

PROCESS DESCRIPTION

Production line of canned peaches with water sugar



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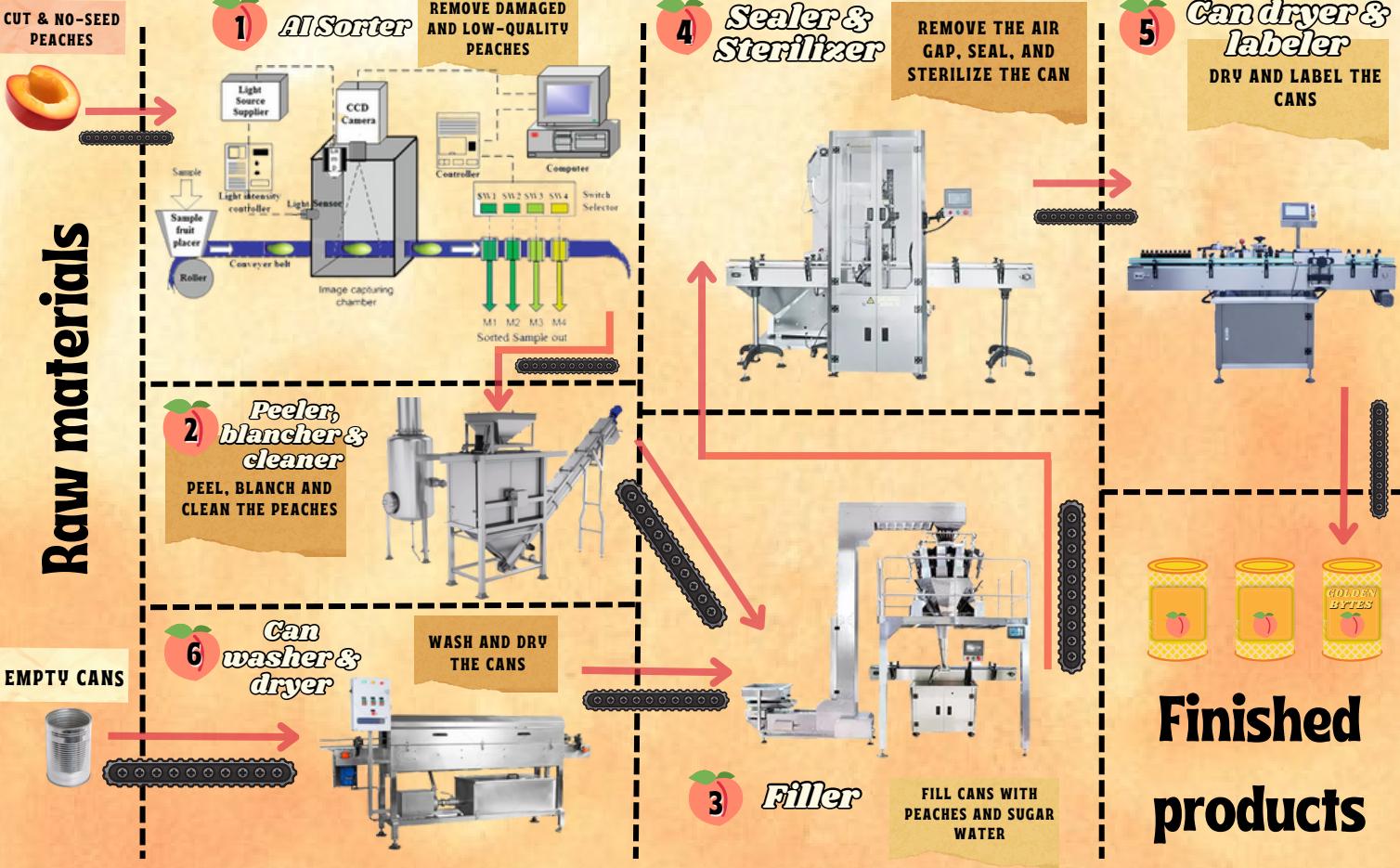
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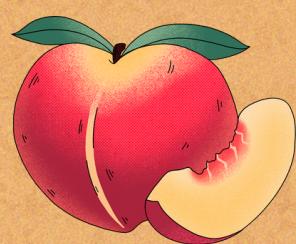
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GOLDEN BYTES

By: sduquel3@eafit.edu.co



AI Sorter

THE OBJECTIVE OF THE PROCESS IS TO ASSESS THE QUALITY OF EACH OF THE PEACHES THAT ARRIVES INSIDE THE NANO-FACTORY AS RAW MATERIAL. THIS PROCESS GUARANTEES THAT THE PEACHES THAT GET PROCESSED MEET THE HIGHEST OF STANDARDS SO THAT IN TURN THE FINAL PRODUCT MEETS THE HIGHEST STANDARDS AS WELL. THIS MODULE OF THE NANO-FACTORY DISCARDS THE PEACHES THAT SHOW SIGNS OF IMPERFECTION IN DIFFERENT CATEGORIES.

