AOI System – Operator User Manual (User-Centric Revised)

This document is prepared **strictly for Operators**. The content, structure, and explanations are aligned with **actual shop-floor usage**, keeping the original screens, images, and flow intact.

Login Screen

1. Purpose

The Login Screen is the first screen shown when the AOI System application starts.
It is used to verify the Operator's identity and allow access to the system.

Only authorized Operators can log in using valid credentials.

2. User Role

- **User Type:** Operator
- This screen is used by Operators to access the AOI System.

3. Screen Overview

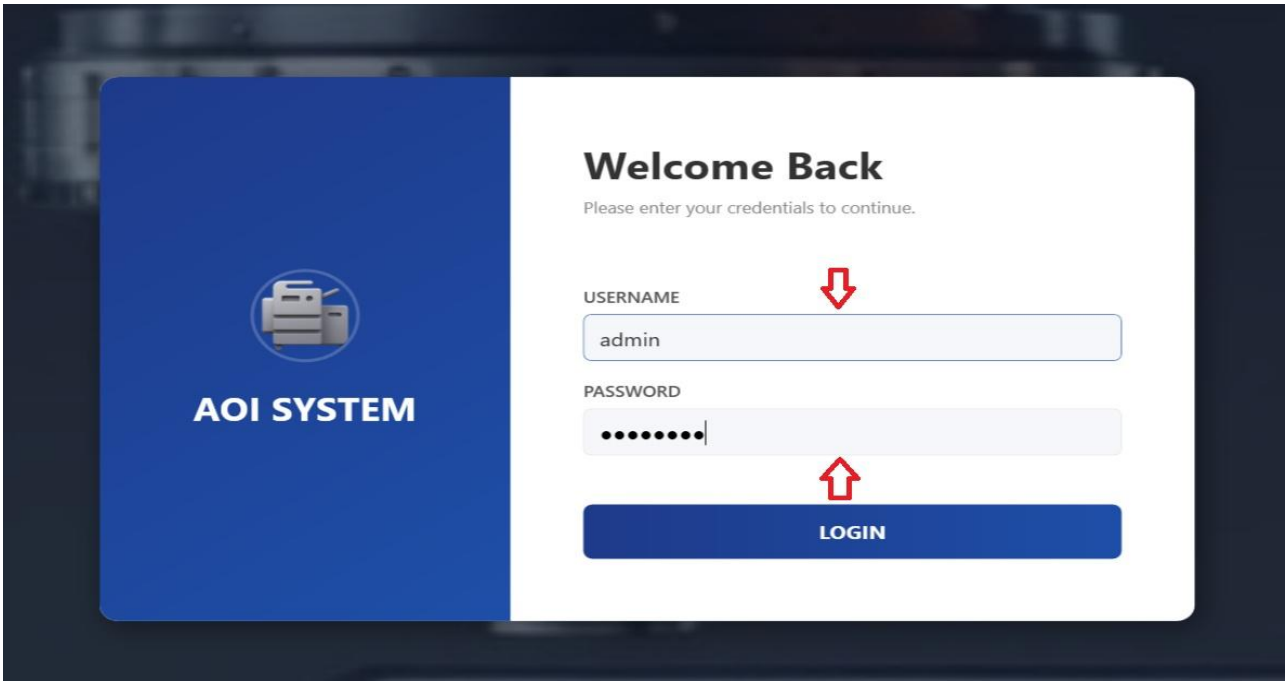
The Login Screen includes the following items:

- **System Name**
  Displays the application name **AOI System**.
- **Username Field**
  Used to enter the Operator's assigned username.
- **Password Field**
  Used to enter the Operator's password.
  The password is hidden for security.
- **Login Button**
  Used to submit the login details.

4. Login Steps

To log in, the Operator should follow these steps:

1. Open the AOI System application.
2. Enter the username in the **Username** field.
3. Enter the password in the **Password** field.
4. Click the **Login** button.
5. If the details are correct, the Operator Dashboard will open.



5. System Response

5.1 Successful Login

- The system allows access to the Operator.
- The main dashboard is displayed.
- Operator features become available.

5.2 Login Failure

If the username or password is incorrect:

- An error message is shown.
- Access is denied.

- The Operator must enter the correct details.

6. Security Guidelines

- Username is case-insensitive.
- Password is case-sensitive.
- Operators must keep their credentials private.
- Multiple incorrect attempts may temporarily block access.
- For login issues, contact the System Administrator.

7. Operator Responsibility

- Do not share login credentials.
- Log out after completing work.
- Report any access issues to the administrator.

Dashboard Screen (Post Login)

1. Screen Name

Operator Dashboard / Home Screen

2. Purpose of the Screen

The Dashboard Screen is displayed after a successful login.
It is the **main working screen** for the Operator.

From this screen, the Operator can:

- Monitor system status
- Access logs and reports

- Check machine connectivity
- Navigate to assigned modules

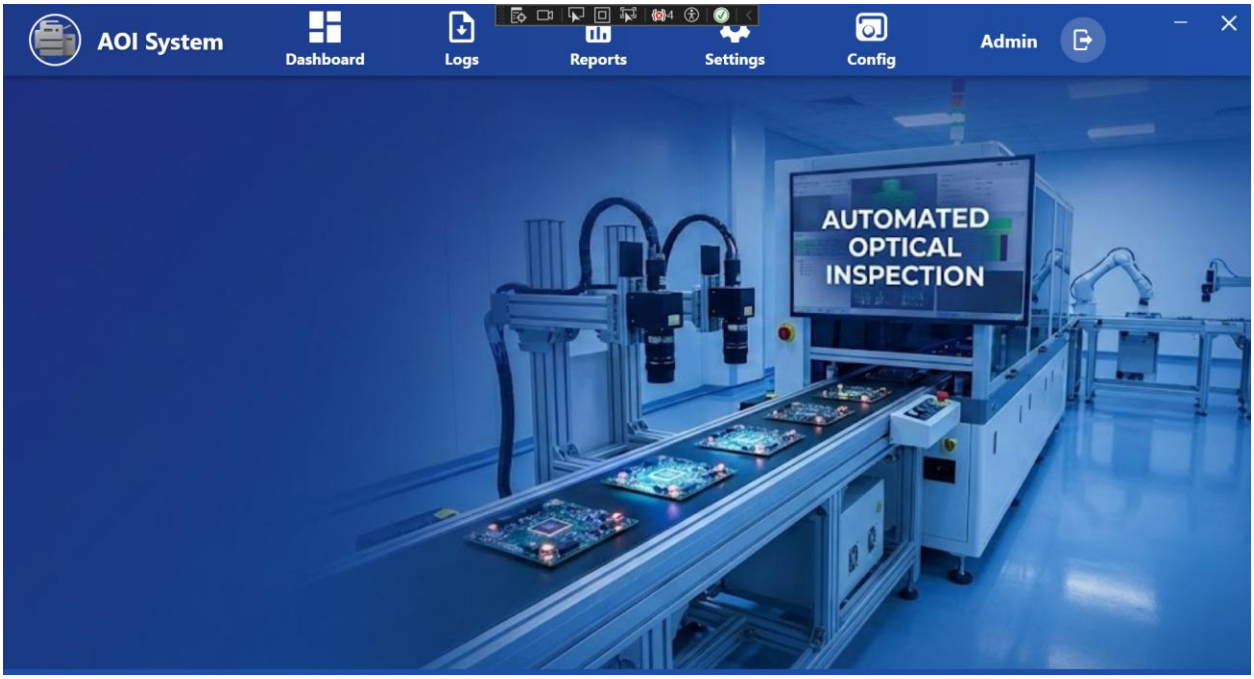
3. Screen Overview

The Dashboard screen contains the following main areas:

3.1 Top Navigation Bar

The top bar provides quick access to important sections of the system:

- **Dashboard**
  Returns to the main dashboard view.
- **Logs**
  Used to view system and operation logs.
- **Reports**
  Used to view inspection and performance reports.
- **Settings**
  Used to view system settings (limited access for Operator).
- **Config**
  Used for configuration-related options (access depends on permission).
- **User Info / Logout**
  Displays the logged-in user and provides logout option.



