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## 1 Statutory Information

### Disclaimer

The information contained in this document is confidential and only for informing intended recipient. This information may not be used, published or redistributed without the prior written consent of Cybernetik Technologies Pvt. Ltd. Legal action will be taken against the violator.

### Warranty

The warranty period will be 12 months from the date of successful testing at Cybernetik. The warranty work against any manufacturing defects in the equipment or parts of the equipment designed and manufactured by us. Warranty on bought-out items by Cybernetik is restricted by the warranty period specified by the specific vendors. Any extended warranty for the bought-out items, unless stated otherwise in the above document, will be charged extra. Under all circumstances our liability arising out of any manufacturing defects/workmanship if any, will be restricted to the ex-works price of the offered system and not extended to any consequential damage. Our warranty extends to the system provided by us and is not related to any other machinery or related equipment which may be linked to the system. Warranty above said will not be applicable if usage and maintenance instruction are not properly adhered to as per our guidelines and instructions. The warranty does not apply to normal wear, improper storage and maintenance, failure to observe operating instructions, manhandling and use of system beyond defined use as per agreement. Replacement of defective components, described above, does not include international freight, customs and duties, as applicable. It also doesn't include manpower cost required for reinstallation of the said item.

In the event of replacement of any individual element (subject to conditions mentioned above), the said element needs to be sent back to Cybernetik and the replacement/repair will be done by individual equipment manufacturer and this will be facilitated by Cybernetik.



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## 2 Purpose of this Manual

This manual contains instructions for:

- Installation Instruction
- Power up and Operation Sequence
- Alarm troubleshooting
- Preventive Maintenance

The manual is organized as below,

**Table 1: Outline of the manual**

Chapter	Description
Purpose of this Manual	This chapter
General Safety Instruction	Safety instructions to be followed.
System Description	Information on working and product description
Operation	Power up sequence and Operating Procedure.
Alarm Diagnostic and Troubleshooting	How to diagnose and troubleshoot the alarms in the system.
Preventive Maintenance	Information about maintenance schedule.
Spare Parts List	Contains the mechanical/electrical spare list.

## 3 General Safety

### 3.1 Identify the Safety



When you see the above symbol on your machine or in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

### 3.2 Understand Signal Words



**DANGER:** Danger refers to the state of being exposed to harm, risk, or the potential for adverse consequences that may threaten one's well-being, safety, or life.

**WARNING:** A warning is a communication or signal that alerts individuals to the presence of a potential danger, threat, or problem, urging them to take precautionary measures or actions to avoid harm or adverse outcomes.

**CAUTION:** Caution is a state of alertness and careful consideration, typically exercised in response to potential risks or dangers.

### 3.3 Safety Instruction

- Always keep work area clean.
- Avoid all electrical dangers. Pay attention to the risks of electric shock or arc flash hazards.
- Always bear in mind the risk of drowning, electrical accidents, and burn injuries.
- Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs.
- Additional safety information contained on parts and components sourced from suppliers that is not reproduced in this manual.
- Learn how to operate the system. Do not let anyone operate the system without instruction.

### 3.4 Safety Equipment

Use the following safety equipment within the work area:

- Safety Helmet, Safety goggles, preferably with side shields, Protective shoes and gloves, First-aid kit, Fire extinguisher



### 3.5 Transport the System Safely

A disassembled system is best transported on a flatbed carrier. Use crane to lift the system assemblies and load it on a heavy hauler for transportation.

Before transporting the system, make sure that the sub-assemblies are having suitable attachment points. Use chains to secure the system assemblies to the carrier.

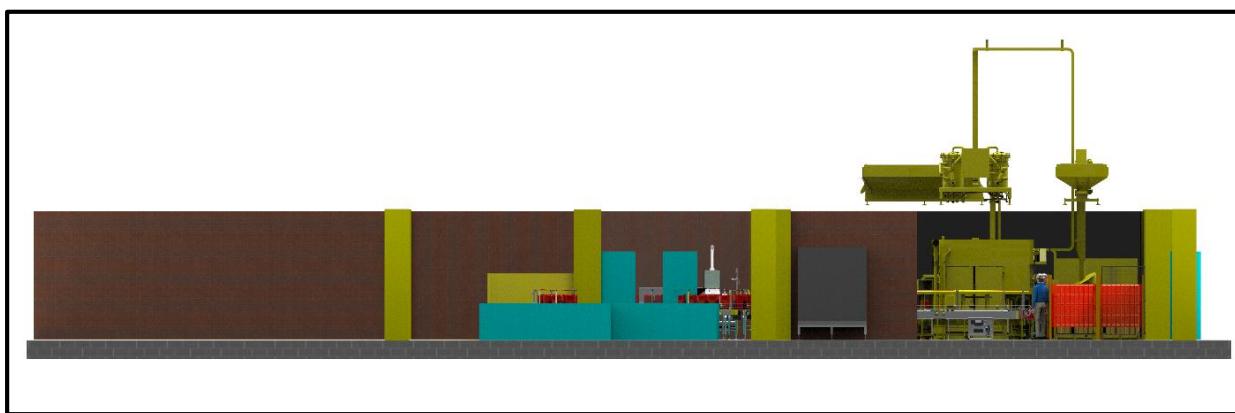


## 4 Introduction

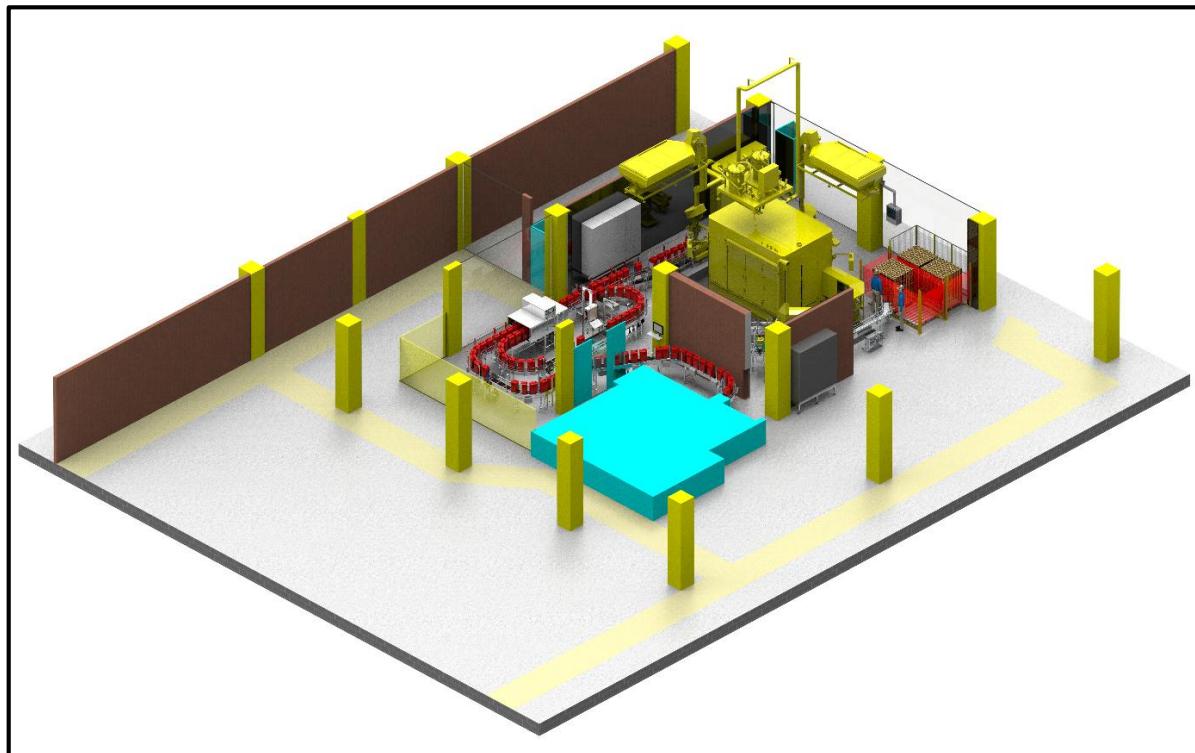
### 1.1. About

The Integrated Can Handling, Inspection, and Sorting System is a highly engineered, precision-driven automation solution designed to streamline and optimize the complete lifecycle of can movement—from depalletizing empty cans to validating filled cans and preparing them for palletizing. Built to meet the rising industrial demand for accuracy, traceability, and uninterrupted production flow, the system intelligently coordinates mechanical handling, sensor-based inspection, and automated decision-making across two fully synchronized operational zones. Its design eliminates inefficiencies, reduces manual dependencies, and ensures that every can passes through each stage with consistent quality and reliability.

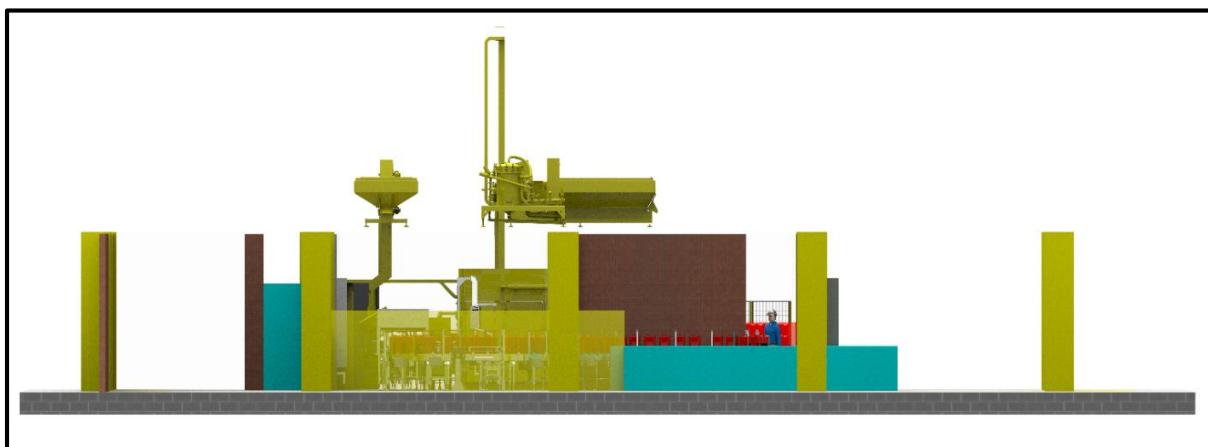
With its cohesive architecture, intelligent inspection logic, and seamless material handling capabilities, the Integrated Can Handling, Inspection, and Sorting System sets a new benchmark in automated packaging operations. By combining mechanical precision, sensor-driven quality assurance, and operator-friendly interfaces, it enables manufacturers to achieve higher throughput, minimize human errors, maintain traceability, and ensure consistent product quality. The system's modular design supports scalability and long-term reliability, making it an ideal solution for modern production environments focused on efficiency, accuracy, and operational excellence.



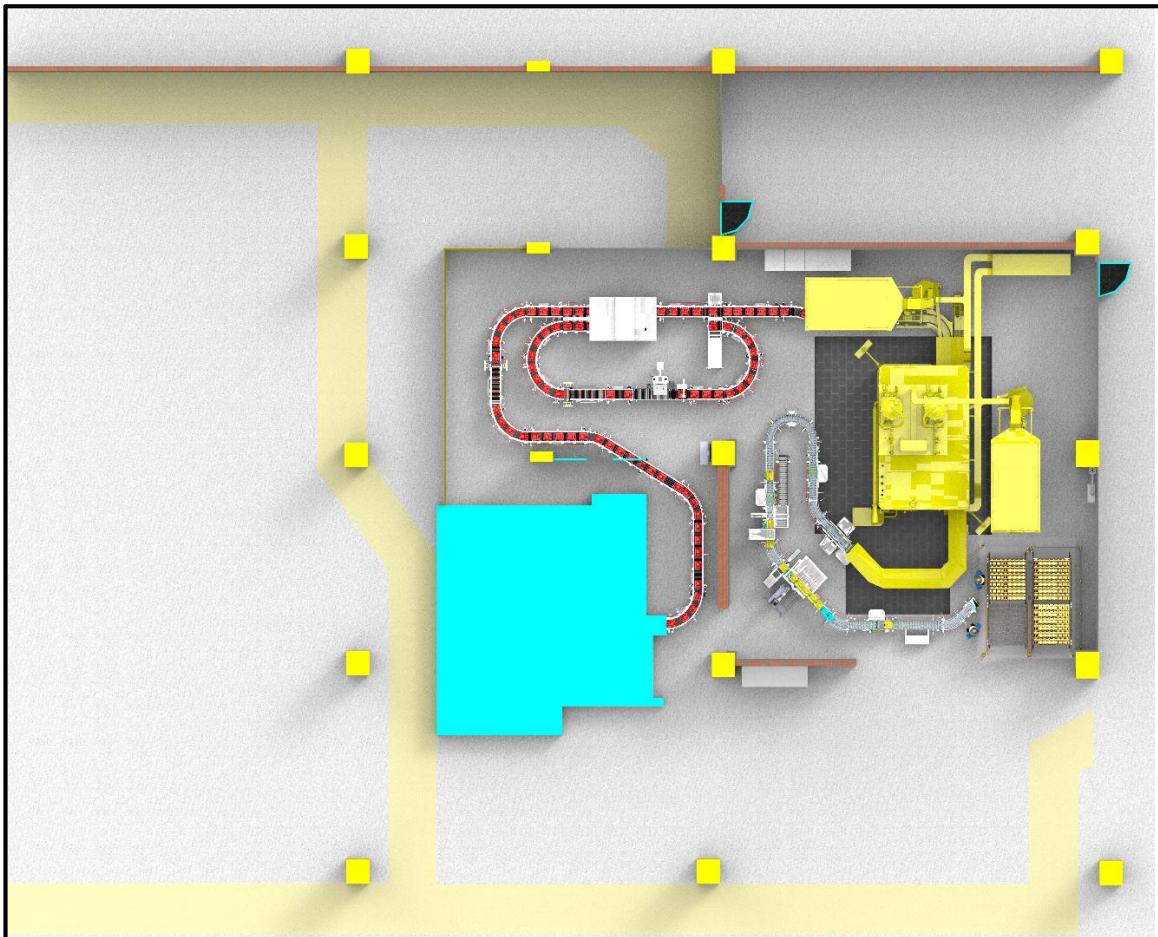
**Figure 1: Front View**



**Figure 2: Isometric View**



**Figure 3: Side View**



**Figure 4: Top View**

## 5 Technical Specifications

This chapter consists of both mechanical and electrical specifications. It has a set of information and requirements for the product in order for it to work as it was meant to.

**Table 2: Technical Specification**

Sr. No	Part Name
1	Empty Can Line System
2	Empty Line Control Panel Assembly
3	Filled Line Conveyor System
4	FCC Control Panel Assembly
5	Pallet Feeding Line

### 5.1 Electrical Specifications

#### Requirements:

1. Need separate earth pit for Instrumental Earthling (IE) and Power Earthling (PE).
2. Earth resistance should be below 5 Ohm.

Following are the electrical specifications of the system.

**Table 3: Electrical Details**

Control Panel	
<b>Power Supply</b>	415 VAC, 50 Hz , 3 Phase
<b>Connected Load</b>	41 kW, 55 HP, 71 AMP
<b>Design Load (1.25)</b>	51 kW, 69 HP, 89 AMP

**Table 4: Start –Up Sequence**

<b>Sr. No</b>	<b>System Start Up Sequence</b>
1	Turn On Main Panel Power Switch.
2	Turn On all MCB's & MPCB's.
3	Check PLC and IO module get started.
4	Check HMI get started.
5	Check Prestart Condition on HMI is Healthy.
6	Check Safety Condition is healthy on HMI.
7	Put System In auto mode,
8	Tower Lamp Indicates Green Blinking. (Auto Selected)
9	Press system start button for 3 seconds. ( System gets started)
10	Tower Lamp Indicates Solid Green. (Auto Started)
11	System is started.

## 5.2 Tower Lamp Status



**Figure 5: Dome Lamp**

The following table describes the light color status shown by dome lamp.