Sensors

Camera 1: Checks for the color of the peaches.



Camera 2: Checks for holes in the peaches which have been caused by insects.



Camera 3: Checks for mold or fungi in the peaches.



Camera 4: Checks for bruised peaches.



Proximity: checks to see if there are peaches at the hopper's bottom gate.



pH: Checks the acidity level of the peaches.



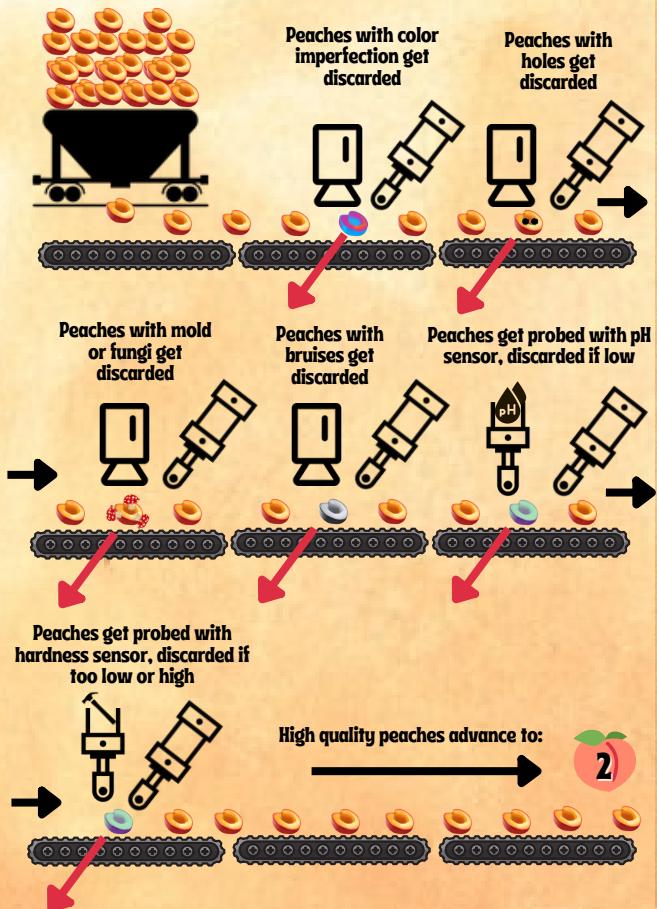
Hardness: Checks the hardness level of the peaches.



Presence: checks to see if there are peaches on the conveyor belt to get analyzed by the previous sensors.



PROCESS DESCRIPTION



Actuators

Conveyor Belt: Carries the peaches through the inspection zone.



Shaker: Generates vibration in the hopper to induce movement within the peaches



Pistons: 4 pistons are used to push the fruits once the computer has determined they should be discarded.



Pistons: 1 piston for probing the pH sensor on the probe.

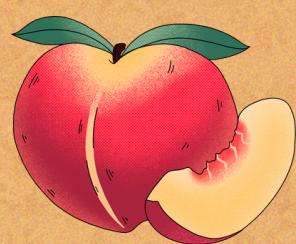


Pistons: 1 piston for probing the peach with the hardness sensor.



Gate: Located at the bottom of the hopper, controls the flow of peaches to the conveyor belt.





GOLDEN BYTES

By: aarangog2@eafit.edu.co



Peeler, blancher & cleaner

THIS IS A PROCESS FOR THE TRANSFORMATION OF PEACHES. THE OBJECTIVE IS TO PEEL, BLANCH AND DRY THE HIGH-QUALITY PEACHES COMING FROM THE AI SORTER. THE PEACHES SKIN IS REMOVED BY THE PEELING BRUSHES WHILE BEING EXPOSED TO HIGH-TEMPERATURE STEAM. ONCE PRE-COOKED (BLANCHED), THE PEACHES ARE WASHED WITH COLD WATER TO HALT THE COOKING PROCESS.

PROCESS DESCRIPTION

Sensors

Proximity Sensor: Detects the entry of peaches in the hopper.



Pre-cooking

Flow Sensor: Measures the steam flow.



Temperature Sensor: Measures the temperature of the water steam coming out of the nozzles.