4. Main Display Area

The center area of the dashboard shows the **AOI machine working environment**.

This visual represents:

- Automated Optical Inspection process
- Boards or components under inspection
- Current operational state of the system

This helps the Operator quickly understand whether the system is active and running.

5. System Status Information

At the bottom of the screen, system status messages are displayed.

Example Status Indicators:

- **PLC Connection Status**
  Shows whether the PLC is connected or disconnected.

- **System Version**
  Displays the current software version.
- **Date and Time**
  Shows the current system date and time.

These indicators help the Operator identify system health at a glance.

6. Operator Actions from Dashboard

From the Dashboard screen, the Operator can:

- Monitor system connectivity
- Navigate to Logs for issue tracking
- View Reports for inspection results
- Check system status messages
- Log out after completing work

7. Operator Limitations

- The Operator cannot change critical system configurations.
- Advanced settings are restricted to Admin users.
- Access depends on assigned permissions.

Dashboard – Menu View

1. Screen Name

Dashboard – Menu Screen

2. Purpose of the Screen

This screen is displayed when the Operator clicks on the **Dashboard** option. It provides access to key operational views required for daily monitoring and control.

This screen helps the Operator quickly navigate to important system functions.

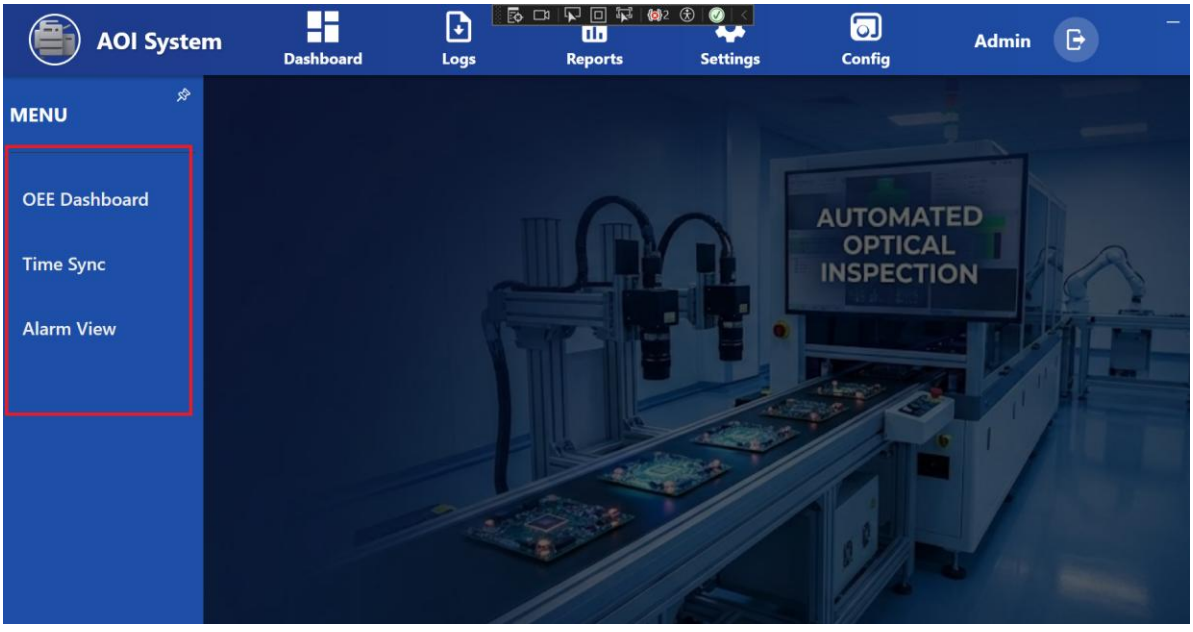
3. Screen Layout Overview

The screen is divided into two main sections:

- Left Menu Panel
- Main Display Area

4. Left Menu Panel (Operator View)

The left-side menu provides navigation to important Operator functions.



4.1 OEE Dashboard

- Displays Overall Equipment Effectiveness (OEE) information.
- Used to monitor machine performance and productivity.

4.2 Time Sync

- Used to synchronize system time.
- Ensures correct timestamps for logs and reports.

4.3 Alarm View

- Displays active and historical alarms.
- Helps the Operator identify and respond to system issues.

5. Main Display Area

The main area shows the **current operational view** selected from the menu.

Depending on the selected option:

- OEE data
- Time synchronization status
- Alarm details

will be displayed in this area.

6. Operator Actions

From this screen, the Operator can:

- Open the OEE Dashboard to check performance
- Verify or sync system time
- View alarms and system warnings
- Monitor system condition during operation

7. Operator Access Limitations

- The Operator can view information but cannot change critical configurations.
- Advanced system settings are restricted to Admin users.
- Access is based on assigned permissions.

8. Important Notes for Operator

- Regularly check the **Alarm View** for any active issues.
- Ensure system time is correct before starting operations.
- Report repeated alarms to the supervisor or administrator.

OEE Inspection Dashboard

1. Screen Name

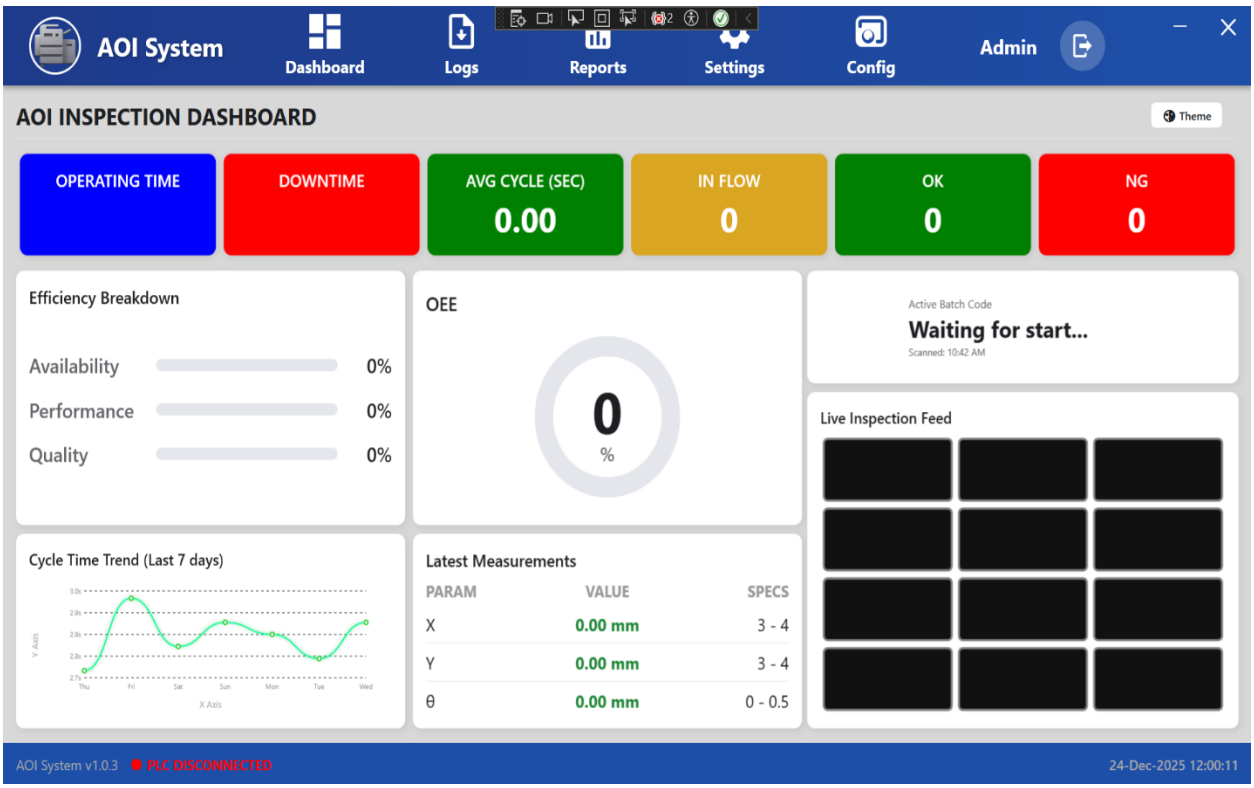
OEE Inspection Dashboard

2. Purpose of the Screen

The OEE Inspection Dashboard is used to **monitor machine performance and inspection status in real time**.
It provides key operational metrics required by the Operator during daily production.