**Table 5: Light Color Status**

Lamp Color	Status
Steady Red	System is at Fault and requires RESET
Amber	Manual Operation is done
Green	System is set at Auto Mode

## 6 Operation

### 6.1 Startup sequence

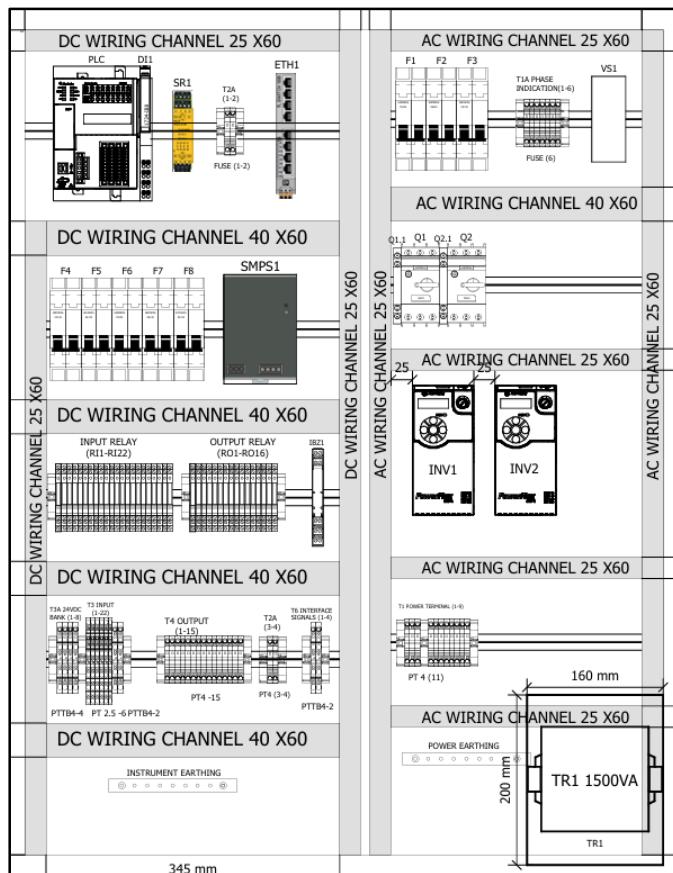
Follow below Power up sequence.

1. Switch on the main Isolator switch on the control panel.



**Figure 6: Isolator Switch**

2. Switch on all the MCBs, MPCBs, inside the panel.

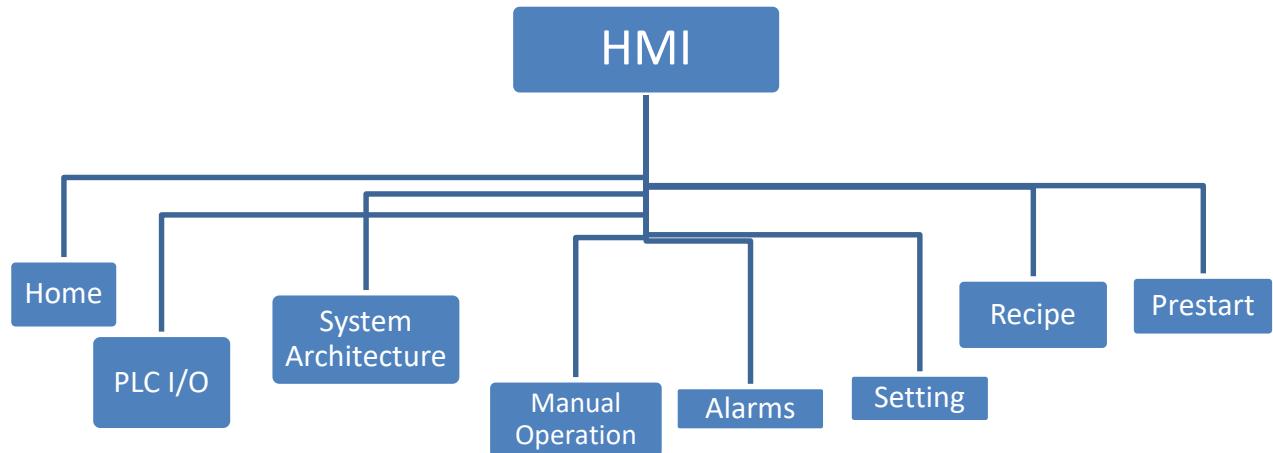


**Figure 7: MCBS, MPCBs, RCCBs**

3. Check the incoming power supply parameters from the VFD meter.

## 7 Working with HMI

The below figure shows the overall layout of the HMI



## 8 Process Flow

The system has 2 Zones. Following is the Zone—Wise Explanation:

### Zone 1:

#### 1. Can Specifications

Zone 1 handles empty cans of **5 L**, **10 L**, and **20 L** capacities.

#### 2. Depalletizer Operation

- Empty cans are supplied to the line through the **depalletizer system**, which includes integrated conveyors for transferring pallets from the loading point to the belt conveyor.
- Pallet Loading:** Forklifts load pallets of empty cans onto the depalletizer infeed conveyor.
- The pallet advances until it reaches a buffer position, where it waits until the upstream pallet position becomes available.
- Once a movement signal is triggered for feeding cans to the belt conveyor, the system automatically advances the pallet to align with the empty-can discharge point.

#### 3. Manual Can Feeding

- An operator manually transfers empty cans from the depalletizer discharge point onto the **belt conveyor**.
- The belt conveyor moves cans forward for further processing.

#### 4. Singling

- Cans pass through the **singling mechanism**, where they are separated into a single-file arrangement.

#### 5. Label Application and Cap-Presence Check

- Each can enters the **label applicator**, where the product label is applied.
- The label includes a **barcode**, which is critical for traceability and quality control.
- Simultaneously, a **cap-presence sensor** checks whether each can is properly capped before allowing it to proceed to the next stage.

#### 6. Label Pressing (Pad Press)

- After label application, cans move to the **pad pressing unit**, which ensures the label is firmly adhered and eliminates the risk of the sticker peeling off during further handling.

#### 7. Barcode Scanning and Quality Rejection

- The barcode on each labelled can is scanned for validation.
- If the scanner detects **any missing, unreadable, or incorrect barcode**, the system automatically diverts the can to the **rejection line**.

## 8. Safety Provisions

- A **red pull-cord emergency stop** is installed throughout Zone 1.
- Operators may pull this cord at any time to immediately halt the conveyor system in case of an emergency.

## 9. Transfer to Customer Conveyor

- Once all checks are completed, the accepted cans are transferred to the **customer conveyor**, where they continue toward the **filling section**.

### Zone 2:

#### 1. Transfer to Roller Conveyor

- After filling, cans are transferred onto the **roller conveyor**, which transports them toward the inspection section.

#### 2. Check-Weigher Conveyor (Customer Scope)

- The cans move onto the **check-weigher conveyor**, where each can is:
  - **Scanned** (barcode validation)
  - **Weighed** (to verify correct fill quantity)

#### 3. OK / Reject Sorting

- Based on the scanning and weighing results:
  - **OK Cans**: Automatically diverted to the **OK Line** for downstream processing.
  - **Rejected Cans**: Diverted to the **Rework Line** for corrective action.

#### 4. Rework Process

- An operator performs the required **rework activity** on the rejected cans (e.g., correcting labels, weight adjustments, barcode issues, etc.).

#### 5. Post-Rework Inspection

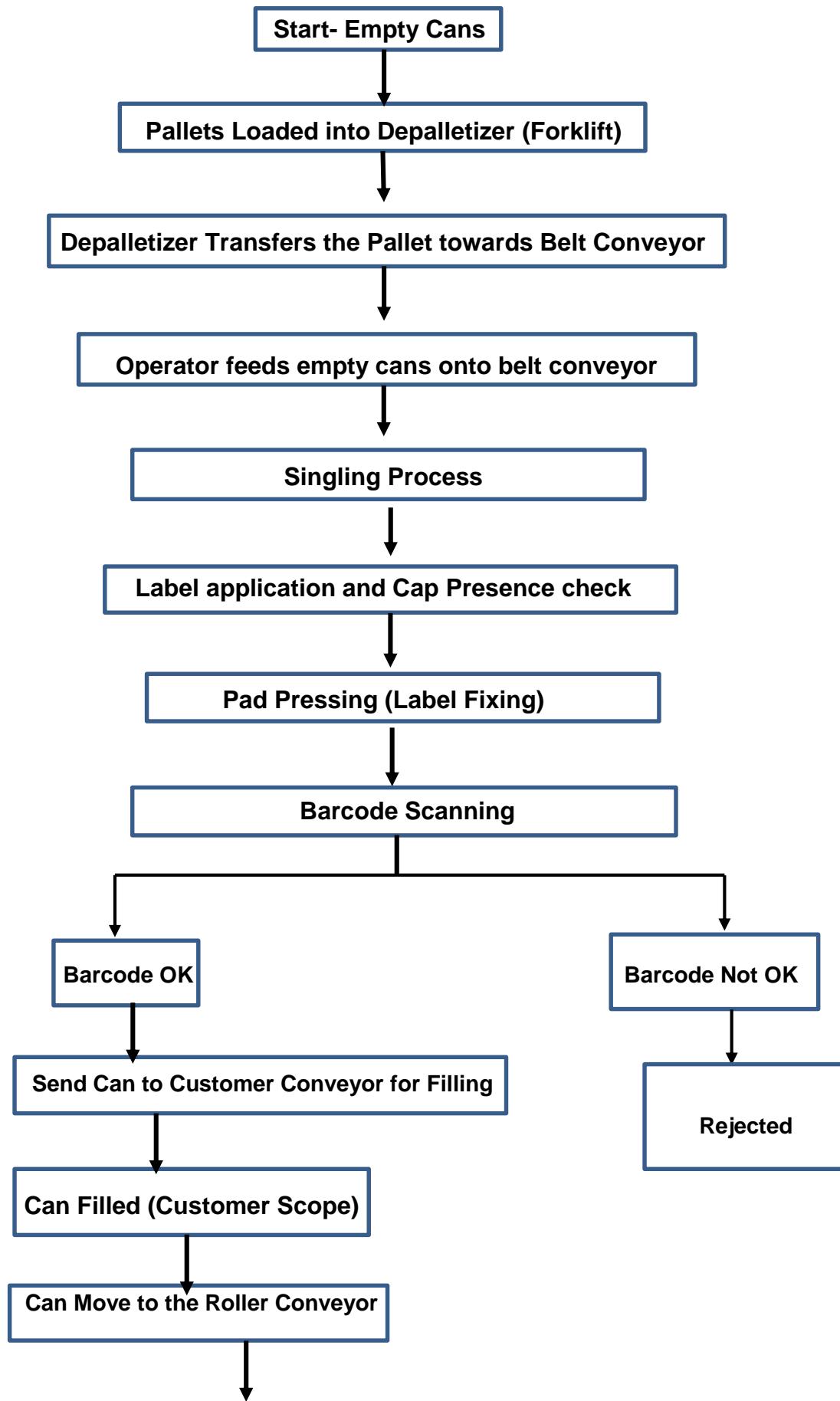
- Once rework is completed:
  - The cans are reintroduced onto the check-weigher conveyor.
  - They pass again through the **weighing system** and **barcode scanner** for verification.

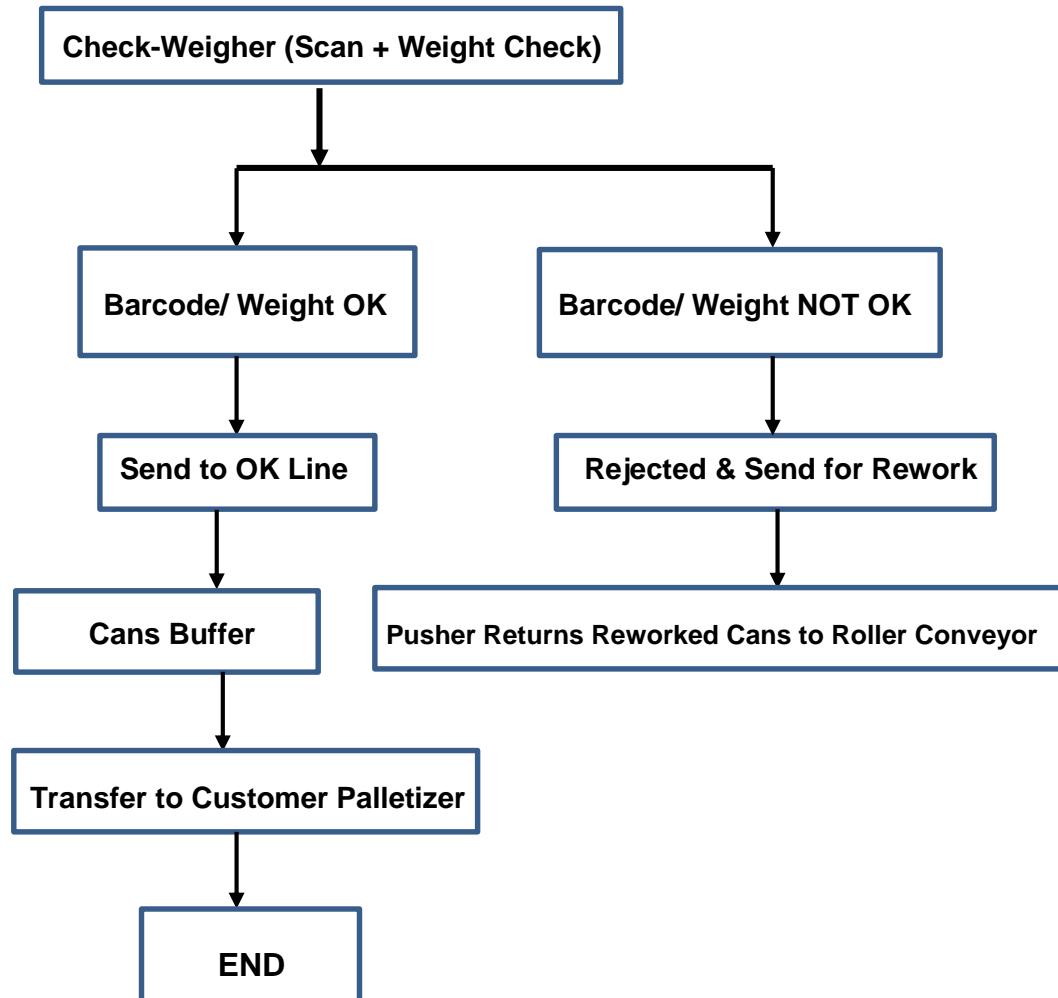
#### 6. Reintroduction to Roller Conveyor

- A **pusher mechanism** transfers the reworked cans back to the **roller conveyor** at the original rejection point, allowing them to rejoin the main line flow.

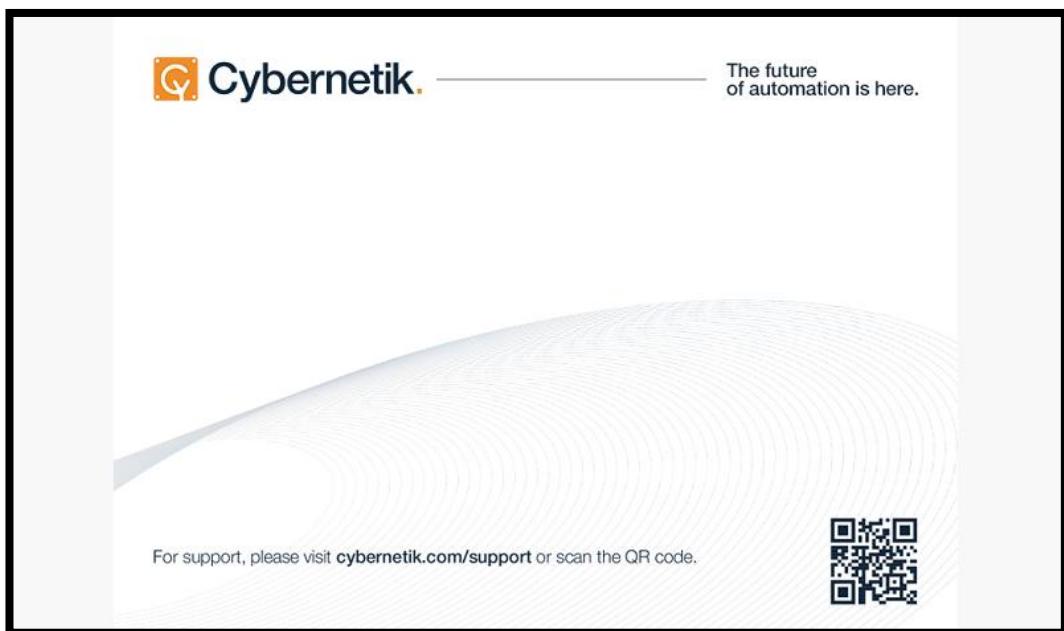
#### 7. Buffering and Transfer to Palletizer

- Accepted cans are accumulated (buffered) and then conveyed toward the **customer palletizer** for final palletizing and dispatch.