Humidity Sensor: Measures when the inside of the cans are within the acceptable moisture range (dry).



Peeling

RPM Sensor: Measures the RPMs of the peeling brushes.



Washing

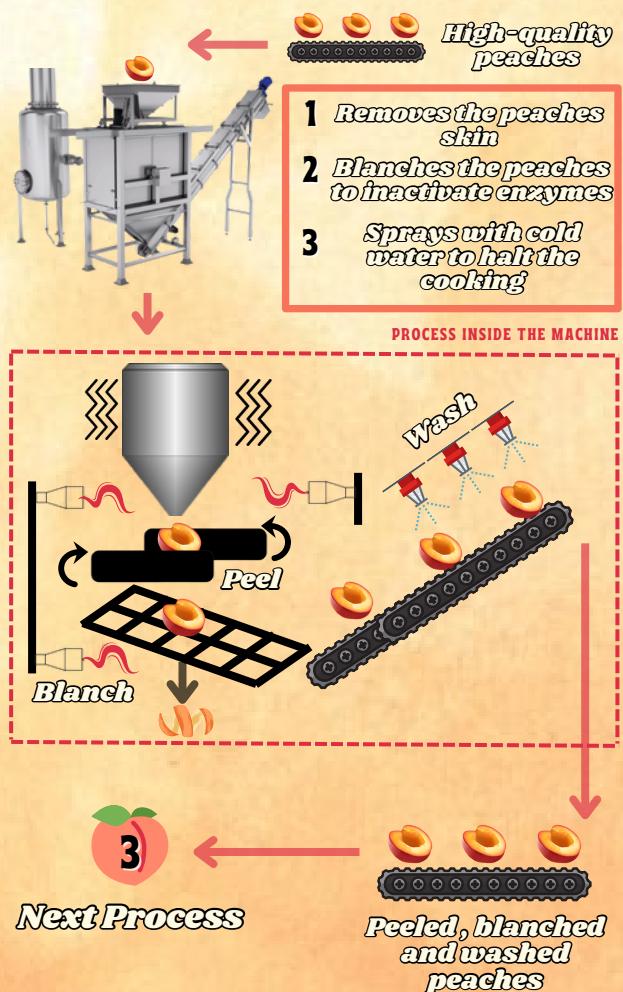
Flow Sensor: Measures the water flow.



Temperature Sensor: Measures the temperature of the water flow coming out of the sprinklers.



Level Sensor: Measures the level of water accumulated in the bottom of the chamber.



Actuators

Conveyor Belt: Carries the cans, from the raw material store to the washing machine.



Motor: Provides angular velocity for the peeling brushes.



Resistance: Increases the water temperature to produce water steam.



Water Sprinkler Valve: Increases or decreases the water flow of the sprinklers.



Steam Valve: Increases or decreases the flow of water steam.



Water Discharging Valve: Discharges the water accumulated in the bottom of the chamber.



Water Pump: Provides water for the sprinklers.

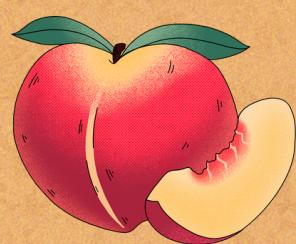


Water Pump: Provides water for the steam generator.



Shaker: Increases the vibration velocity of hopper.





GOLDEN BYTES

By: dochoas@eafit.edu.co

6) Can washer & dryer

THIS IS A PARALLEL PROCESS FOR THE TRANSFORMATION AND MANIPULATION OF CANS. THE OBJECTIVE IS TO WASH AND DRY THE CANS THAT WILL CONTAIN THE FINAL PRODUCT. THE EMPTY CANS ENTER THE PROCESS DIRECTLY FROM THE RAW MATERIAL AND INPUT WAREHOUSE, AND THEN THE CANS ARE WASHED AND DRIED FOR THE FILLING PROCESS.

Sensors

Weight sensor: Detects how many cans are on the inventory compartment that is stocking the sorter.



Proximity Sensor: Detects the entry of cans, coming on the conveyor belt, to the washing machine.



Flow Sensor: Measures the water flow that the sprinklers are depositing.



Pressure Sensor: Measures the outlet pressure of the water from the sprinklers.



Temperature Sensor: Measures the temperature of the water coming out of the sprinklers.



Speed Sensor: Measures the speed at which the conveyor belt moves and regulates it.



All to detect Soap: Detects when the pressurized water has finished removing the soap.



Air temperature sensor: Measures the temperature of the air being generated by the dryer.