This screen helps the Operator understand:

- Machine running time and downtime
- Inspection performance
- Quality results



3. Top Performance Indicators

The top section displays key performance values:

- **Operating Time**
  Shows the total time the machine has been running.
- **Downtime**
  Shows the total time the machine was stopped or inactive.
- **Average Cycle Time (Sec)**
  Displays the average inspection cycle time in seconds.
- **In Flow**
  Shows the number of boards/components currently under inspection.
- **OK**
  Displays the count of passed inspections.
- **NG**
  Displays the count of failed inspections.

4. Efficiency Breakdown Panel

This section shows efficiency details in percentage:

- **Availability**
  Indicates how much time the machine was available for operation.
- **Performance**
  Indicates how efficiently the machine is running compared to expected speed.
- **Quality**
  Indicates the percentage of good (OK) inspections.

5. OEE Indicator

- Displays the **Overall Equipment Effectiveness (OEE)** value in percentage.
- Combines Availability, Performance, and Quality into a single metric.
- Helps the Operator quickly assess overall system efficiency.

6. Active Batch Information

- Displays the **current batch status**.
- Example: *"Waiting for start"* indicates inspection has not yet started.
- Shows the last scanned time for the batch.

7. Live Inspection Feed

- Displays live camera images from the inspection process.
- Allows the Operator to visually monitor ongoing inspections.
- Black or empty frames indicate that no inspection is currently active.

8. Cycle Time Trend (Last 7 Days)

- Shows a graphical trend of inspection cycle time.
- Helps identify performance variations over time.
- Useful for monitoring consistency.

9. Latest Measurements Panel

Displays the most recent measurement values:

- **Parameter Name** (X, Y, θ, etc.)
- **Measured Value**
- **Specification Range**

Helps the Operator verify whether measurements are within limits.

10. System Status Information

At the bottom of the screen:

- **System Version** is displayed
- **PLC Connection Status** is shown
  - Example: *PLC Disconnected*
- **Date and Time** are displayed

11. Operator Actions

From the OEE Dashboard, the Operator can:

- Monitor inspection performance
- Track OK and NG counts
- Observe live inspection feed
- Identify downtime or connection issues
- Inform supervisor in case of abnormal values

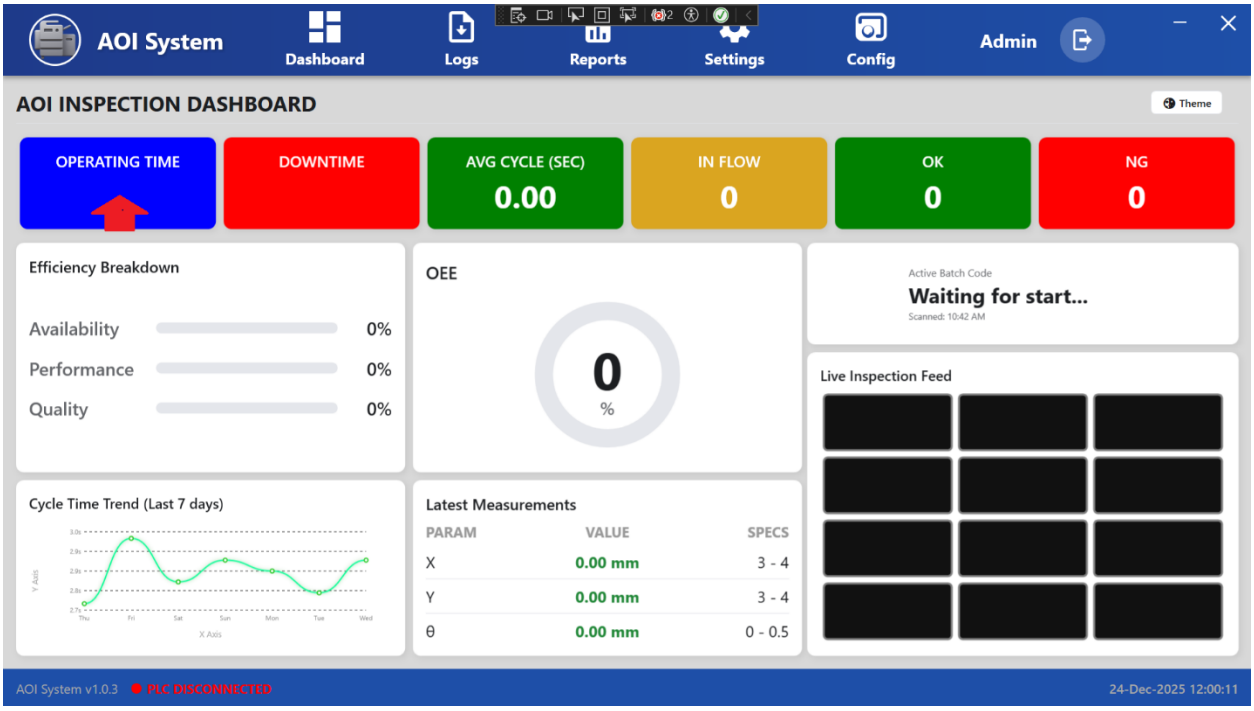
12. Important Notes for Operator

- Always check **PLC connection status** before starting inspection.
- If OEE or efficiency values remain zero, verify system readiness.
- Report repeated NG results or alarms immediately.