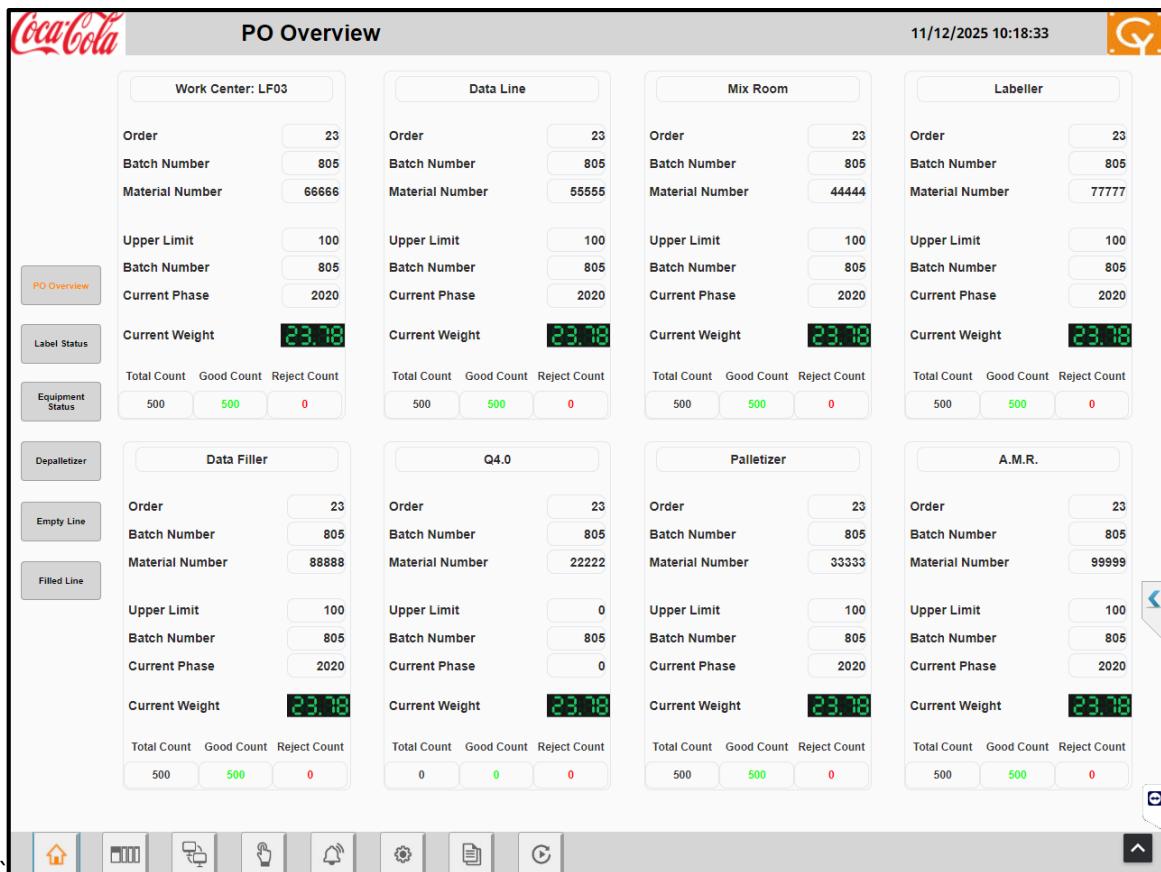


## Welcome Screen



**Figure 8: welcome screen**

## 10.1 PO Overview

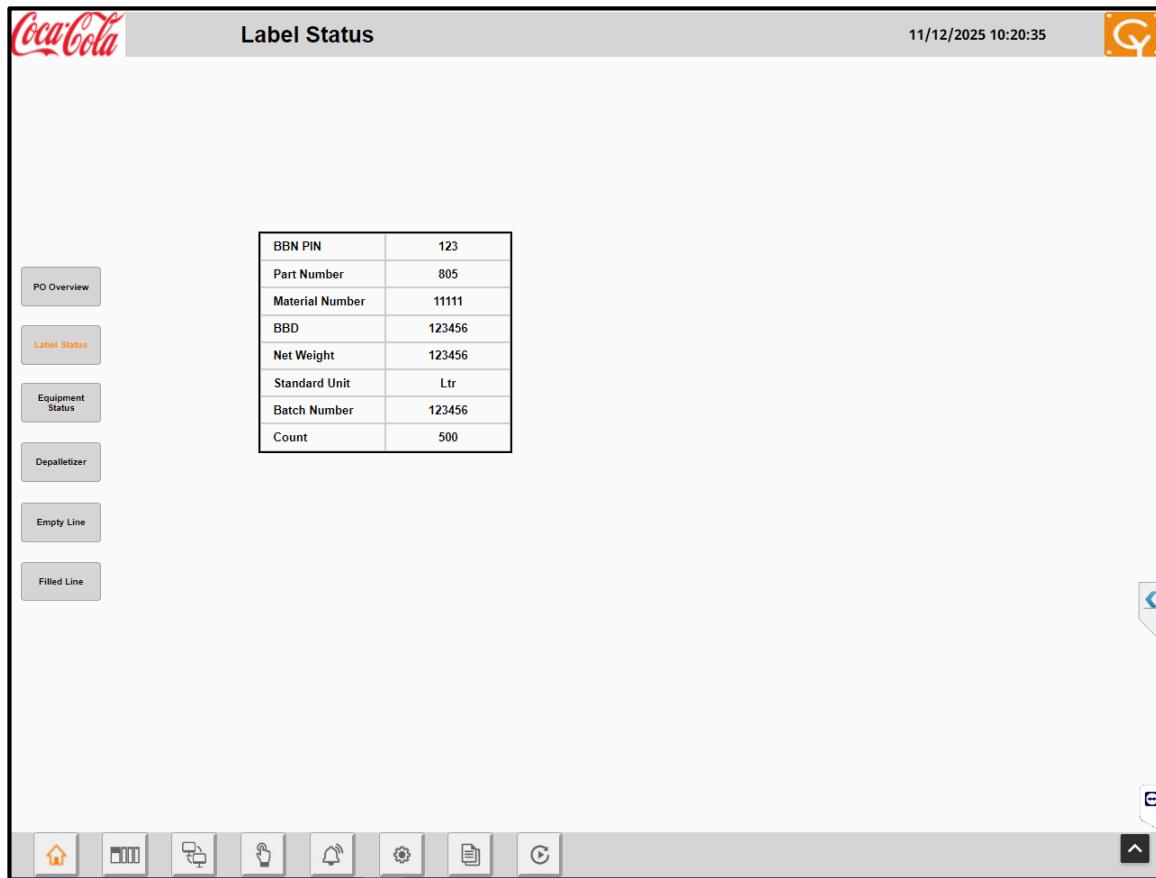


**Figure 9: PO Overview**

- The above screen is the PO Overview screen of the system. It shows the live status of all major stations- starting from ingredient handling to packaging, palletizing, and AMR movement.
- The entire purpose of this screen is to give a single glance view of:
  - Production performance
  - Current weights
  - Counts (good + reject)
  - Batch & Material details.
  - Phase of production.
  - Status of each work center

- The left vertical menu helps the operator switch to other key screens.
- The main area contains 8 station tiles, each representing a major phase of production.
  - Work Centre: LF03
  - Data Line
  - Mix Room
  - Labeller
  - Data Filler
  - Q4.0
  - Palletizer
  - A.M.R
- Each tile consists of the following blocks:
  - **Order:** This number represents the PO.
  - **Batch Number:** Unique number representing the batch produced that day.
  - **Material Number:** Material code for the product (e.g., Different bottles, flavours, sugar content).
  - **Upper Limit:** Maximum allowed weight for quality acceptance.
  - **Current Phase:** Shows in which step of production the specific station currently is.
  - **Current Weight:** the exact weight of the product recorded.
  - **Total Count:** Total number of items processed.
  - **Good Count:** Number of items that passed quality checks.
  - **Reject Count:** Items rejected due to various reasons.

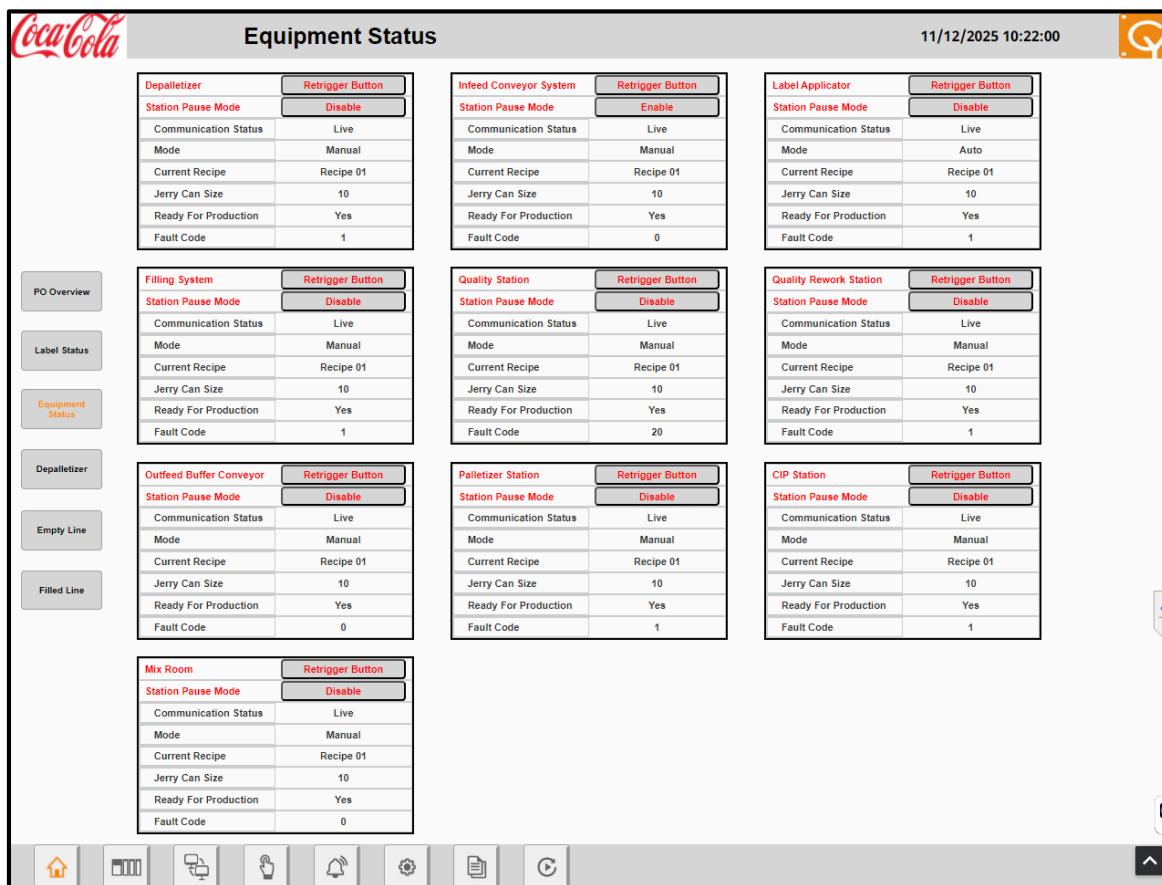
## 10.2 Label Status



**Figure 10: Label Status**

- The label status screen gives a focused, real-time view of all key label-related information for the current Batch. It ensures that the label being printed or applied on the product contains accurate product identity, traceability, and regulatory details.
- This page acts as a regulatory checkpoint for the operator to confirm:
  - The label's product details.
  - Batch information
  - Material Number
  - BBD
  - Net weight & standard units
  - Total count of labels used/printed.

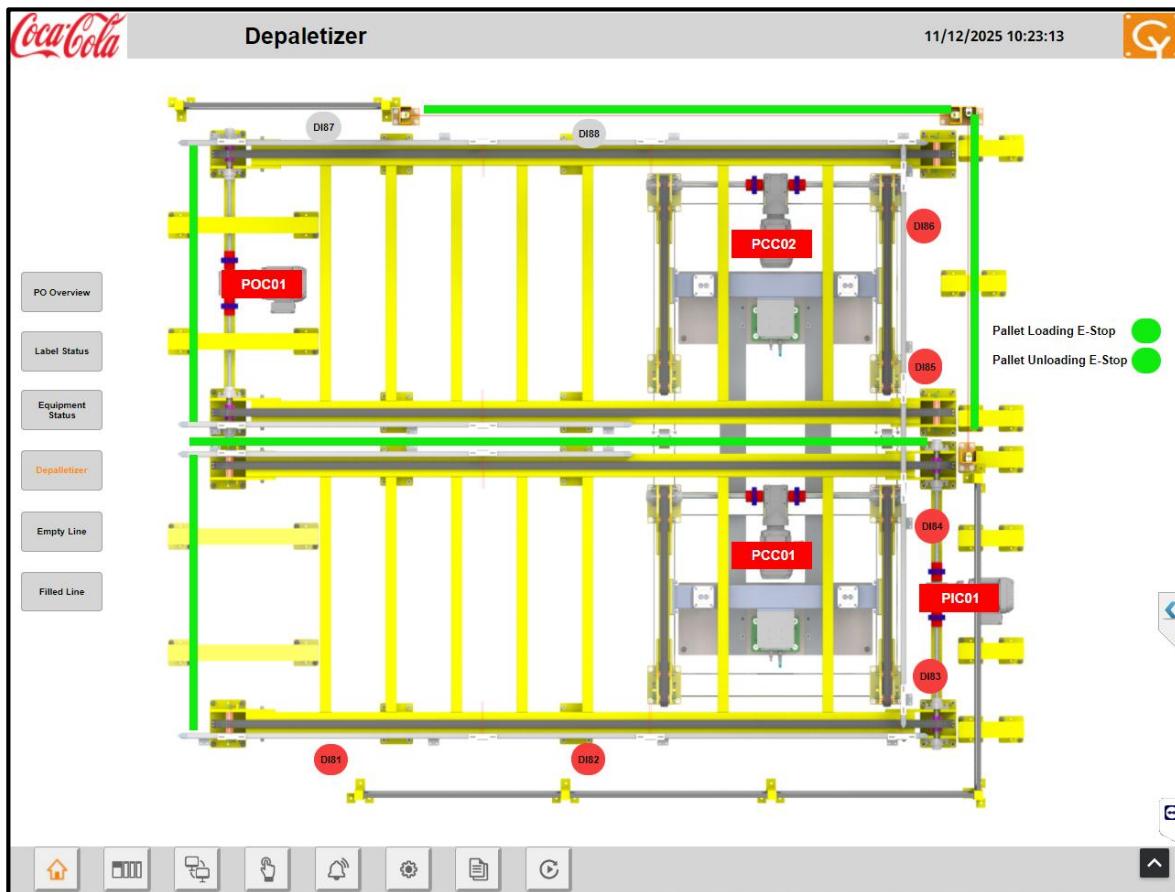
## 10.3 Equipment Status



**Figure 11: Equipment Status**

- The interface shows **real-time operational status** for multiple machines across the production line.
- The central area is divided into **11 individual station status panels**, each representing a physical station in the production line. Every panel has a consistent structure.
- Overall, this screen acts as a **centralized dashboard** that lets operators quickly check each station's health, mode, readiness, and fault status across the entire production line.

## 10.4 Depalletizer



**Figure 12: Depalletizer**

- The Depalletizer screen gives a **visual, real-time layout** of the depalletizing section of the production line. It helps operators understand the **exact physical position and status** of sensors, actuators, conveyors, and safety devices.

**1. Visual Layout of the Depalletizer:** The screen displays a top-view mechanical layout of the depalletizing area.

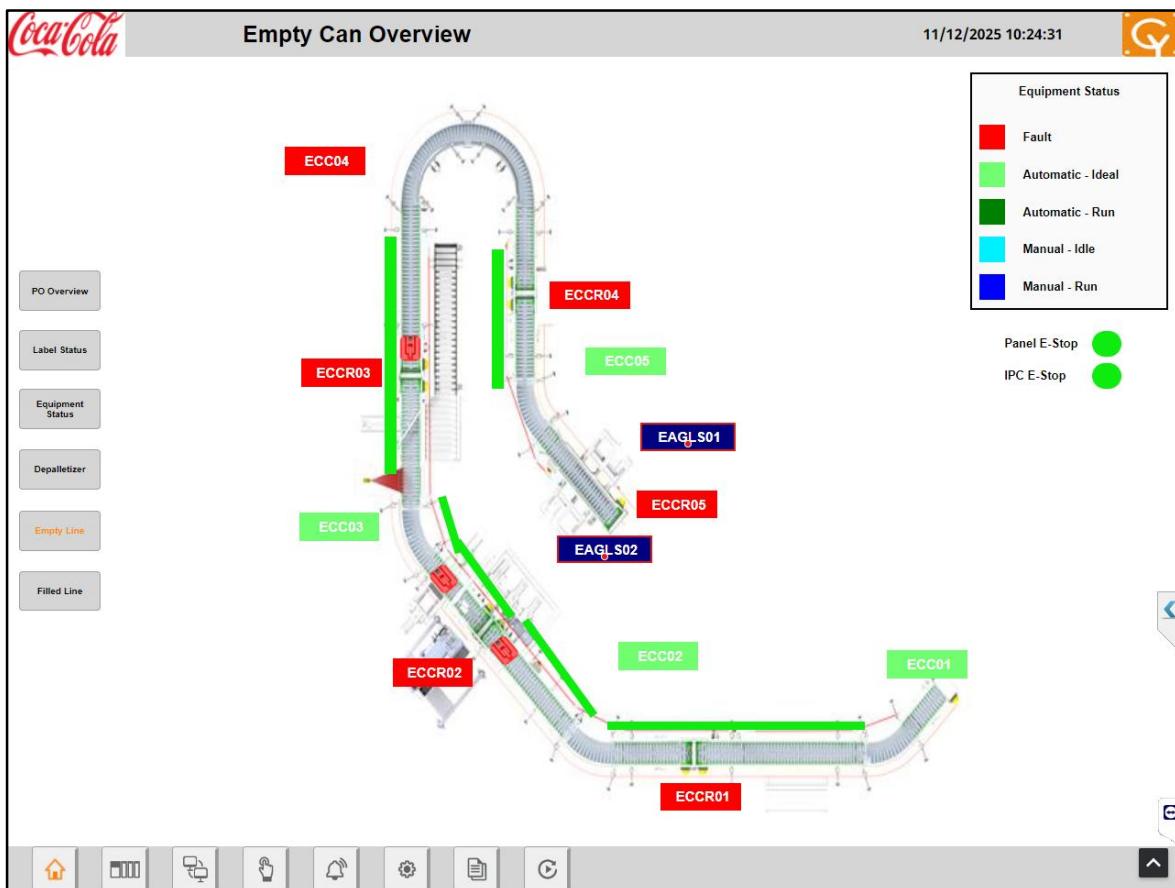
**2. Sensors and Devices (Red Labels):** Each red-marked block represents an **I/O device** such as sensors and controllers.