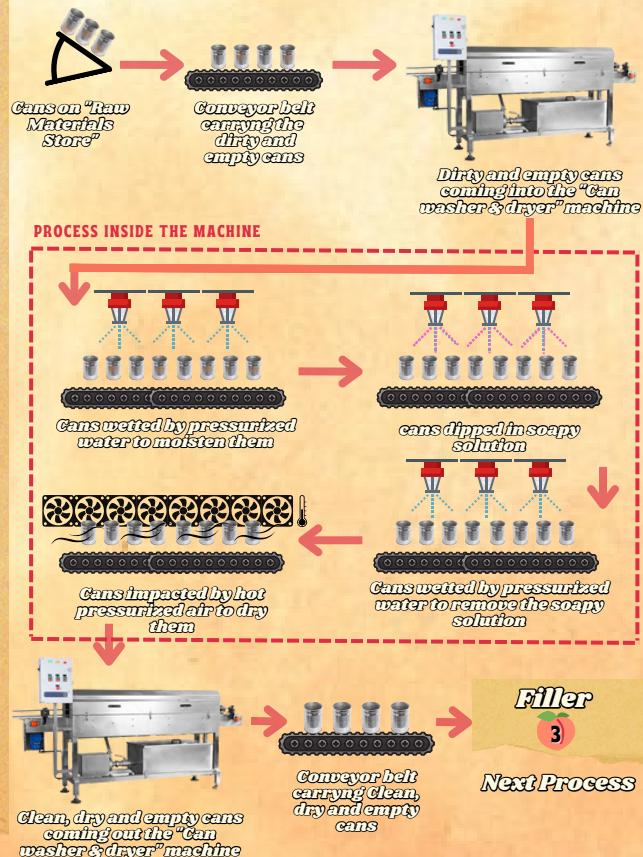
Air flow sensor: Measures the flow rate at which air is coming out of the dryer.



Humidity sensor: Measures when the inside of the cans are within the acceptable moisture range (dry).



PROCESS DESCRIPTION



Actuators

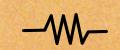
Cans sorter: Puts the cans on the conveyor belt. It makes it using a propeller.



Conveyor Belt: Carries the cans, from the raw material store to the washing machine.



Resistance: Increases the water temperature.



Water Sprinkler Valve: Increases or decreases the water flow from the sprinklers.



Soap Solution Valve: Increases or decreases the soap solution from the sprinklers.

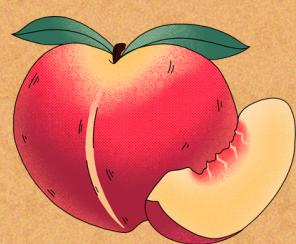


Dryer: Blows pressurized air into the cans.



Resistance: Heats or lowers the temperature of the air in the dryer.





GOLDEN BYTES

By: sarango10@eafit.edu.co



Filler

THE OBJECTIVE OF THE PROCESS IS TO RECEIVE THE EMPTY CANS THAT HAVE ALREADY GONE THROUGH THE WASHING AND DRYING PROCESS, TO FILL THEM WITH THE PEELED, WASHED AND BLANCHED PEACHES, AND ADD SUGAR WATER, ONCE THE CANS ARE FILLED, THE PRODUCT IS READY TO GO TO THE NEXT PROCESS.

Sensors

Weight sensor: Detects if there is a can to start filling.



Height sensor: Detects if there are any peach over the rim of the can.



Presence sensor: Detects when the can is in the position for filling.



Level sensor: Measure the level of sugar water inside the can.



Ph sensor: Measure the ph level of the sugar water before placing it in the can.



Flow Sensor: Measures the sugar water flow that the injector is depositing.



Temperature Sensor: Measures the temperature of the sugar water coming out of the injector.

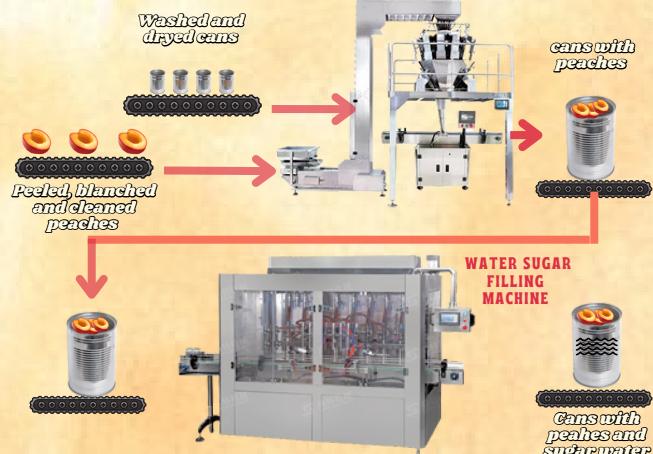


Presence sensor: Detects when the peaches are in the hopper ready to be dropped into the can.