Operating Time – Detail View

1. Screen Name

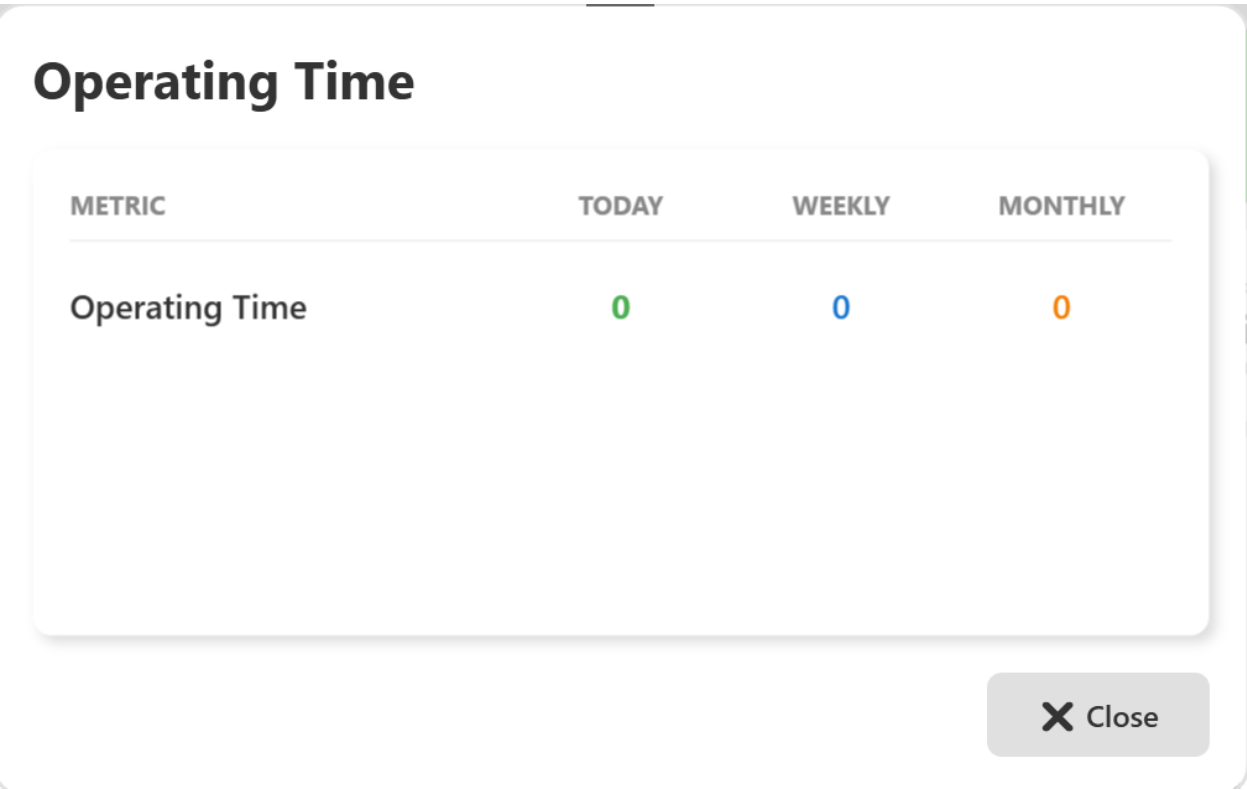
Operating Time – Detail View



2. Purpose of the Screen

The Operating Time screen displays the **machine running time summary**.
It helps the Operator understand how long the system has been operating over different time periods.

This screen is used only for monitoring and review.



3. Screen Overview

The screen shows operating time data in a tabular format with the following columns:

- Metric
- Today
- Weekly
- Monthly

4. Displayed Information

4.1 Operating Time

- **Today**
  Shows the total operating time for the current day.
- **Weekly**
  Shows the total operating time for the current week.
- **Monthly**
  Shows the total operating time for the current month.

If the values are shown as **0**, it indicates:

- The machine has not started operation yet, or
- No operating data is available for the selected period.

5. Operator Actions

From this screen, the Operator can:

- View operating time statistics
- Compare daily, weekly, and monthly usage
- Close the screen after review

There are **no edit or control actions** available on this screen.

6. Close Action

- Click the **Close (X)** button to exit the Operating Time screen.
- The system will return to the previous dashboard view.

7. Important Notes for Operator

- Operating Time values update automatically based on machine activity.
- If values remain zero during production, check:
  - Machine running status
  - PLC connection status
- Report data issues to the system administrator.

Downtime Statistics – Detail View

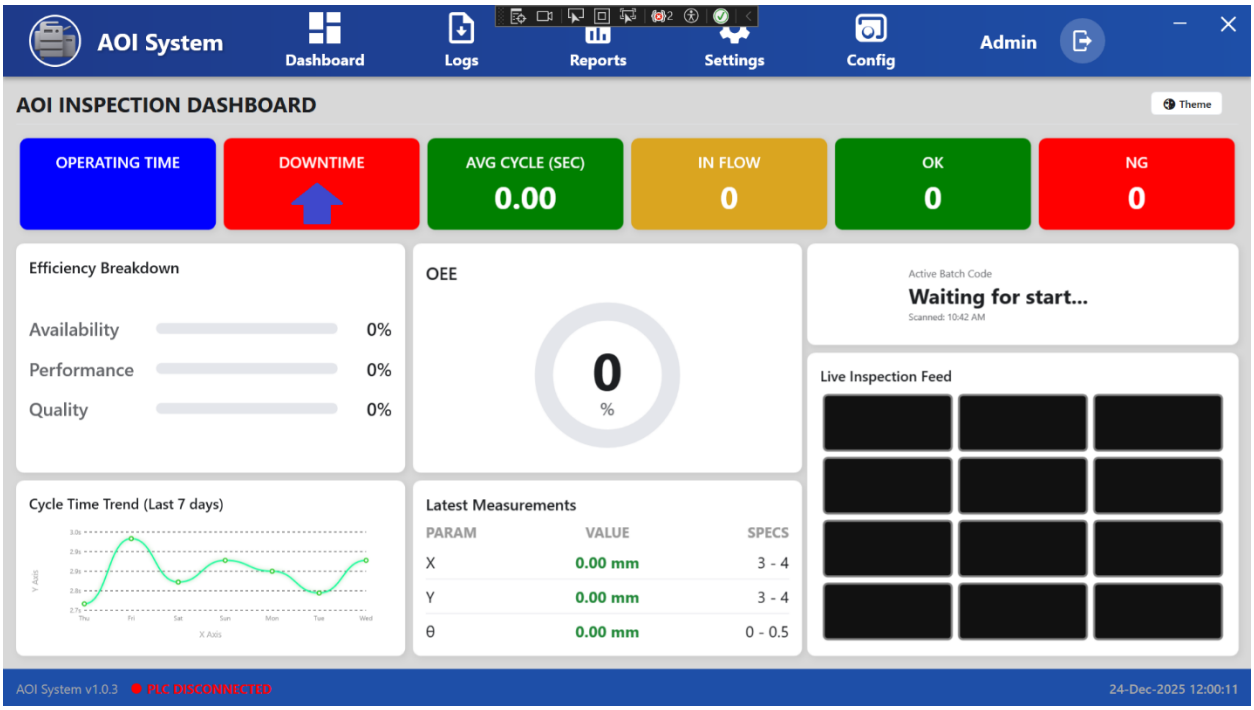
1. Screen Name

Downtime Statistics – Detail View

2. Purpose of the Screen

The Downtime Statistics screen displays a **summary of machine stoppages**. It helps the Operator understand how often and for how long the machine was stopped.

This screen is used for **monitoring and review purposes only**.

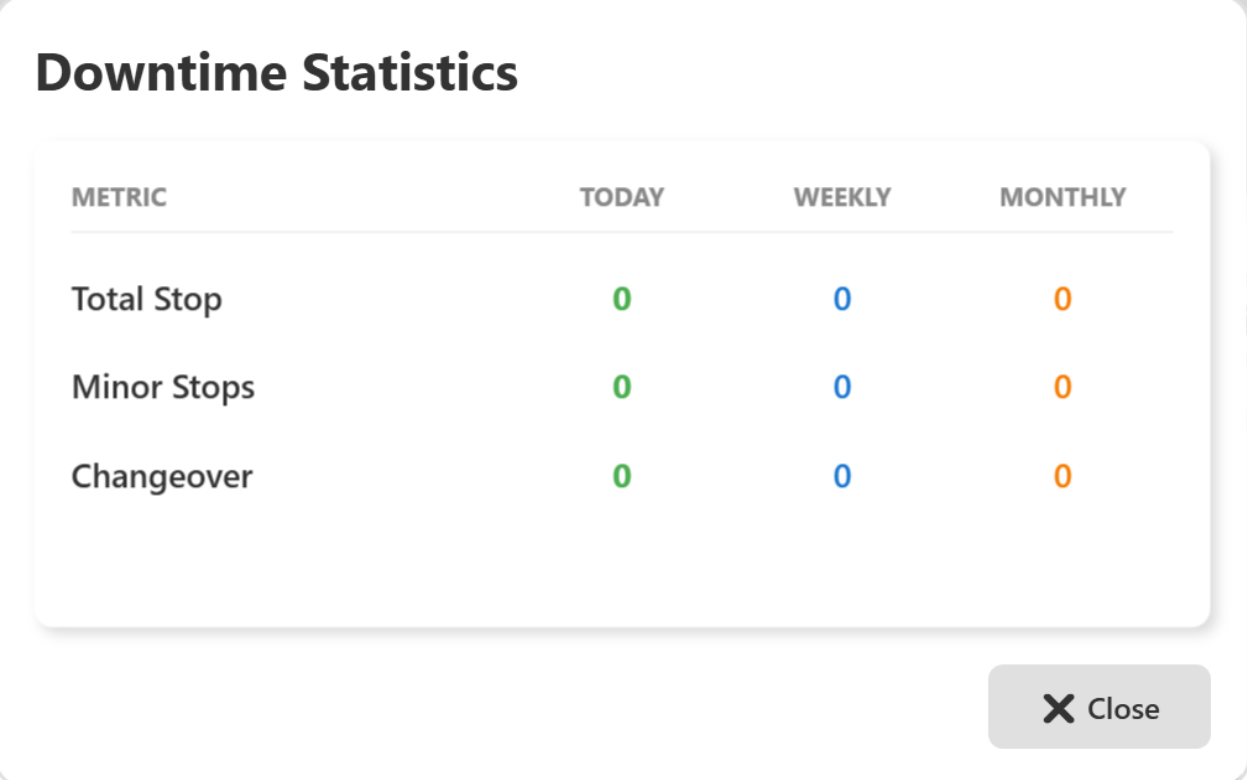


3. Screen Overview

The screen presents downtime data in a table with the following columns:

- **Metric**
- **Today**
- **Weekly**

- **Monthly**



4. Displayed Metrics

4.1 Total Stop

- Shows the total number of machine stops.
- Includes all stop events during the selected period.

4.2 Minor Stops

- Shows the number of short-duration stops.
- Usually caused by small interruptions or brief pauses.

4.3 Changeover

- Shows downtime caused by product or batch changeover.
- Includes setup and adjustment time.

If values are shown as **0**, it means:

- No downtime occurred, or
- No downtime data is available for the selected period.

5. Operator Actions

From this screen, the Operator can:

- Review downtime statistics
- Compare Today, Weekly, and Monthly values
- Close the screen after reviewing data

No changes or inputs are allowed on this screen.

6. Close Action

- Click the **Close (X)** button to exit the Downtime Statistics screen.
- The system returns to the previous dashboard view.

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7. Important Notes for Operator

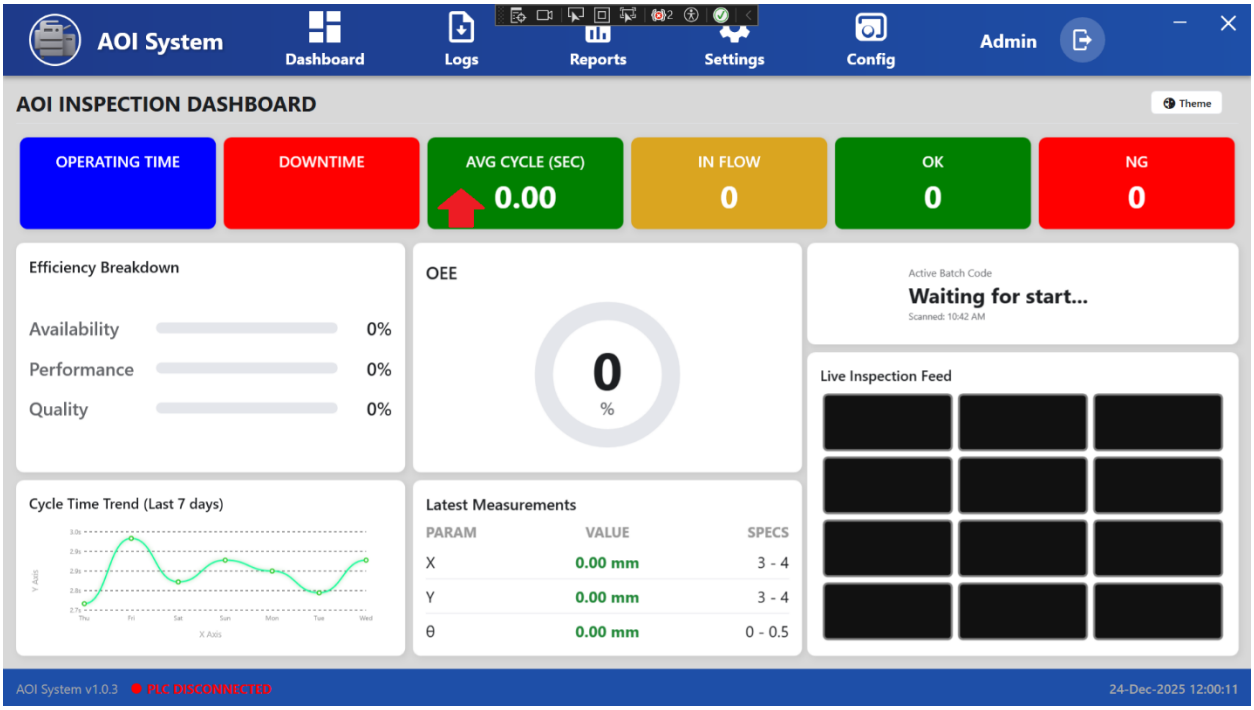
- Downtime data is automatically recorded by the system.
- Frequent minor stops should be reported to maintenance.
- Changeover downtime helps evaluate setup efficiency.

Avg Cycle (Sec) – Detail View

1. Screen Name

Avg Cycle (Sec)

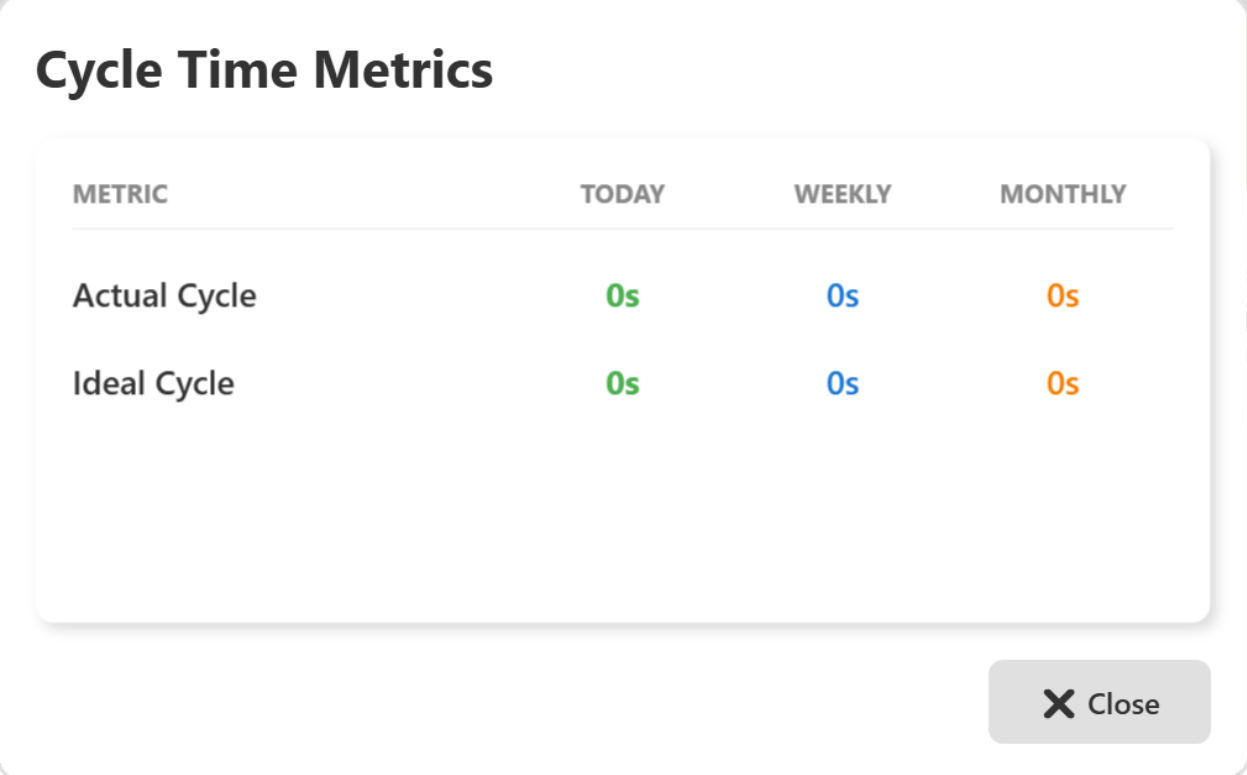
(Same as displayed in the application UI)



2. Purpose of the Screen

The **Avg Cycle (Sec)** screen shows the **average inspection cycle time** of the system.
It helps the Operator understand how much time the machine takes to inspect one board or component.