**3. Safety Indicators:** On the right, two **E-Stop indicators** show:

- Pallet Loading E-Stop – Green (Safe)**
- Pallet Unloading E-Stop – Green (Safe)**

Green indicates that both emergency stop circuits are **healthy and not pressed**, so the machine can operate.

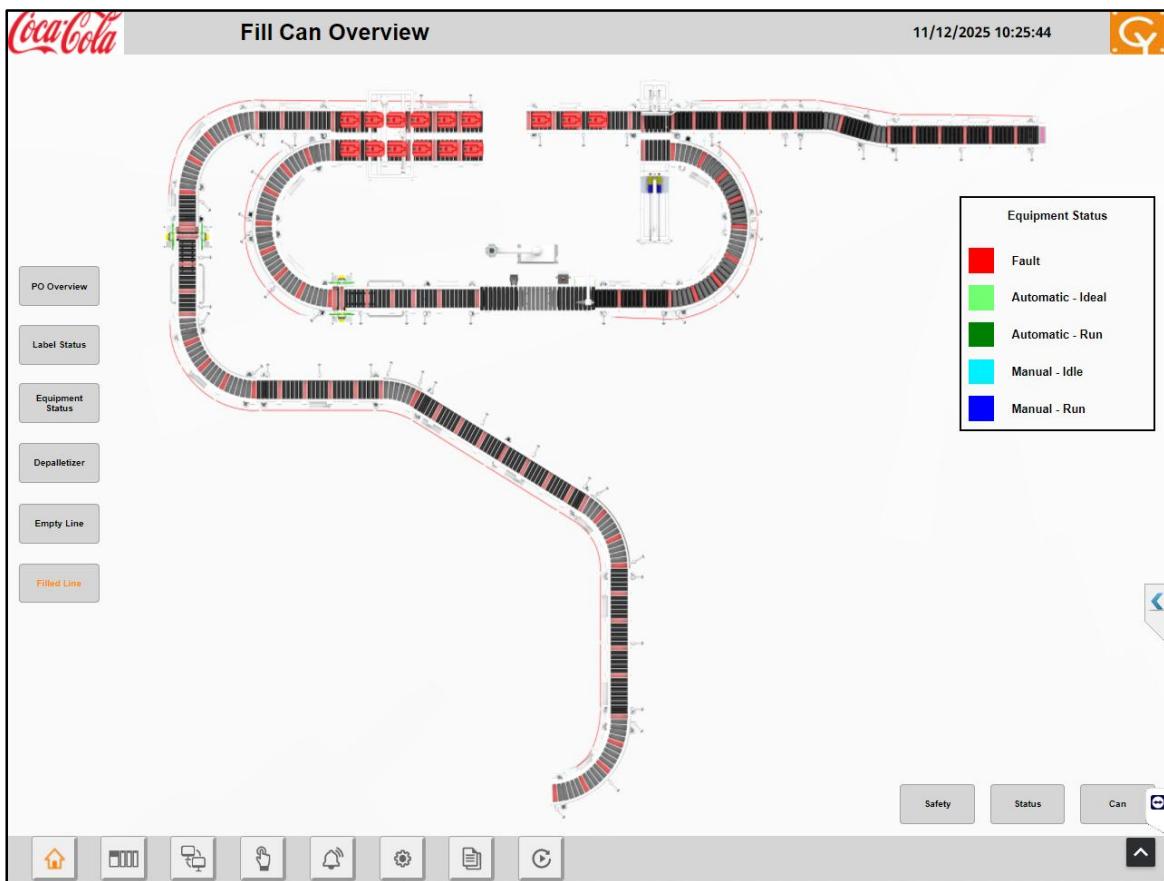
## 10.5 Empty Line Overview



**Figure 13: Empty Line Overview**

- This screen provides a real-time graphical visualization of the empty can conveyor line in the plant. It helps operators monitor can flow, detect equipment faults, and check the operating mode of each station.
- The main section displays a **top-view layout** of the conveyor system used to transport empty cans from the depalletizer to downstream equipment.
- Each equipment or sensor is shown with a colored tag (ECC01, ECC02, ECC03, ECCR01, EAGL S01, etc.). Devices labeled in **red** indicate fault
- Labels such as **ECC02, ECC05, and ECC01** in light green indicate: Station is powered and operating in Automatic mode.
- On the right side, two indicators Panel E-Stop and IPC E-Stop both shows green that means System is Safe to operate.

## 10.6 Filled Line Overview



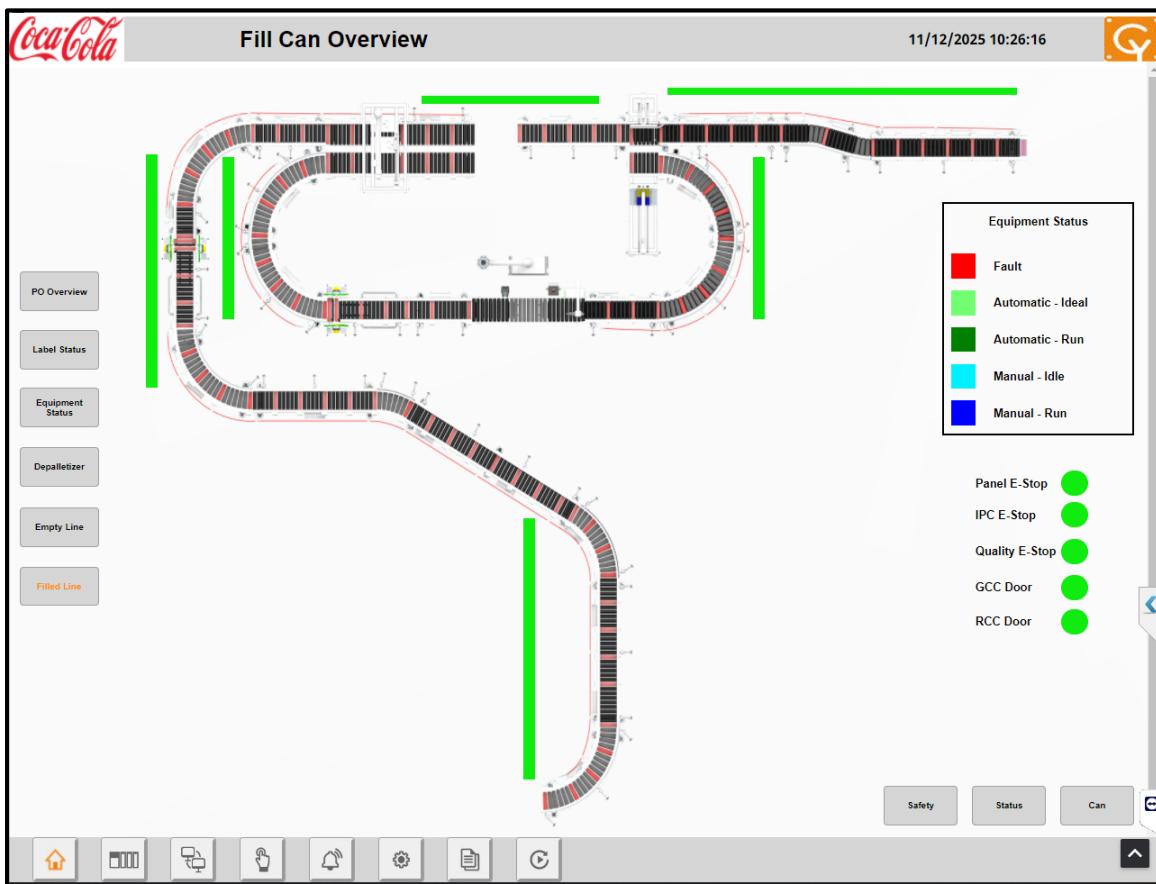
**Figure 14: Filled Line Overview**

- The Fill Can Overview screen provides operators with a real-time visualization of the can-filling production line. It displays the status of conveyors, equipment, and product flow throughout the line, enabling quick identification of faults, idle sections, and running conditions.

This screen is primarily used for:

- Monitoring the operating state of each machine or conveyor.
- Identifying production bottlenecks and stoppages.
- Verifying product movement and flow direction.

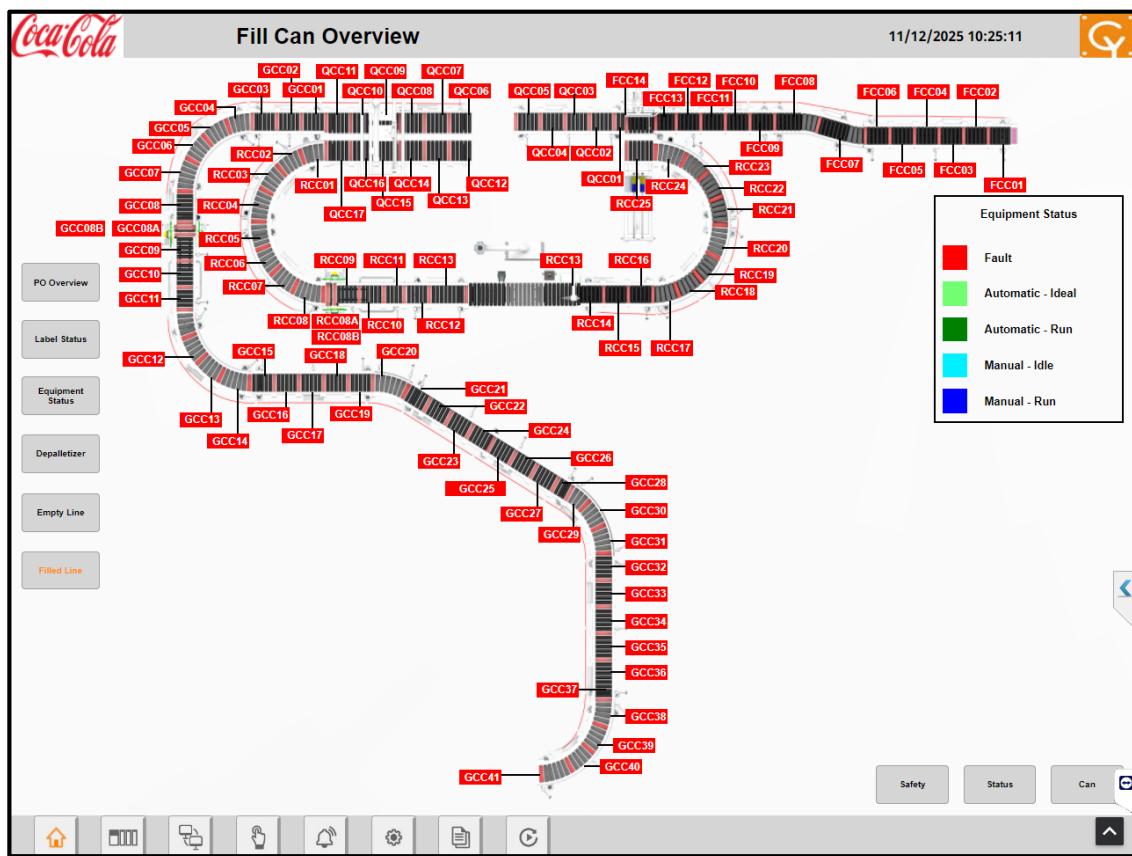
## 10.7 Filled Can Overview



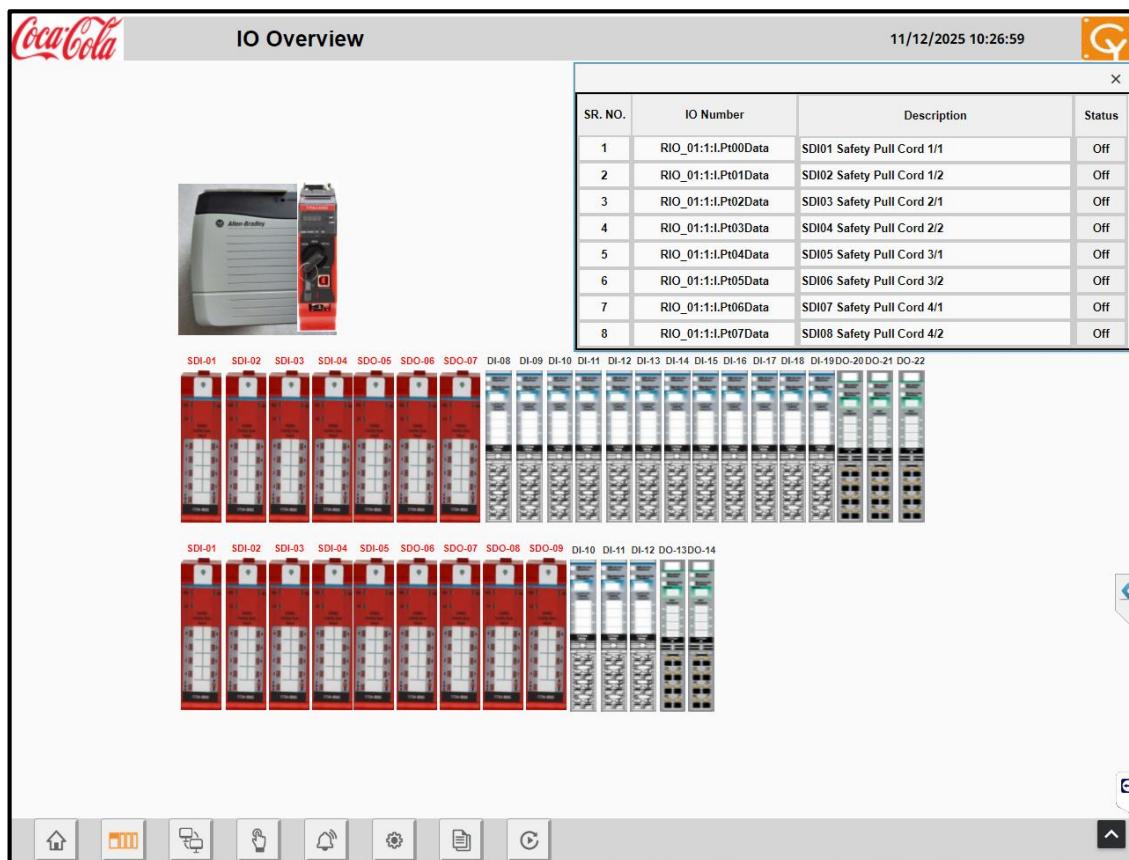
**Figure 15: Filled Can Overview**

- The Fill Can Overview screen provides a real-time visual representation of the filled-can conveyor system, showing the movement of cans and the operational state of all equipment in the line.
- It also provides immediate visibility of critical **safety devices** such as E-Stops and door interlocks.
- Operators use this screen to ensure continuous equipment operation, verify product flow, and monitor safety conditions.
- This version of the screen includes **real-time safety device feedback**, displayed as a vertical list of circular indicators.
- Each indicator is shown as green when healthy/closed, and would turn red if triggered/open.

