Remove all dirt and grease
3. Remove all rust and paint
4. Complete all physical modifications
5. Apply primer and paint
6. Apply new grease
7. Reassemble everything with new motors
8. Test and refine

Bin Dumper Operation



With a capacity is 1200 lbs, the Bin Dumper inverts and dumps multiple sizes of bins on to the sorting conveyor. Static studies were done to simulate Von Mises Stresses, yield strength of material, and determine factor safety.

Inspection and Metering Belt Operation

As commodities are unloaded by the bin dumper they fall upon the metering belt. The metering belts purpose is to receive the commodities at the specified elevation and then to divide them into equal portions. The commodities then fall onto the inspection table which houses rollers moving on chains over rubber sheets. Workers on both sides of the inspection table are then responsible for inspecting commodities and throwing the rejections into the middle lane. Good commodities are funneled into a bin.

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