This screen is used only for **monitoring and performance review**.



3. Screen Overview

The screen displays data in a table format with the following columns:

- **Metric**
- **Today**
- **Weekly**
- **Monthly**

All values are displayed in **seconds (s)**.

4. Displayed Metrics

4.1 Actual Cycle

- Shows the actual average cycle time taken by the machine.
- Represents real inspection time.

4.2 Ideal Cycle

- Shows the standard or expected cycle time.
- Used as a reference to compare machine performance.

If values are shown as **0s**, it means:

- Inspection has not started yet, or
- No cycle time data is available.

5. Operator Actions

From this screen, the Operator can:

- View actual cycle time
- Compare it with ideal cycle time
- Review Today, Weekly, and Monthly values
- Close the screen after checking data

No input or configuration is allowed on this screen.

6. Close Action

- Click the **Close (X)** button to exit the **Avg Cycle (Sec)** screen.
- The system returns to the OEE Dashboard.

7. Important Notes for Operator

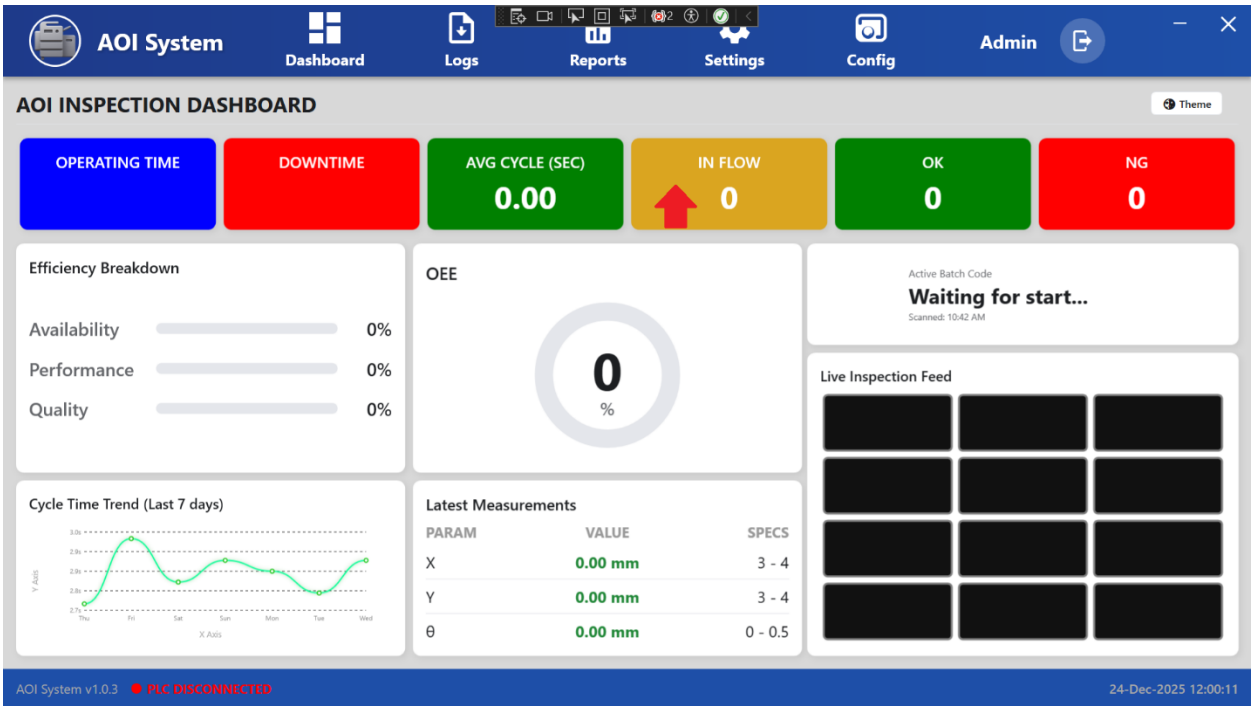
- Actual cycle time should be close to the ideal cycle time.
- Higher cycle time may indicate performance issues.
- If values remain zero during production, check machine and PLC status.

Input Statistics

1. Screen Name

Input Statistics

(Opened when Operator clicks on ***In Flow***)



2. Purpose of the Screen

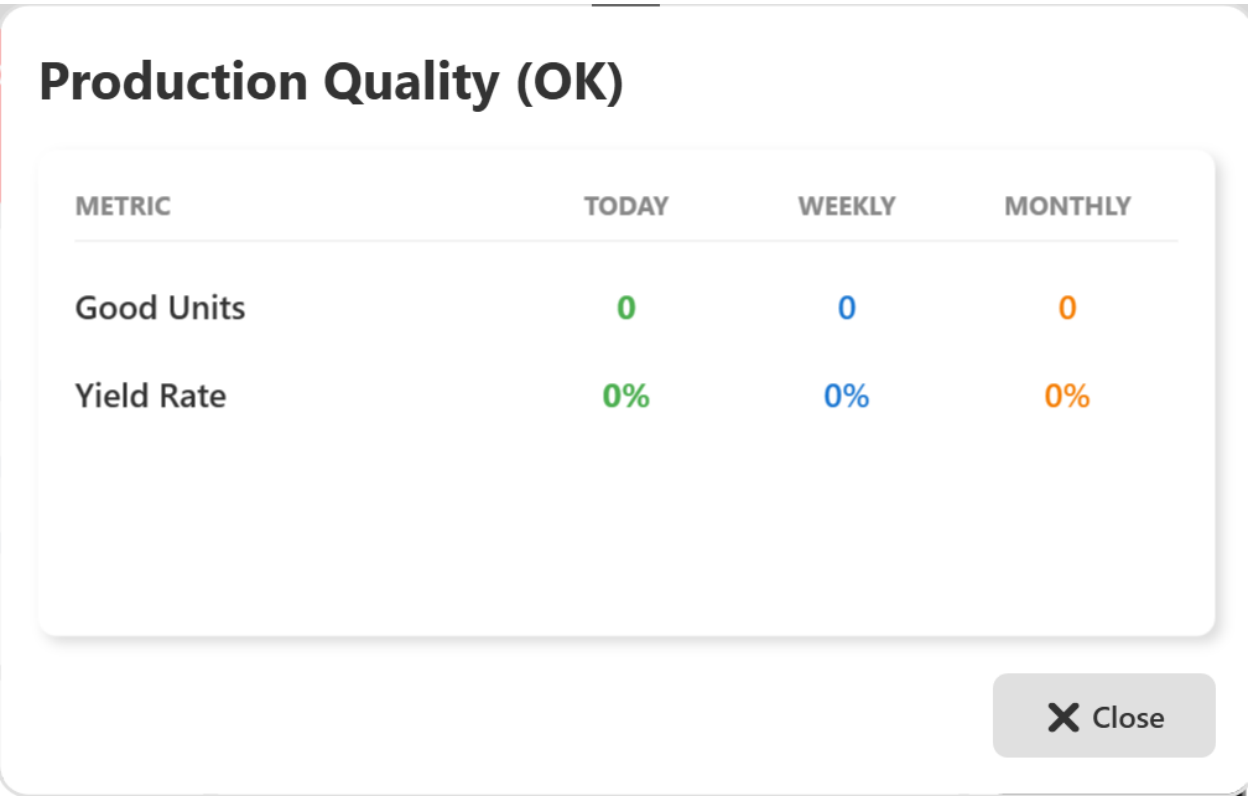
The **Input Statistics** screen shows the **total number of inputs received by the system**.
It helps the Operator understand how many boards or components have entered the inspection process.