## 10.8 Filled Can Overview

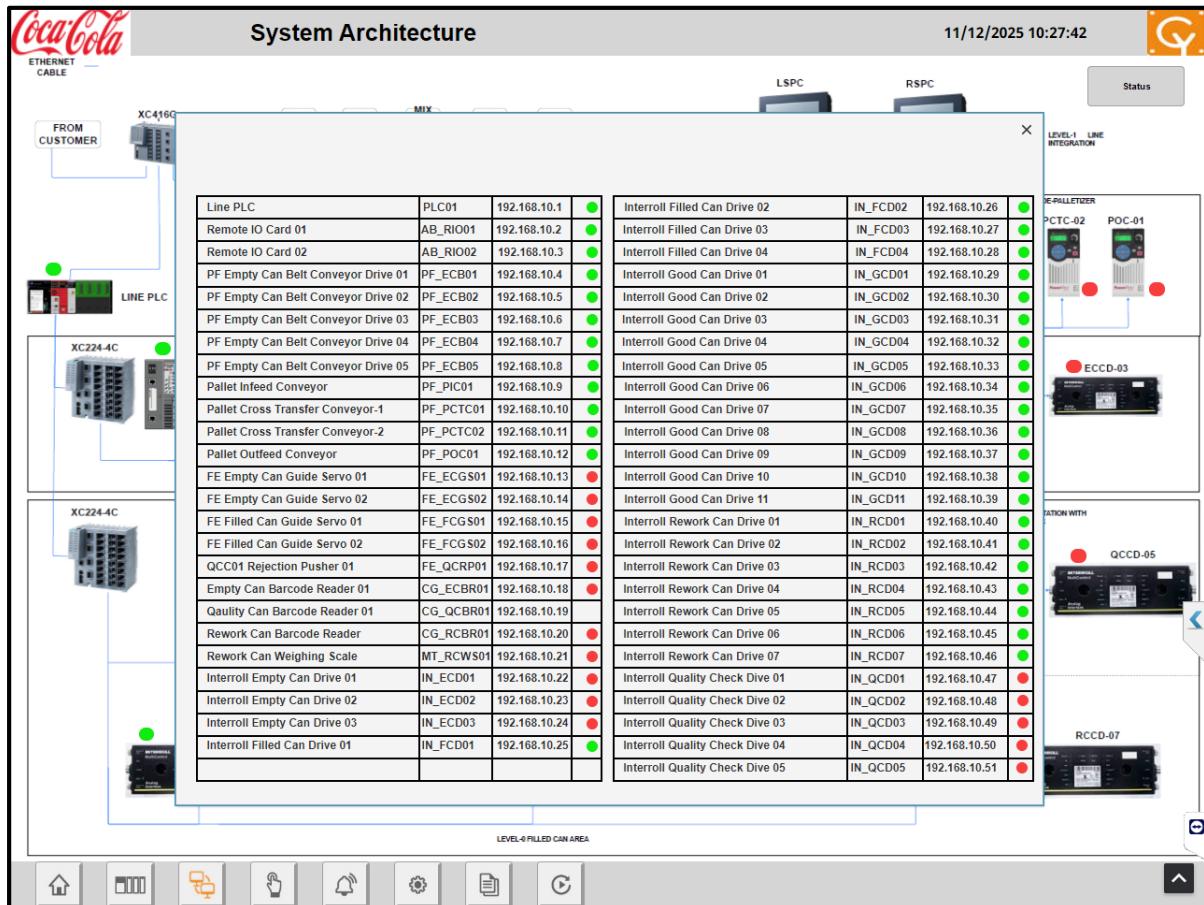


**Figure 16: Filled Can Overview**



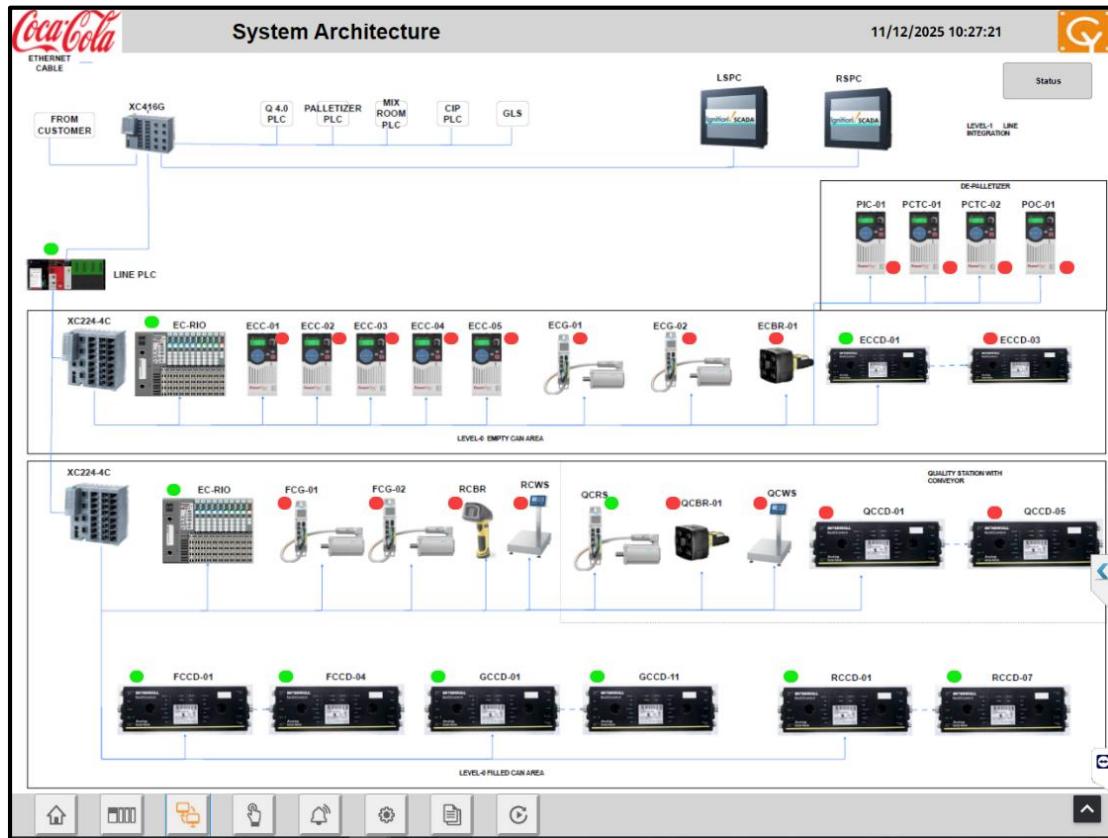
**Figure 17: I/O List**

- From the I/O screen, one can check the list of PLC input and output. Healthy I/O's are indicated by green color whereas error is highlighted in red color.
- The list of PLC Input and Output (I/O), includes digital I/O.
- To view the I/O list one has to click on the required PLC I/O card.
- The list shows, the input name and its description.



**Figure 18: System Architecture**

- This screen gives a visual representation of the **PLC and network topology** for the robotic case packing system.
  - It helps operators and maintenance engineers quickly locate devices, IP addresses, and communication paths.



**Figure 19: System Architecture**

The **System Architecture** screen provides a **complete high-level overview of the electrical and control network** used across the Coca-Cola production line. It visually maps out how different controllers, remote I/O modules, drives, sensors, and actuators communicate and interact across multiple functional zones of the plant.

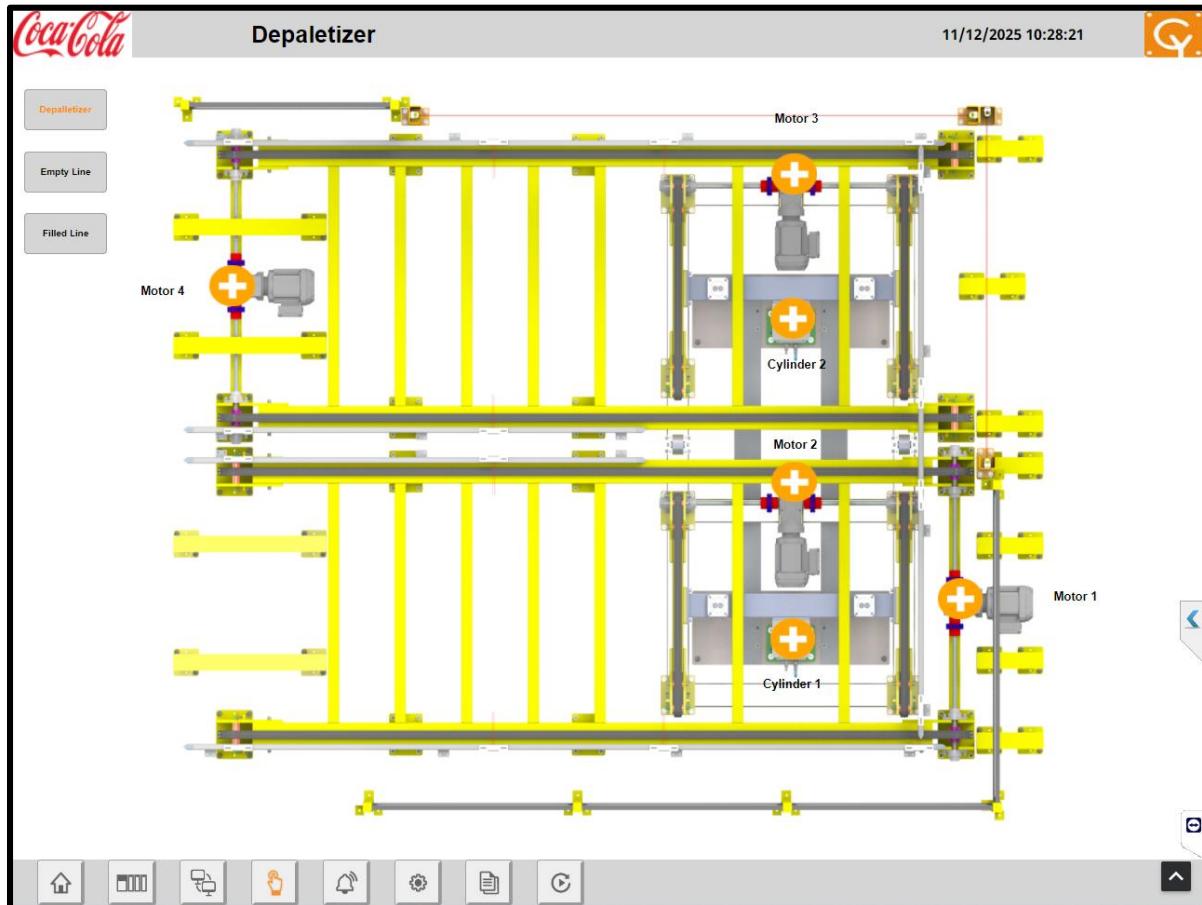


Figure 20: Depalletizer

- This screen provides a **mechanical layout view** of the depalletizing system, showing all major **motors**, **cylinders**, and **motion axes** involved in the depalletizing operation. It is primarily a **maintenance-oriented screen**, helping technicians identify and access drive components.

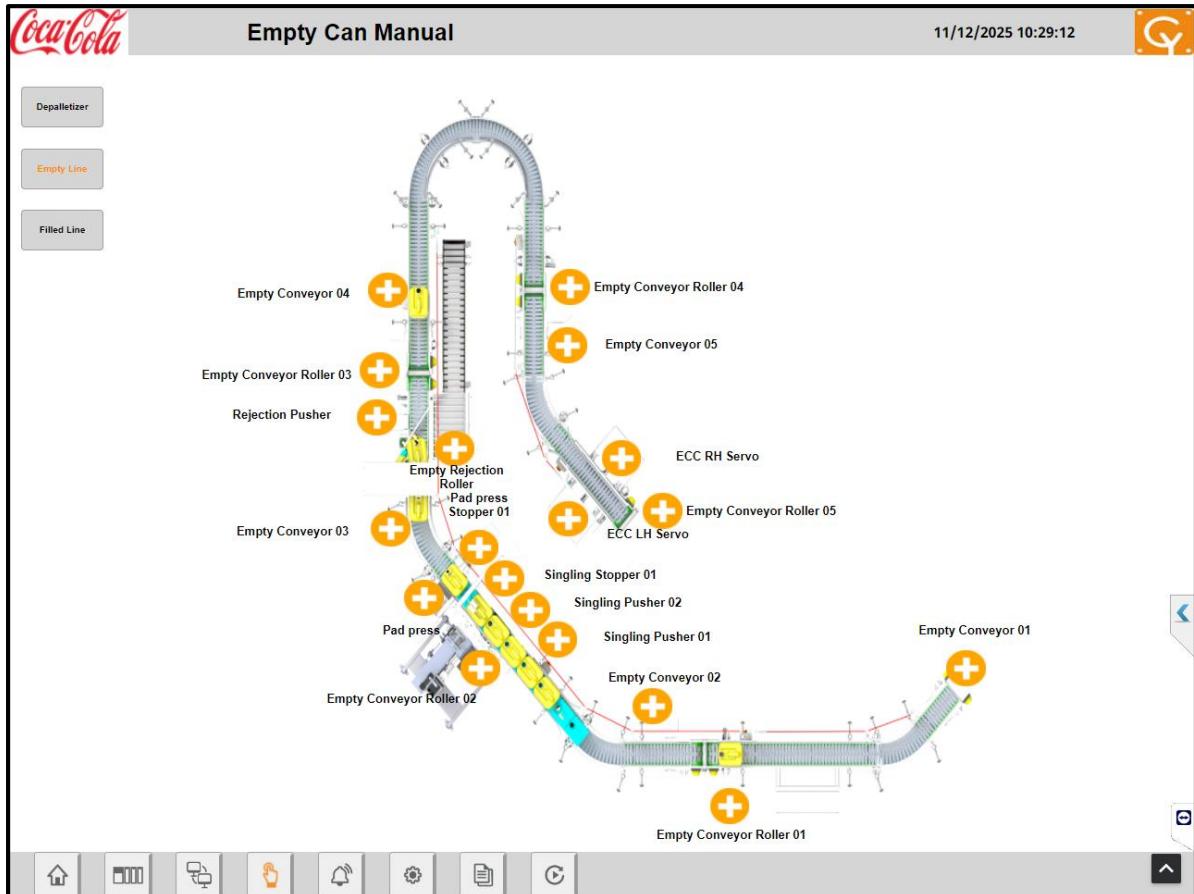
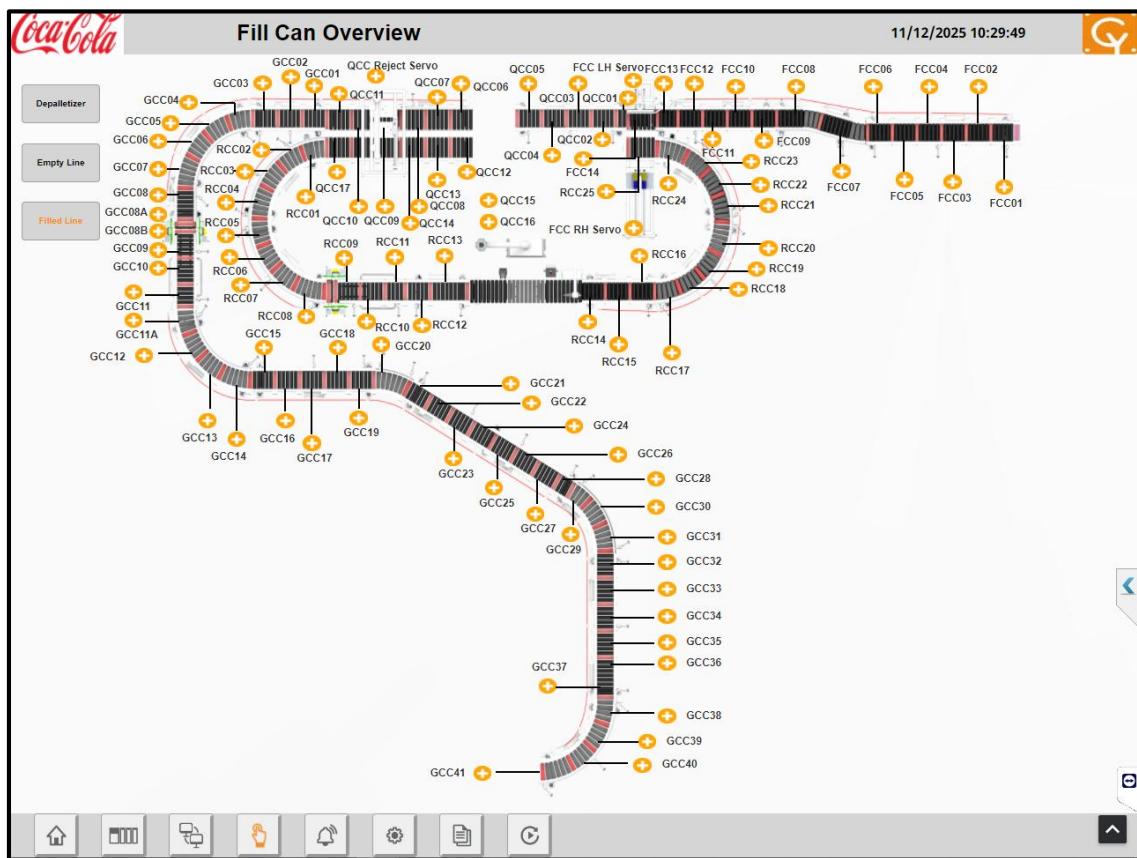