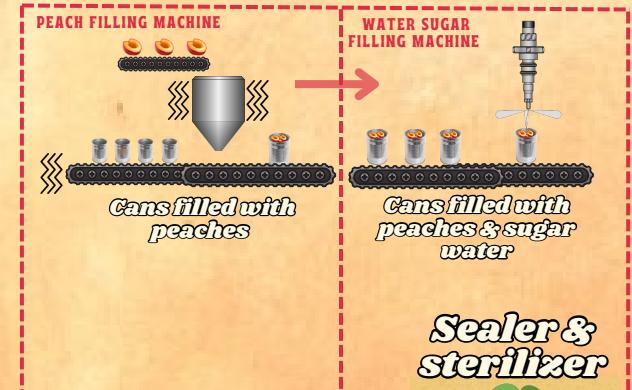


PROCESS DESCRIPTION

PEACH FILLING MACHINE



PROCESS INSIDE THE MACHINES



Sealer & sterilizer



Next Process

Actuators

Conveyor Belt: Carries the cans.



Conveyor Belt: Carries the peaches to the hopper.



Shaker: Increases the vibration velocity of the cans.



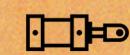
Shaker: Increases the vibration velocity of the hopper.



Valve: Control the flow of the sugar water.



Piston: Contact between sugar water and ph sensor.



Pump: Pumping the sugar water.



Resistance: Increase the temperature of the sugar water

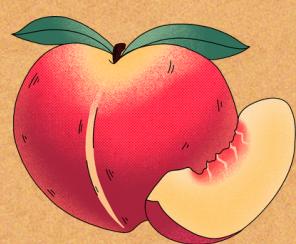


Gate: Exit of cans after being filled with peaches



Gate: Exit of cans after being filled with sugar water





GOLDEN BYTES

By: dhurtadol@cafif.edu.co



Sealer & Sterilizer

THIS IS A PROCESS FOR THE TRANSFORMATION AND MANIPULATION OF CANS. THE OBJECTIVE IS TO REMOVE THE AIR GAP IN THE CANS, SEAL THEM AND STERILIZE THEM, WITH THE OBJECTIVE OF LATER BEING DRIED AND LABELED.

Sensors

Presence Sensor: Detects the entry of cans.



Pressure Sensor: Measures the pressure inside the vacuum chamber.



Temperature Sensor: Measures the temperature inside the vacuum chamber.



Proximity Sensor: Detects the distance between the lid and the can for optimal sealing.



Force Sensor: controls sealing force.



Flow Sensor: Measures the water flow for sterilization.



Temperature Sensor: Measures the temperature of the water.



Level Sensor: Measures the level of the water inside the vacuum chamber.



PROCESS DESCRIPTION

MACHINE 1

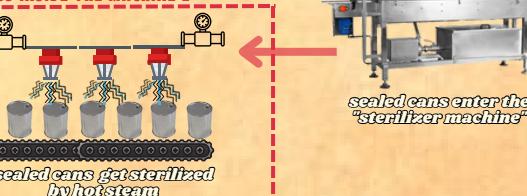


PROCESS INSIDE THE MACHINE 1



MACHINE 2

PROCESS INSIDE THE MACHINE 2



Next Process



Dryer & labeler

Actuators

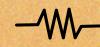
Piston: Opens and closes the entry gate.



Piston: presses the lid against the can to seal it.



Resistance: Increases or decreases the water temperature.



Resistance: Increases or decreases the steam temperature.

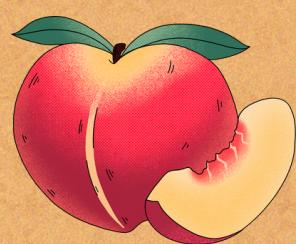


Conveyor Belt: Carries the cans, from the raw material store to the washing machine.



Valve: Increases or decreases the flow of the steam to sterilize the cans.





GOLDEN BYTES

By: pamartinecc@cafif.edu.co



Can dryer & labeler

THIS IS A PROCESS FOR THE TRANSFORMATION AND MANIPULATION OF CANS. THE OBJECTIVE OF THE PROCESS IS TO DRY AND LABEL THE CANS THAT CONTAIN THE PEACHES DIPPED IN SUGAR WATER. THE CANS ENTER THE PROCESS DIRECTLY FROM THE SEALER & STERILIZER, AND THEN THEY ARE DRIED AND LABELED TO GET THE FINAL PRODUCT.