This screen is used for **monitoring production input only**.

3. Screen Overview

The screen displays input data in a table with the following columns:

- **Metric**
- **Today**
- **Weekly**
- **Monthly**



4. Displayed Metric

4.1 Total Input

- Shows the total number of boards/components received by the system.
- Values are shown for:
  - Current day
  - Current week
  - Current month

If the value is **0**, it means:

- No input has been received yet, or
- Inspection has not started, or
- No data is available for the selected period.

5. Operator Actions

From this screen, the Operator can:

- View total input count
- Compare Today, Weekly, and Monthly input values
- Close the screen after reviewing information

No editing or control actions are available on this screen.

6. Close Action

- Click the **Close (X)** button to exit the **Input Statistics** screen.
- The system returns to the OEE Dashboard.

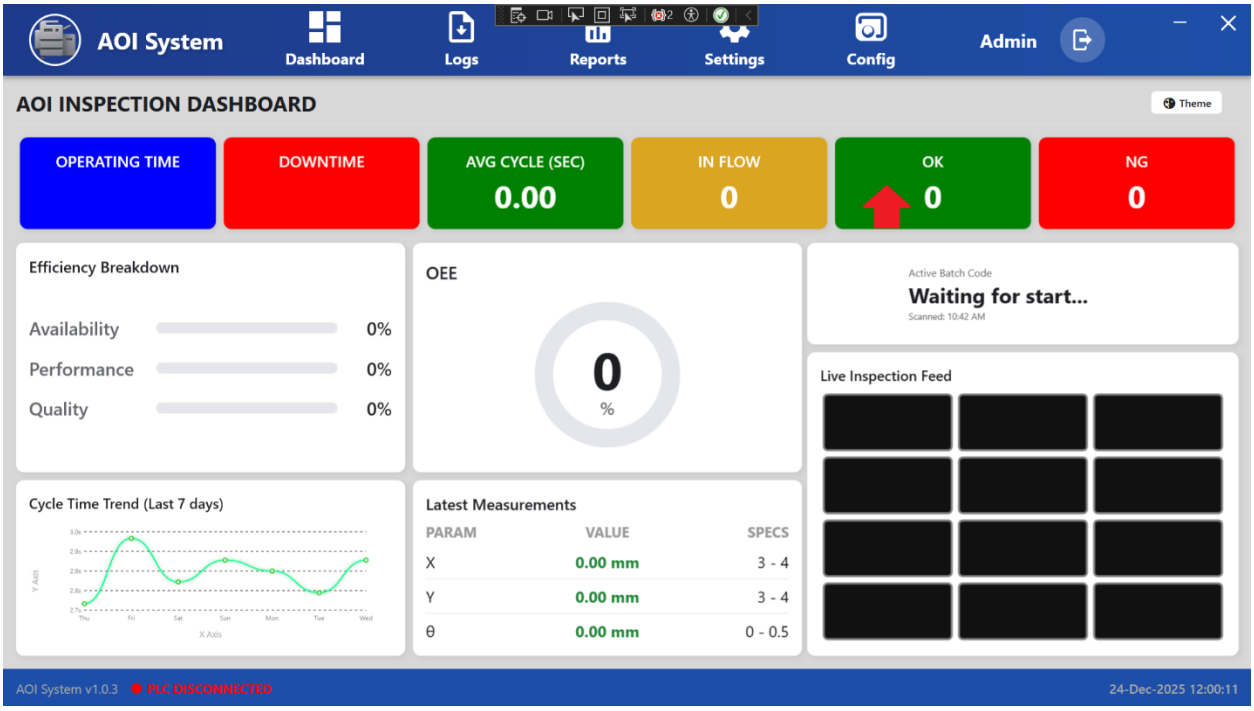
7. Important Notes for Operator

- Input count updates automatically when boards enter the system.
- If input remains zero during production:
  - Check machine status
  - Verify PLC connection
- Report any data mismatch to the supervisor or administrator.

Production Quality (OK)

1. Screen Name

Production Quality (OK)



2. Purpose of the Screen

The **Production Quality (OK)** screen shows information about **good units that have passed inspection**.
It helps the Operator monitor production quality and yield performance.

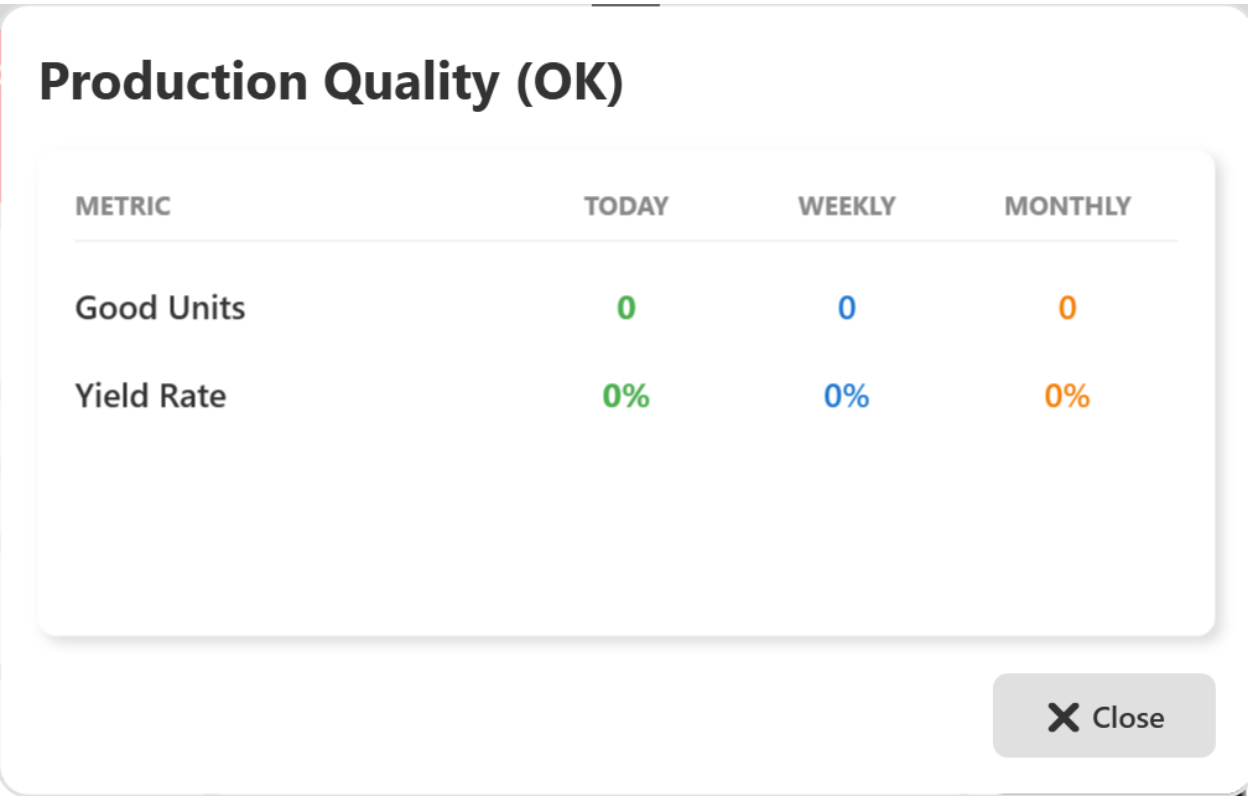
This screen is used for **quality monitoring only**.

3. Screen Overview

The screen displays quality data in a table format with the following columns:

- **Metric**

- **Today**
- **Weekly**
- **Monthly**



4. Displayed Metrics

4.1 Good Units

- Shows the total number of units that passed inspection (OK).
- Values are shown for today, this week, and this month.