Figure 21: Empty Line

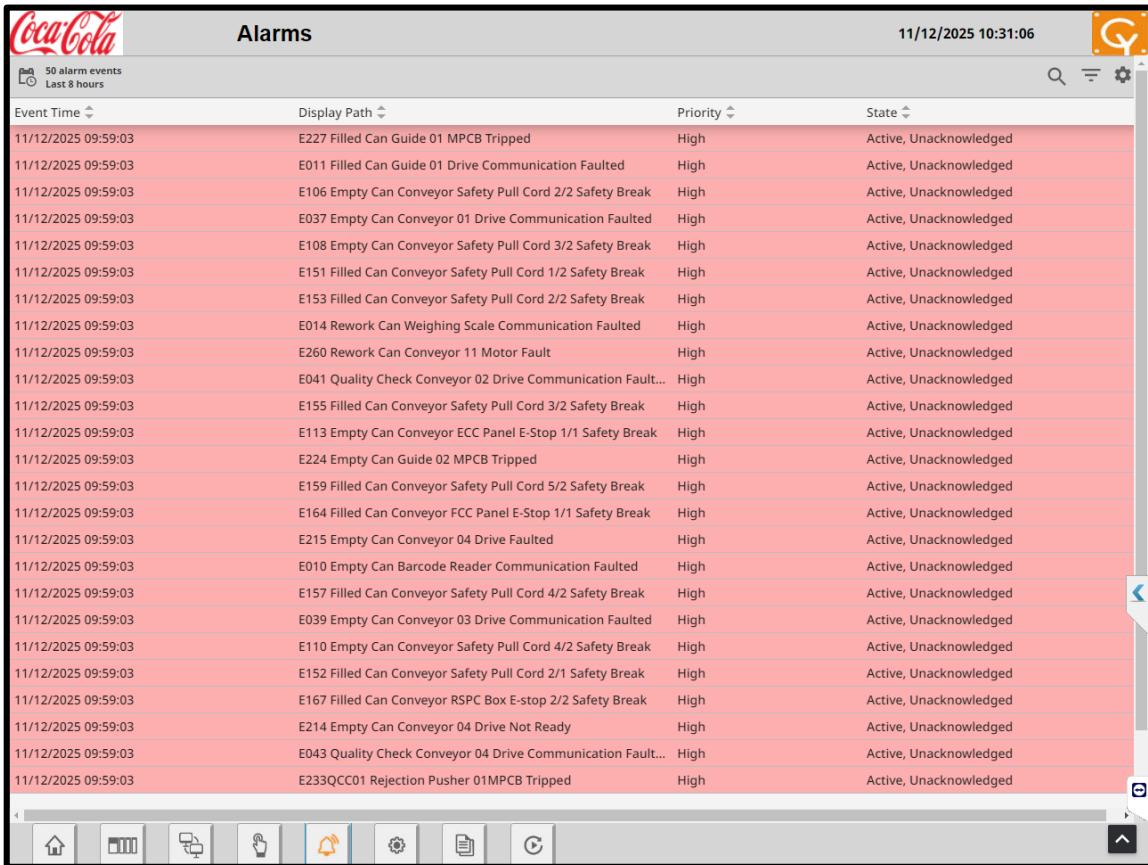
- This screen represents the **Empty Can Handling Line** in a beverage production plant (Coca-Cola). It visually displays the **entire empty-can conveying path**, along with all the **mechanical components, sensors, rollers, pushers, servo motors, and stoppers** involved in guiding, singling, and rejecting cans.



**Figure 22: Empty Line**

- The screen displays a **complete visual map of the filled-can conveyor system** inside the production line. It shows how cans move through various conveyor sections, curves, and merge/divert points after filling.

## 14.1 Active Alarms



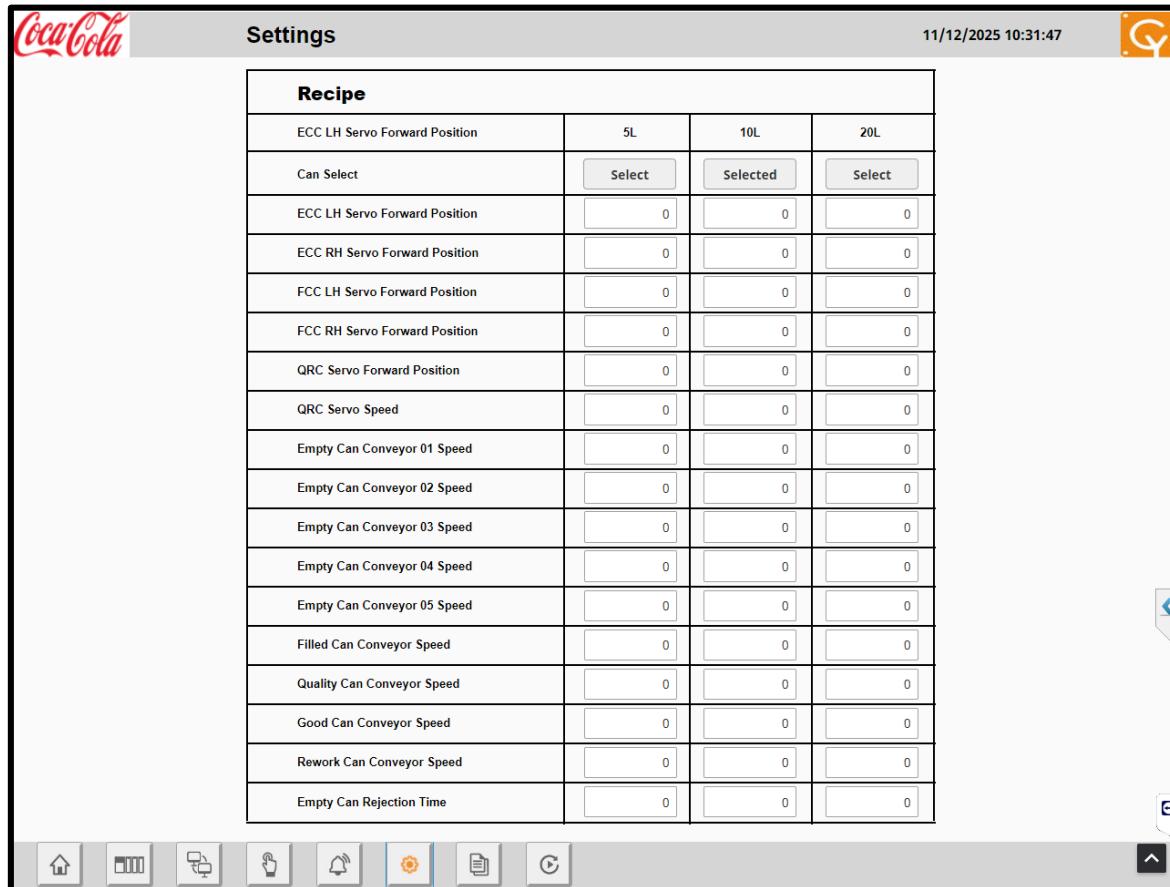
The screenshot shows a software interface titled "Alarms" with a Coca-Cola logo at the top. The date and time are displayed as 11/12/2025 10:31:06. The interface lists 50 alarm events from the last 8 hours, ordered by event time. The columns are: Event Time, Display Path, Priority, and State. Most alarms are categorized as "High" priority and are in an "Active, Unacknowledged" state. The list includes various error codes such as E227, E011, E106, E037, E108, E151, E153, E014, E260, E041, E155, E113, E224, E159, E164, E215, E010, E157, E039, E110, E152, E167, E214, E043, and E233QCC01.

Event Time	Display Path	Priority	State
11/12/2025 09:59:03	E227 Filled Can Guide 01 MPCB Tripped	High	Active, Unacknowledged
11/12/2025 09:59:03	E011 Filled Can Guide 01 Drive Communication Faulted	High	Active, Unacknowledged
11/12/2025 09:59:03	E106 Empty Can Conveyor Safety Pull Cord 2/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E037 Empty Can Conveyor 01 Drive Communication Faulted	High	Active, Unacknowledged
11/12/2025 09:59:03	E108 Empty Can Conveyor Safety Pull Cord 3/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E151 Filled Can Conveyor Safety Pull Cord 1/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E153 Filled Can Conveyor Safety Pull Cord 2/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E014 Rework Can Weighing Scale Communication Faulted	High	Active, Unacknowledged
11/12/2025 09:59:03	E260 Rework Can Conveyor 11 Motor Fault	High	Active, Unacknowledged
11/12/2025 09:59:03	E041 Quality Check Conveyor 02 Drive Communication Fault...	High	Active, Unacknowledged
11/12/2025 09:59:03	E155 Filled Can Conveyor Safety Pull Cord 3/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E113 Empty Can Conveyor ECC Panel E-Stop 1/1 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E224 Empty Can Guide 02 MPCB Tripped	High	Active, Unacknowledged
11/12/2025 09:59:03	E159 Filled Can Conveyor Safety Pull Cord 5/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E164 Filled Can Conveyor FCC Panel E-Stop 1/1 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E215 Empty Can Conveyor 04 Drive Faulted	High	Active, Unacknowledged
11/12/2025 09:59:03	E010 Empty Can Barcode Reader Communication Faulted	High	Active, Unacknowledged
11/12/2025 09:59:03	E157 Filled Can Conveyor Safety Pull Cord 4/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E039 Empty Can Conveyor 03 Drive Communication Faulted	High	Active, Unacknowledged
11/12/2025 09:59:03	E110 Empty Can Conveyor Safety Pull Cord 4/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E152 Filled Can Conveyor Safety Pull Cord 2/1 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E167 Filled Can Conveyor RSPC Box E-stop 2/2 Safety Break	High	Active, Unacknowledged
11/12/2025 09:59:03	E214 Empty Can Conveyor 04 Drive Not Ready	High	Active, Unacknowledged
11/12/2025 09:59:03	E043 Quality Check Conveyor 04 Drive Communication Fault...	High	Active, Unacknowledged
11/12/2025 09:59:03	E233QCC01 Rejection Pusher 01MPCB Tripped	High	Active, Unacknowledged

Figure 23: Alarms

- This screen lists all currently active alarms in the system.
- Each alarm includes:
  - **Time stamp**
  - **Error code (Exxx)**
  - **Device & fault description**
- Alarms remain listed until the fault is resolved and acknowledged.

## 14.2 Settings



**Figure 24: Settings**

- This screen allows the operator to configure and select **container size-specific machine parameters** for the production line. It is used to load and edit servo positions, conveyor speeds, and timing values associated with each recipe (5L, 10L, and 20L). These parameters ensure that all machine functions—such as can conveying, servo alignment, and rejection—operate correctly for the selected container size.

### Recipe Selection Section

This section is used to activate the correct recipe based on the production container size.

#### Columns:

- **5L**
- **10L**
- **20L**

Each column includes a **Select** button:



- **Select** – loads the recipe parameters for the chosen size.
- **Selected** – indicates the currently active recipe.

Only one recipe can be active at any time.

## 15.1 Depalletizer prestart & Safety

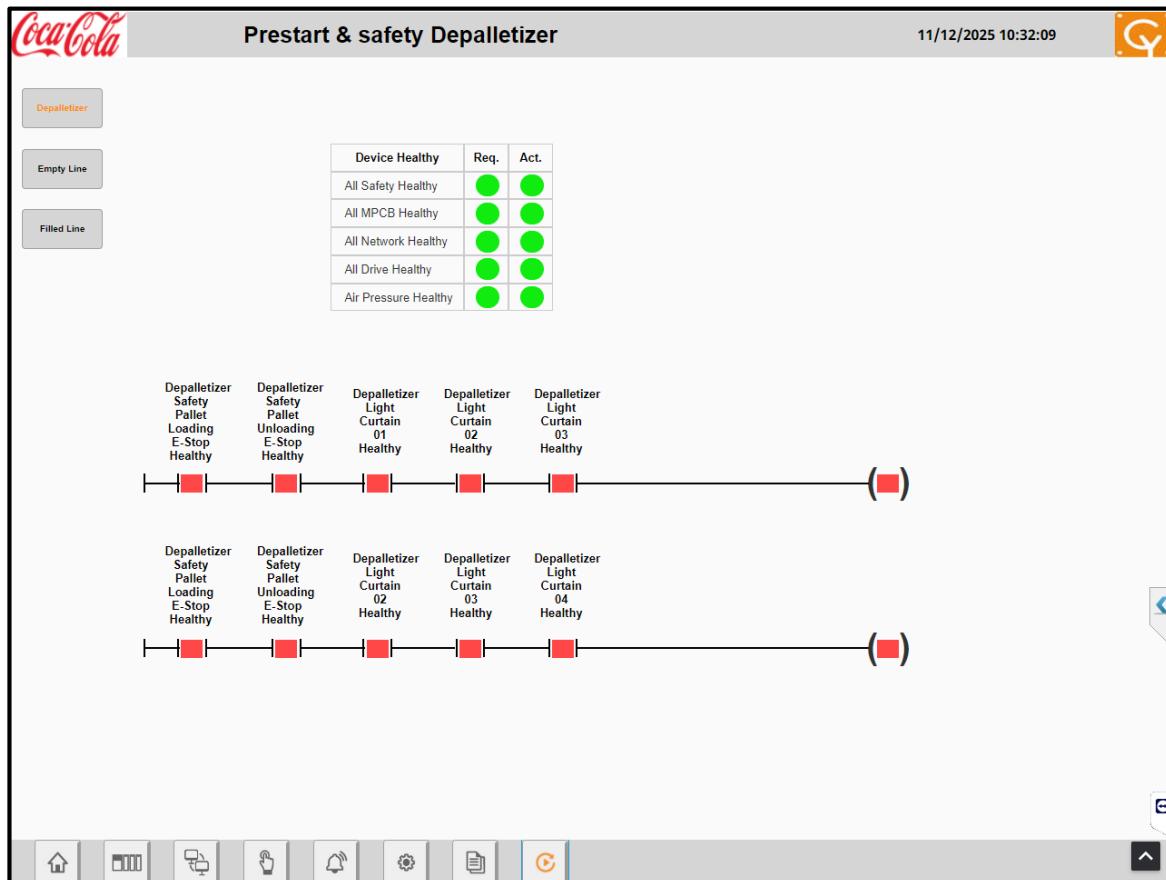


Figure 25: Depalletizer Prestart & Safety

- This screen provides a complete overview of the **safety status** of the Depalletizer before production can begin. It ensures that all critical safety devices—including emergency stops, light curtains, and system health checks—are functioning correctly. Operators must verify that all indicators show a healthy status before the machine is allowed to start.
- Required Status (Req.)** – always shown as green (healthy)
- Actual Status (Act.)** – must match the required status before the machine can start
- Below the summary is a visual representation of all safety devices wired into the Depalletizer's safety circuit.
- Each device is displayed as a **red safety block** along a horizontal safety chain line.

### How to read this section:

- Devices are placed **in series**, representing how they are wired in the safety loop.

- Red blocks represent individual safety devices.
- If any device is not healthy, it causes the entire safety loop to open and prevents machine startup.

## 15.2 Empty Line Prestart & Safety

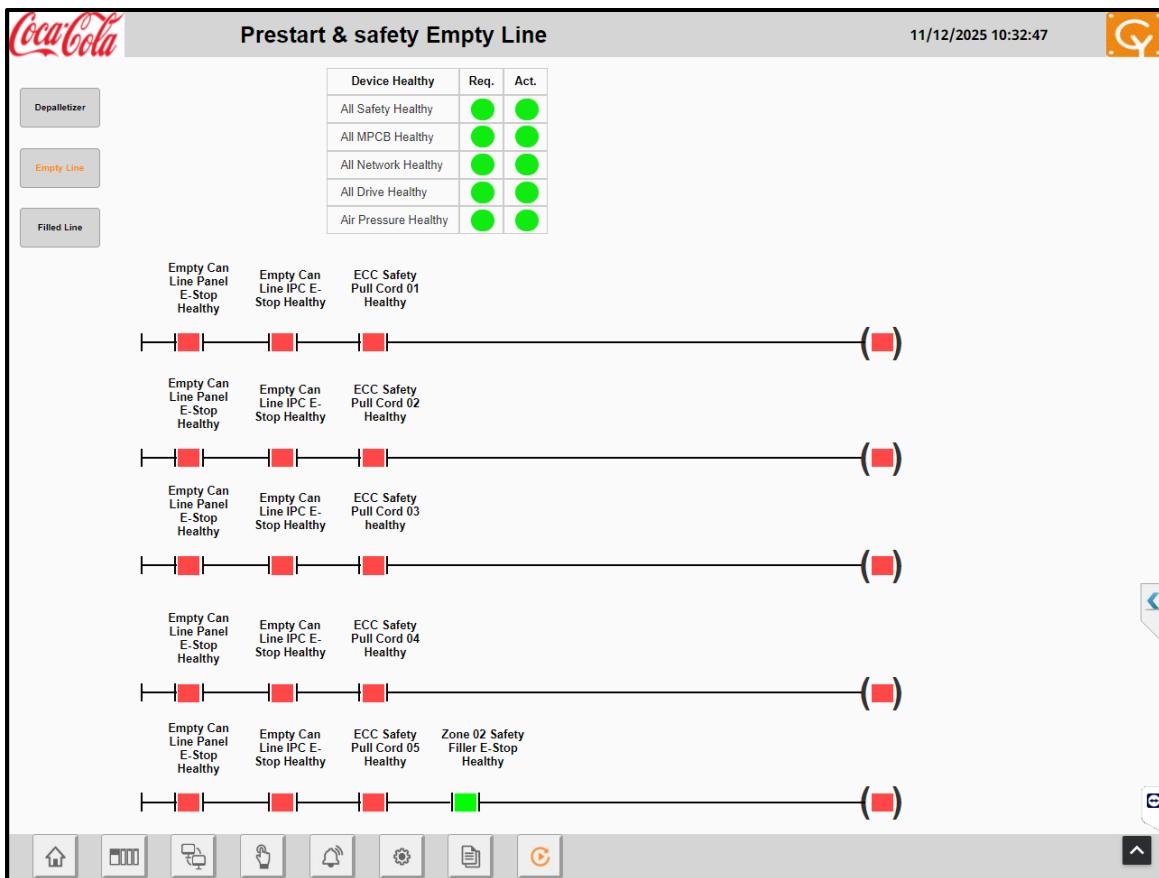
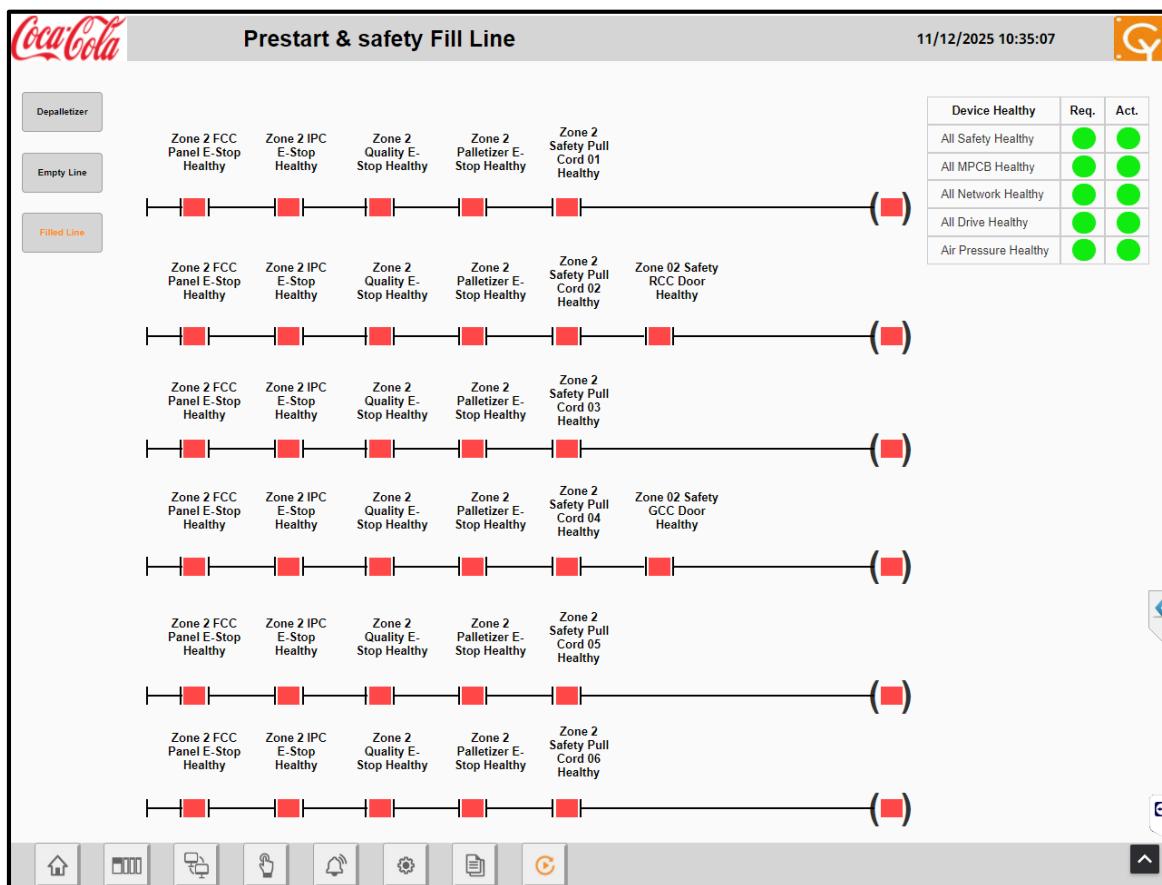


Figure 26: Empty Line Prestart & Safety

- This screen provides a complete overview of the **safety conditions of the Empty Can Line** before operation can begin. All safety devices, emergency stops, and pull-cord switches must be in a healthy (safe) state to allow machine start-up. This page is used during shift start, after maintenance work, or after any safety trip.
- This panel gives a top-level health check of critical system groups. Operators must verify that all **Actual (Act.)** indicators match the **Required (Req.)** healthy status.

## 15.3 Filled Line Prestart and Safety



**Figure 27: Filled Line Prestart & Safety**

- This screen provides a complete safety overview for **Zone 2 – Fill Line**. It allows operators and maintenance teams to verify the status of all emergency stops, pull-cord switches, and door interlocks before starting the filling operations. The Fill Line will **not start** unless every device in the safety circuit is healthy.
- Req. (Required): always green
- Act. (Actual)**: must be green for the Fill Line to run

Any red **Actual** indicator means the system must NOT be started.

## 16 Alarm List

Sr.No	Alarm Code	Alarm Description
1	E001	Communication Faulted
2	E002	Communication Faulted
3	E003	Drive Communication Faulted
4	E004	Drive Communication Faulted
5	E005	Drive Communication Faulted
6	E006	Drive Communication Faulted
7	E007	Drive Communication Faulted
8	E008	Drive Communication Faulted
9	E009	Drive Communication Faulted
10	E010	Communication Faulted
11	E011	Drive Communication Faulted
12	E012	Drive Communication Faulted
13	E013	Communication Faulted
14	E014	Communication Faulted
15	E015	Drive Communication Faulted
16	E016	Drive Communication Faulted
17	E017	Drive Communication Faulted
18	E018	Drive Communication Faulted
19	E019	Drive Communication Faulted
20	E020	Drive Communication Faulted
21	E021	Drive Communication Faulted
22	E022	Drive Communication Faulted
23	E023	Drive Communication Faulted
24	E024	Drive Communication Faulted
25	E025	Drive Communication Faulted
26	E026	Drive Communication Faulted
27	E027	Drive Communication Faulted
28	E028	Drive Communication Faulted
29	E029	Drive Communication Faulted
30	E030	Drive Communication Faulted
31	E031	Drive Communication Faulted
32	E032	Drive Communication Faulted
33	E033	Drive Communication Faulted
34	E034	Drive Communication Faulted
35	E035	Drive Communication Faulted
36	E036	Drive Communication Faulted
37	E037	Drive Communication Faulted
38	E038	Drive Communication Faulted
39	E039	Drive Communication Faulted
40	E040	Drive Communication Faulted
41	E041	Drive Communication Faulted
42	E042	Drive Communication Faulted
43	E043	Drive Communication Faulted

Sr.No	Alarm Code	Alarm Description
44	E044	Drive Communication Faulted
45	E045	Drive Communication Faulted
46	E046	Communication Faulted
47	E047	Communication Faulted
48	E048	Communication Faulted
49	E049	Communication Faulted
50	E050	Communication Faulted
51	E051	Communication Faulted
52	E052	Communication Faulted
53	E053	Communication Faulted
54	E054	Drive Communication Faulted
55	E055	Drive Communication Faulted
56	E056	Drive Communication Faulted
57	E057	Drive Communication Faulted
58	E101	Low
59	E102	Safety Break
60	E103	Safety Break
61	E104	Safety Break
62	E105	Safety Break
63	E106	Safety Break
64	E107	Safety Break
65	E108	Safety Break
66	E109	Safety Break
67	E110	Safety Break
68	E111	Safety Break
69	E112	Safety Break
70	E113	Safety Break
71	E114	Safety Break
72	E151	Low
73	E152	Safety Break
74	E153	Safety Break
75	E154	Safety Break
76	E155	Safety Break
77	E156	Safety Break
78	E157	Safety Break
79	E158	Safety Break
80	E159	Safety Break
81	E160	Safety Break
82	E161	Safety Break
83	E162	Safety Break
84	E163	Safety Break
85	E164	Safety Break
86	E165	Safety Break
87	E166	Safety Break
88	E167	Safety Break
89	E201	MPCB Tripped
90	E202	Drive Not Ready
91	E203	Drive Faulted

Sr.No	Alarm Code	Alarm Description
92	E204	Motor Disconnector Off
93	E205	MPCB Tripped
94	E206	Drive Not Ready
95	E207	Drive Faulted
96	E208	Motor Disconnector Off
97	E209	MPCB Tripped
98	E210	Drive Not Ready
99	E211	Drive Faulted
100	E212	Motor Disconnector Off
101	E213	MPCB Tripped
102	E214	Drive Not Ready
103	E215	Drive Faulted
104	E216	Motor Disconnector Off
105	E217	MPCB Tripped
106	E218	Drive Not Ready
107	E219	Drive Faulted
108	E220	Motor Disconnector Off
109	E221	MPCB Tripped
110	E222	Drive Not Ready
111	E223	Drive Faulted
112	E224	MPCB Tripped
113	E225	Drive Not Ready
114	E226	Drive Faulted
115	E227	MPCB Tripped
116	E228	Drive Not Ready
117	E229	Drive Faulted
118	E230	MPCB Tripped
119	E231	Drive Not Ready
120	E232	Drive Faulted
121	E233	MPCB Tripped
122	E234	Drive Not Ready
123	E235	Drive Faulted
124	E236	Motor Fault
125	E237	Motor Fault
126	E238	Motor Fault
127	E239	Motor Fault
128	E240	Motor Fault
129	E241	Motor Fault
130	E242	Motor Fault
131	E243	Motor Fault
132	E244	Motor Fault
133	E245	Motor Fault
134	E246	Motor Fault
135	E247	Motor Fault
136	E248	Motor Fault
137	E249	Motor Fault
138	E250	Motor Fault
139	E251	Motor Fault

Sr.No	Alarm Code	Alarm Description
140	E252	Motor Fault
141	E253	Motor Fault
142	E254	Motor Fault
143	E255	Motor Fault
144	E256	Motor Fault
145	E257	Motor Fault
146	E258	Motor Fault
147	E259	Motor Fault
148	E260	Motor Fault
149	E261	Motor Fault
150	E262	Motor Fault
151	E263	Motor Fault
152	E264	Motor Fault
153	E265	Motor Fault
154	E266	Motor Fault
155	E267	Motor Fault
156	E268	Motor Fault
157	E269	Motor Fault
158	E270	Motor Fault
159	E271	Motor Fault
160	E272	Motor Fault
161	E273	Motor Fault
162	E274	Motor Fault
163	E275	Motor Fault
164	E276	Motor Fault
165	E277	Motor Fault
166	E278	Motor Fault
167	E279	Motor Fault
168	E280	Motor Fault
169	E281	Motor Fault
170	E282	Motor Fault
171	E283	Motor Fault
172	E284	Motor Fault
173	E285	Motor Fault
174	E286	Motor Fault
175	E287	Motor Fault
176	E288	Motor Fault
177	E289	Motor Fault
178	E290	Motor Fault
179	E291	Motor Fault
180	E292	Motor Fault
181	E293	Motor Fault
182	E294	Motor Fault
183	E295	Motor Fault
184	E296	Motor Fault
185	E297	Motor Fault
186	E298	Motor Fault
187	E299	Motor Fault

Sr.No	Alarm Code	Alarm Description
188	E300	Motor Fault
189	E301	Motor Fault
190	E302	Motor Fault
191	E303	Motor Fault
192	E304	Motor Fault
193	E305	Motor Fault
194	E306	Motor Fault
195	E307	Motor Fault
196	E308	Motor Fault
197	E309	Motor Fault
198	E310	Motor Fault
199	E311	Motor Fault
200	E312	Motor Fault
201	E313	Motor Fault
202	E314	Motor Fault
203	E315	Motor Fault
204	E316	Motor Fault
205	E317	Motor Fault
206	E318	Motor Fault
207	E319	Motor Fault
208	E320	Motor Fault
209	E321	Motor Fault
210	E322	Motor Fault
211	E323	Motor Fault
212	E324	Motor Fault
213	E325	Motor Fault
214	E326	Motor Fault
215	E327	Motor Fault
216	E328	Motor Fault
217	E329	Motor Fault
218	E330	Motor Fault
219	E331	Motor Fault
220	E332	Motor Fault
221	E333	Motor Fault
222	E334	Motor Fault
223	E335	Motor Fault
224	E336	Motor Fault
225	E337	Motor Fault
226	E338	Motor Fault
227	E339	Motor Fault
228	E340	Motor Fault
229	E341	Motor Fault
230	E342	Both Reed Switch Present
231	E343	Both Reed Switch Absent
232	E344	Forward Reed Switch Absent
233	E345	Reverse Reed Switch Absent
234	E346	Both Reed Switch Present
235	E347	Both Reed Switch Absent

Sr.No	Alarm Code	Alarm Description
236	E348	Forward Reed Switch Absent
237	E349	Reverse Reed Switch Absent
238	E350	Both Reed Switch Present
239	E351	Both Reed Switch Absent
240	E352	Forward Reed Switch Absent
241	E353	Reverse Reed Switch Absent
242	E354	Both Reed Switch Present
243	E355	Both Reed Switch Absent
244	E356	Forward Reed Switch Absent
245	E357	Reverse Reed Switch Absent
246	E358	Both Reed Switch Present
247	E359	Both Reed Switch Absent
248	E360	Forward Reed Switch Absent
249	E361	Reverse Reed Switch Absent
250	E362	Both Reed Switch Present
251	E363	Both Reed Switch Absent
252	E364	Forward Reed Switch Absent
253	E365	Reverse Reed Switch Absent
254	E366	Both Reed Switch Present
255	E367	Both Reed Switch Absent
256	E368	Forward Reed Switch Absent
257	E369	Reverse Reed Switch Absent
258	E370	Both Reed Switch Present
259	E371	Both Reed Switch Absent
260	E372	Forward Reed Switch Absent
261	E373	Reverse Reed Switch Absent
262	E374	Sensor Fault
263	E375	Sensor Fault
264	E376	Sensor Fault
265	E377	Sensor Fault
266	E378	Sensor Fault
267	E379	Sensor Fault
268	E380	Sensor Fault
269	E381	Sensor Fault
270	E382	Sensor Fault
271	E383	Sensor Fault
272	E384	Sensor Fault
273	E385	Sensor Fault
274	E386	Sensor Fault
275	E387	Sensor Fault
276	E388	Sensor Fault
277	E389	Sensor Fault
278	E390	Sensor Fault
279	E391	Sensor Fault
280	E392	Sensor Fault
281	E393	Sensor Fault
282	E394	Sensor Fault
283	E395	Sensor Fault

Sr.No	Alarm Code	Alarm Description
284	E396	Sensor Fault
285	E397	Sensor Fault
286	E398	Sensor Fault
287	E399	Sensor Fault
288	E400	Sensor Fault
289	E401	Sensor Fault
290	E402	Sensor Fault
291	E403	Sensor Fault
292	E404	Sensor Fault
293	E405	Sensor Fault
294	E406	Sensor Fault
295	E407	Sensor Fault
296	E408	Sensor Fault
297	E409	Sensor Fault
298	E410	Sensor Fault
299	E411	Sensor Fault
300	E412	Sensor Fault
301	E413	Sensor Fault
302	E414	Sensor Fault
303	E415	Sensor Fault
304	E416	Sensor Fault
305	E417	Sensor Fault
306	E418	Sensor Fault
307	E419	Sensor Fault
308	E420	Sensor Fault
309	E421	Sensor Fault
310	E422	Sensor Fault
311	E423	Sensor Fault
312	E424	Sensor Fault
313	E425	Sensor Fault
314	E426	Sensor Fault
315	E427	Sensor Fault
316	E428	Sensor Fault
317	E429	Sensor Fault
318	E430	Sensor Fault
319	E431	Sensor Fault
320	E432	Sensor Fault
321	E433	Sensor Fault
322	E434	Sensor Fault
323	E435	Sensor Fault
324	E436	Sensor Fault
325	E437	Sensor Fault
326	E438	Sensor Fault
327	E439	Sensor Fault
328	E440	Sensor Fault
329	E441	Sensor Fault
330	E442	Sensor Fault
331	E443	Sensor Fault

Sr.No	Alarm Code	Alarm Description
332	E444	Sensor Fault
333	E445	Sensor Fault
334	E446	Sensor Fault
335	E447	Sensor Fault
336	E448	Sensor Fault
337	E449	Sensor Fault
338	E450	Sensor Fault
339	E451	Sensor Fault
340	E452	Sensor Fault
341	E453	Sensor Fault
342	E454	Sensor Fault
343	E455	Sensor Fault
344	E456	Sensor Fault
345	E457	Sensor Fault
346	E458	Sensor Fault
347	E459	Sensor Fault
348	E460	Sensor Fault
349	E461	Sensor Fault
350	E462	Sensor Fault
351	E463	Sensor Fault
352	E464	Sensor Fault
353	E465	Sensor Fault
354	E466	Sensor Fault
355	E467	Sensor Fault
356	E468	Sensor Fault
357	E469	Sensor Fault
358	E470	Sensor Fault
359	E471	Sensor Fault
360	E472	Sensor Fault
361	E473	Sensor Fault
362	E474	Sensor Fault
363	E475	Sensor Fault
364	E485	MPCB Tripped
365	E486	Drive Not Ready
366	E487	Drive Faulted
367	E488	MPCB Tripped
368	E489	Drive Not Ready
369	E490	Drive Faulted
370	E491	MPCB Tripped
371	E492	Drive Not Ready
372	E493	Drive Faulted
373	E494	MPCB Tripped
374	E495	Drive Not Ready
375	E496	Drive Faulted
376	E503	Motor Fault

**17.1 Mechanical Spare List**

Sr. No.	Item Code	Description	Make	Used Qty	Recommended Spares	Critical Spares
<b>CONVEYOR LINE FOR ECC/FCC</b>						
1	010FES001377	ISO CYLINDER:DSBC-32-150-D3-PPVA-N3R3A3,1463250	FESTO	5.000	2	1
2	010FES001379	SERVO MOTOR:EMMT-AS-60-MR-LS-RM FESTO 4808568	FESTO	4.000	2	1
3	010FES001388	SWIVEL FLANGE:CRSNCS-32 FESTO 2895920	FESTO	2.000	1	1
4	010FES001389	GUIDE UNIT:FENG-40-200-KF FESTO 34502	FESTO	2.000	1	1
5	010FES001391	GUIDE UNIT:FENG-32-150-KF FESTO 34487	FESTO	3.000	1	1
6	052SYP000008	TAB CHAIN 190MM:10405-SSE8810TAB-K750,SYSTEM PLAST	SYSTEM PLAST	39.624	5	2
7	052SYP000010	SPROCKET:25T/40 MM BORE:881-25R40M-DS(12076N)	SYSTEM PLAST	20.000	2	1
8	052SYP000009	CURVE 90°/610 R:VT880T750R610T1D-90,SYSTEM PLAST	SYSTEM PLAST	5.000	2	1
9	052SYP000011	BEARING-CLOSED CAP:UCFXX208-40M-CEC,SYSTEM PLAST	SYSTEM PLAST	20.000	2	1
10	052SYP000012	BEARING-OPEN CAP:UCFXX208-40M-OEC,SYSTEM PLAST	SYSTEM PLAST	8.000	2	1
11	052SYP000013	SIDE GUIDE:VG-LSSR-10(19019),SYSTEM PLAST	SYSTEM PLAST	144.000	5	-

Sr. No.	Item Code	Description	Make	Used Qty	Recommended Spares	Critical Spares
12	052SYP000014	S.S BRACKET:VG-011-03(131002),SYSTEM PLAST	SYSTEM PLAST	150.000	2	1
13	052SYP000015	SPEED SET BRACKET:VG-Q-75-40-M10(AA1300001)	SYSTEM PLAST	120.000	2	-
14	052SYP000016	WEAR STRIP:VG-JL19M-G-200(19007V),SYSTEM PLAST	SYSTEM PLAST	60.000	2	1
15	052SYP000017	TRANSFER ROLLERS:TME-K900R2SR-FM,SYSTEM PLAST	SYSTEM PLAST	10.000	2	1
16	052SYP000018	LEVELLER 16 M:LSSC100-01-SM16L240,SYSTEM PLAST	SYSTEM PLAST	132.000	2	1
17	052SYP000019	ROD MOUNT:VG-213R-20-01,13S00029,SYSTEM PLAST	SYSTEM PLAST	120.000	2	1
18	052SYP000020	JOINT ROD ADAPTER:VG-222JQ-M10,13S00259,SYSTEMPLAS	SYSTEM PLAST	60.000	2	1
19	052SYP000021	FLANGED BEARING-UCFQ204-20M-SS_SYSTEMPLAST	SYSTEM PLAST	4.000	2	1
20	031SEW000291	SEW GEARD MOTOR:SA47/T DRN80M4,M1A,180(L)/NORMAL	SEW	3.000	1	1
21	031SEW000292	SEW GEARD MOTOR:SA47/T DRN80M4,M1B,0(R)/NORMAL	SEW	2.000	1	1
22	052ITR000070	INTERROLL FIX.DRIVE ROLLER SE.3500,RL275,EL-310MM	INTERROLL	260.000	10	5
23	052ITR000071	FIXED TAPERED DRIVE,SE.3500,RL274,EL-310MM	INTERROLL	152.000	2	1
24	052ITR000073	POLY VEE BELT PJ256 - 3 RIB FOR 60MM PITCH	INTERROLL	515.000	2	1
25	052ITR000081	ROLLERDRIVE:RD-52FC-0300001-R10-000,EL=310MM	INTERROLL	52.000	2	1

Sr. No.	Item Code	Description	Make	Used Qty	Recommended Spares	Critical Spares
26	052ITR000082	TAPEREDROLLERDRIVE:RD-51FC-0300000-R12-T36,EL310MM	INTERROLL	36.000	2	1
27	052ITR000083	INTERROLL UNIVERSAL CONVEYOR ROLLER 1700 EL=310MM	INTERROLL	35.000	2	1
28	052ITR000084	ROLLERDRIVE - EL=400MM	INTERROLL	2.000	2	1
29	052ITR000085	INTERROLL FIXED DRIVE _ EL=400MM	INTERROLL	10.000	2	1
30	052ITR000086	INTERROLL UNIVERSAL CONVEYOR ROLLER 1700 EL=250MM	INTERROLL	30.000	2	1
31	052ITR000087	ROLLERDRIVE WITHOUT POLYVEE HEAD _ EL=310MM	INTERROLL	10.000	2	1
32	052ITR000088	BLIND PLUGS- S- 1104466_INTERROLL	INTERROLL	20.000	2	1
33	040THK000137	LINEAR BEARING:SIZE-25 LMH25ML,THK	EIBC	16.000	2	1
34	VAP066101103	TRACK END -1	CTPL	20.000	2	1
35	VAP066104106	PRESSING PAD	CTPL	2.000	1	1
36	VAP066210405	RESTING PL 1	CTPL	1.000	1	1
37	VAP066210406	RESTING PL 2	CTPL	1.000	1	1
38	VAP066101104	DRIVE SHAFT	CTPL	5.000	2	1
39	VAP066101203	DRIVEN SHAFT	CTPL	5.000	2	1
40	012ACE00GS34	GAS SPRING GS-28-250-DD-VA MOC-SS 304 MAKE -ACE	CTPL	4.000	2	1
41	012ACE00GS35	CLEVIS FITTING:D10-VA MAKE -ACE	CTPL	8.000	2	1

Sr. No.	Item Code	Description	Make	Used Qty	Recommended Spares	Critical Spares
42	VAP066104104	COMPRESSION SPRING	CTPL	6.000	3	1
43	011FES000552	FLOW CTRL VALVE- GRLA-1/4-QS-8-RS-D-534339-FESTO	FESTO	4.000	2	1
44	011FES006844	SILENCER U-1/2-B FESTO 6844	FESTO	4.000	2	1
45	011FES186098	PUSH IN FITTING-QS-G1/8-8, FESTO	FESTO	30.000	5	1
46	011FES186125	PUSH IN L FITTING QSL-G1/2-12 FESTO 186125	FESTO	4.000	2	1
47	011FES186126	PUSH IN L FITTING QSL-G1/2-16 FESTO 186126	FESTO	3.000	2	1
48	011FES197578	FLOW CONTROL VALVE GRLA M5-QS-6-RS-D FESTO 197578	FESTO	7.000	2	1
49	010FES001411	SERVO MOTOR:EMMT-AS-100-LR-HS-RM FESTO 5185818	FESTO	1.000	2	1
50	011FES534337	FLOW CTRL VALVE- GRLA-1/8-QS-8-RS-D-534337-FESTO	FESTO	12.000	2	1

### EMPTY CANS PALLET TRANSFER

51	040THK000106	LM BUSH LMK50LUU- THK	EIBC	4.000	2	1
52	031SEW000295	SEW GEARD MOTOR:K19 DRN80MK4,M1AB,IE3,0.55KW	SEW	4.000	2	1
53	010FES001396	COMPACT CYLINDER:ADN-125-50-A-P-A FESTO 536393	FESTO	2.000	1	1
54	011FES036128	COUPLING PIECE KSZ-M20X1.5 FESTO 36128	FESTO	2.000	1	1
55	04000060052Z	DEEP GROOVE BALL BEARING - 6005 2Z	CTPL	24.000	2	1

Sr. No.	Item Code	Description	Make	Used Qty	Recommended Spares	Critical Spares
56	0400006204ZZ	DEEP GROOVE BALL BEARING-6204 ZZ	CTPL	4.000	2	1
57	040SKF000071	DEEP GROOVE BALL BEARING:61904-2RS1 MAKE-SKF	CTPL	40.000	5	2
58	040SKF000221	OVAL FLANGE BALL BEARING UNIT :UCFL204 MAKE - SKF	CTPL	18.000	3	1
59	VAP066301103	SP1_1-2INCH_38 TEETH	CTPL	4.000	2	1
60	VAP066301203	IDLER SPROCKET-2	CTPL	8.000	2	1
61	VAP066301306	SP1_1-2INCH_38 TEETH - 1	CTPL	4.000	2	1
62	VAP066303103	HALF INCH DUPLEX SPROCKET	CTPL	20.000	5	1
63	VAP066303304	HALF INCH DUPLEX_17TEETH -02	CTPL	4.000	2	1
64	VAP066301101	IDLER SHAFT-1	CTPL	4.000	2	1
65	VAP066301201	IDLER SHAFT-2	CTPL	8.000	4	1
66	VAP066301302	DRIVE SHAFT-1	CTPL	4.000	2	1
67	VAP066303102	TENSIONING SHAFT	CTPL	4.000	2	1
68	VAP066303105	IDLER SHAFT 1	CTPL	16.000	4	1
69	VAP066303301	DRIVE SHAFT	CTPL	4.000	2	1
70	VAP066303404	GUIDE LOCATOR	CTPL	4.000	2	1
71	VAP066303503	ROLLER MTG. SHAFT	CTPL	2.000	2	1
72	VAP066303504	ROLLER	CTPL	2.000	2	1
73	VAP066301002	CHAIN GUIDE	CTPL	8.000	4	1
74	VAP066303106	CHAIN GUIDE	CTPL	4.000	2	1
75	100DMD00SS58	1/2" DUPLEX CHAIN FULL LINK - SS304	CTPL	20.000	10	2

Sr. No.	Item Code	Description	Make	Used Qty	Recommended Spares	Critical Spares
76	100DMD00SS59	1/2" DUPLEX CHAIN HALF LINK - SS304	CTPL	20.000	10	2
77	100DMD0SS8B2	SS DUPLEX CHAIN 1/2" ISO NO. 08B-2 MAKE- DIAMOND	CTPL	36.000	10	5
78	040MSM000031	SQUARE FLANGE LINEAR BUSHING:C-LMK20UU,MAKE- MISUMI	MISUMI	4.000	2	1
79	010FES536275	DBL.ACTING CYL.ADN-32-50-A-P-A FESTO-536275	FESTO	2.000	1	1
80	011FES036125	COUPLING PIECE KSZ-M10X1.25 FESTO 36125	FESTO	1.000	1	1
81	011FES534337	FLOW CTRL VALVE- GRLA-1/8-QS-8-RS-D-534337-FESTO	FESTO	4.000	2	1
82	VAP066301404	PIN	CTPL	6.000	3	1

## 17.2 Electrical Spare List

Sr.No	Item Code	Description	Make	Used Qty	Images
1	6010AB000242	GUARDLOGIX 5580 1756 - L83ES 10MB STD MEMORY AB	ABB	1.000	
2	6010AB000220	ETHERNET SINGLE PORT INTERFACE MODULE 1756-EN2T	ABB	2.000	
3	6010AB000217	GUARDLOGIX 5580 SAFETY PARTNER CONTR. 1756-L8SP AB	ABB	1.000	
4	6010AB000177	CONTROLLOGIX 19-32 VDC POWER SUPPLY 1756-PB72 AB	ABB	1.000	
5	6010AB000180	SLOT FILLER MODULE FOR STD CONTROLLOGIX 1756-N2	ABB	3.000	
6	6010AB000018	MODULE 1734- AENTR ETHERNET / IP TWISTED IO ADAPTOR	ABB	1.000	
7	6010AB000019	MODULE 1734-EP24DC 24VDC POWER/BUS EXTENSION -AB	ABB	2.000	
8	6010AB000150	SINK SAFETY I/P MODULE 1734-IB8S 24VDC 8 CHANNEL	ABB	2.000	
9	6010AB000151	SOURCE SAFETY O/P MODULE 1734-OB8S 24VDC 8 CHANNEL	ABB	4.000	
10	6010AB000215	ONE PIECE TERMINAL BASE 1734-TOP3 12-SCREW TERMINAL	ABB	11.000	

Sr.No	Item Code	Description	Make	Used Qty	Images
11	6010AB000021	MODULE 1734-IB8 24VDC 8 CHANNEL SINK I/P MODULE	ABB	9.000	
12	6010AB000022	MODULE 1734-OB8 24VDC 8 CHANNEL SOURCE O/P MODULE	ABB	3.000	
13	6010AB000152	ONE PIECE TERMINAL BASE 1734-TOP SCREW TERMINAL	ABB	12.000	
14	601SIE000428	SCALANCE XC416-8 MANAGEABLE 6GK54248TR002AC2 SIEMENS	Siemens	1.000	
15	601SIE000429	SCALANCE XC224 MANAGEABLE 6GK52240BA002AC2 SIEMENS	Siemens	1.000	
16	601SIE000419	SCALANCE XC208 MANAGEABLE 6GK52080BA002AC2 SIEMENS	Siemens	1.000	
17	604ADV000011	PPC 19" PPC-6191C-RTAE MAKE: ADVANTEC	Advantec	1.000	
18	6010AB000176	CONTROL LOGIX CHASSIS 7 SLOT 1756-A7 AB	ABB	1.000	
19	601HIL000008	ETHERNET/IP TO PROFINET NT151-RE- RE HILSCHER	Hilscher	1.000	
20	6050AB000050	DRIVE PF525 25B-D2P3N104 0.75KW 1 HP 480VAC - AB	ABB	5.000	

Sr.No	Item Code	Description	Make	Used Qty	Images
21	607SIE000544	ROTARY DISCONNECT SWITCHES 16A 3LD20640TB530	Siemens	5.000	
22	607SIE000523	CONTACT BLOCK 3LD92005C - SIEMENS	Siemens	5.000	
23	609RIT000520	PANEL AC SK 3184.800 1.0KW 110-240V BLUE E+ RITTAL	Rittal	1.000	
24	607SIE000965	MCCB 100A 3P 3VA11104EE320AA0 36KA ATFM	Siemens	1.000	
25	600SIE000009	ASSEMBLY- 3VA 16-160A MCCB HANDLE & SPREADER LINK	Siemens	1.000	

## 18 Preventive Maintenance

Table given below will cover all the areas in the system where periodic maintenance is very important.

Sr. no.	Activity	Weekly	Monthly	Quarterly	Annually
<b>Mechanical Maintenance</b>					
1	Gear box oil			✓	
2	All nuts and bolts should be tight.		✓		
3	Pneumatic cylinders.			✓	
4	Lifting belt Inspection				✓
5	Cleaning of FRL unit			✓	
6	Inflatable bellow		✓		
7	Flexible bellow		✓		
<b>Electrical Maintenance</b>					
1	All sensor brackets should be checked and make sure that they are properly mounted.			✓	
2	All sensor & there inputs should be checked.		✓		
3	All solenoid valve and there check-nuts should be checked.			✓	
4	Air pressure switch should be checked.			✓	
5	All junction box terminals and lugs should be checked.				✓
6	All Magnetic sensors should be checked.			✓	
7	All reed switches should be checked.		✓		

## 19 Lifecycle of Material

The definition of life cycle is ‘Consecutive and interlinked stages of a product (or service) system, from raw material acquisition or generation from natural resources to final disposal. Life cycle stages include acquisition of raw materials, design, production, transportation/delivery, use, end-of-life treatment and final disposal.’

**Table 6: Life cycle of material**

Raw Material	Life	Recycle
SS 304 / S.S.316 / S.S.316L	50 Years	Recycle by sorting, Melting and Purification
Mild Steel	20 Years	Recycle by sorting, Melting and Purification
Rubber (Gasket, “O” ring, etc.)	5 years	Recycle by sorting and de-vulcanization.
PVC	50 Years	Recycle by Mechanical recycling / Chemical recycling
Aluminum	40 Years	Recycle by aluminum is sorted and cleaned then melted and uses for further process
Polyurethane	5 Years	Recycle by Mechanical recycling / Chemical recycling
Ultra High Molecular Weight Polyethylene	30 Years	Recycle by Shredding and Resizing then Compounding
Silicon	10 Years	Recycle by grinding or tearing shredded silicone granules into a prepared mold
Plastic	No End life	Recycle
Packaging Material (Paper Box, Wooden Box, Carton Box)	No End life	Recycle
Engine Oil	18 Months (Also depends on its Practical use )	Stored in factory hazard areas

**Note: Disposal to be done as per local rules and regulations.**