4.2 Yield Rate

- Shows the percentage of good units compared to total input.
- Helps measure production quality efficiency.

If values are **0 or 0%**, it means:

- Inspection has not started, or
- No data is available for the selected period.

5. Operator Actions

From this screen, the Operator can:

- Review good unit count
- Check yield rate
- Compare Today, Weekly, and Monthly values
- Close the screen after review

No editing or control actions are available.

6. Close Action

- Click the **Close (X)** button to exit the **Production Quality (OK)** screen.
- The system returns to the OEE Dashboard.

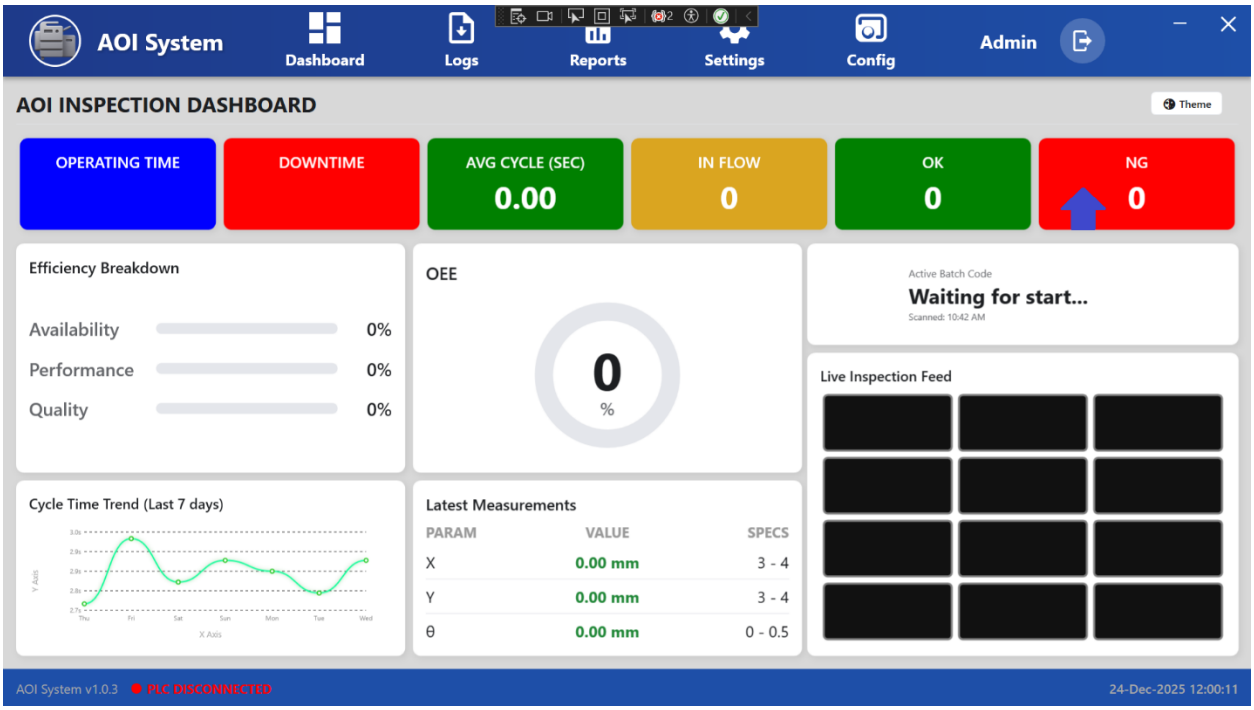
7. Important Notes for Operator

- Yield rate improves when more units pass inspection.
- A sudden drop in yield rate should be reported immediately.
- Verify NG data if OK count remains unexpectedly low.

Rejection Statistics (NG)

1. Screen Name

Rejection Statistics (NG)



2. Purpose of the Screen

The **Rejection Statistics (NG)** screen shows information about **units that failed inspection**.
It helps the Operator monitor rejection count and identify quality issues.

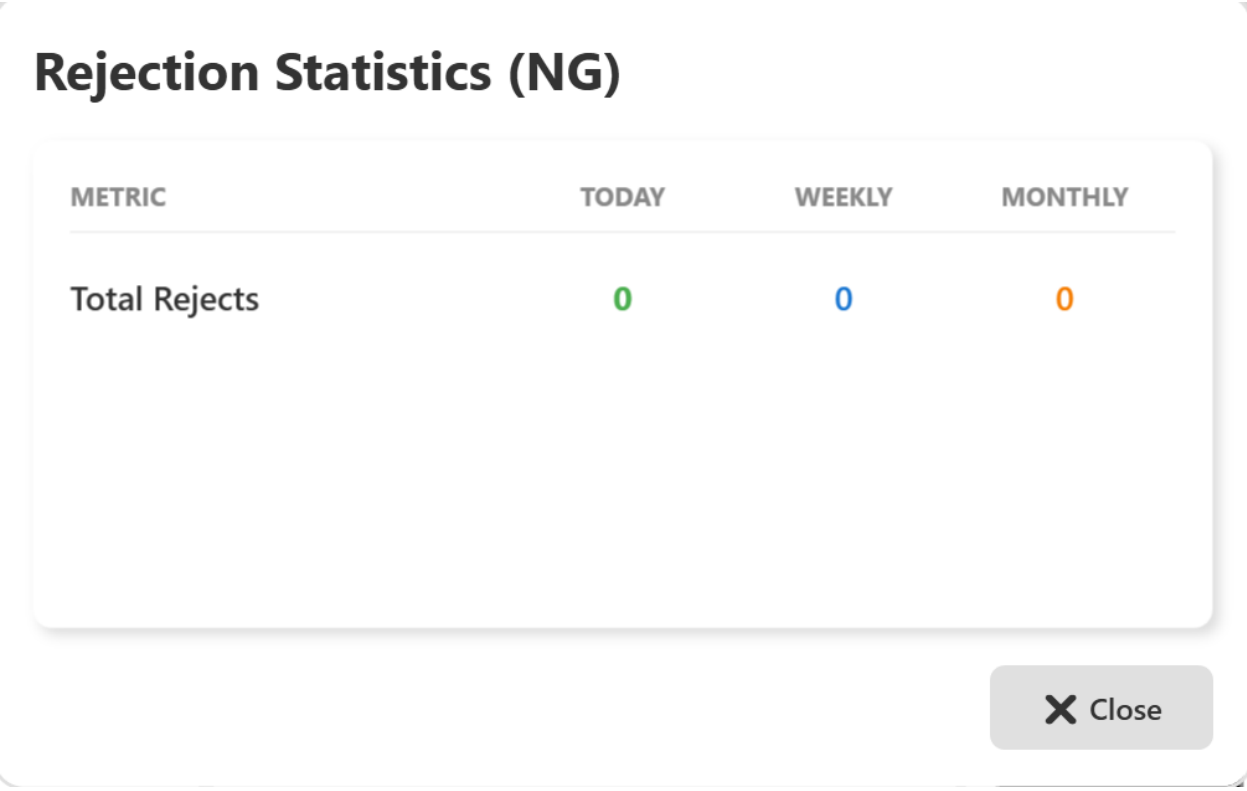
This screen is used for **quality monitoring and analysis only**.

3. Screen Overview

The screen displays rejection data in a table format with the following columns:

- **Metric**
- **Today**

- **Weekly**
- **Monthly**



4. Displayed Metric

4.1 Total Rejects

- Shows the total number of rejected units (NG).
- Values are shown for:
  - Today
  - This week
  - This month

If the values are **0**, it means:

- No units have been rejected, or
- Inspection has not started, or
- No data is available for the selected period.

5. Operator Actions

From this screen, the Operator can:

- Review total reject count
- Compare Today, Weekly, and Monthly values
- Close the screen after reviewing data

No editing or configuration actions are available.

6. Close Action

- Click the **Close (X)** button to exit the **Rejection Statistics (NG)** screen.
- The system returns to the OEE Dashboard.

7. Important Notes for Operator

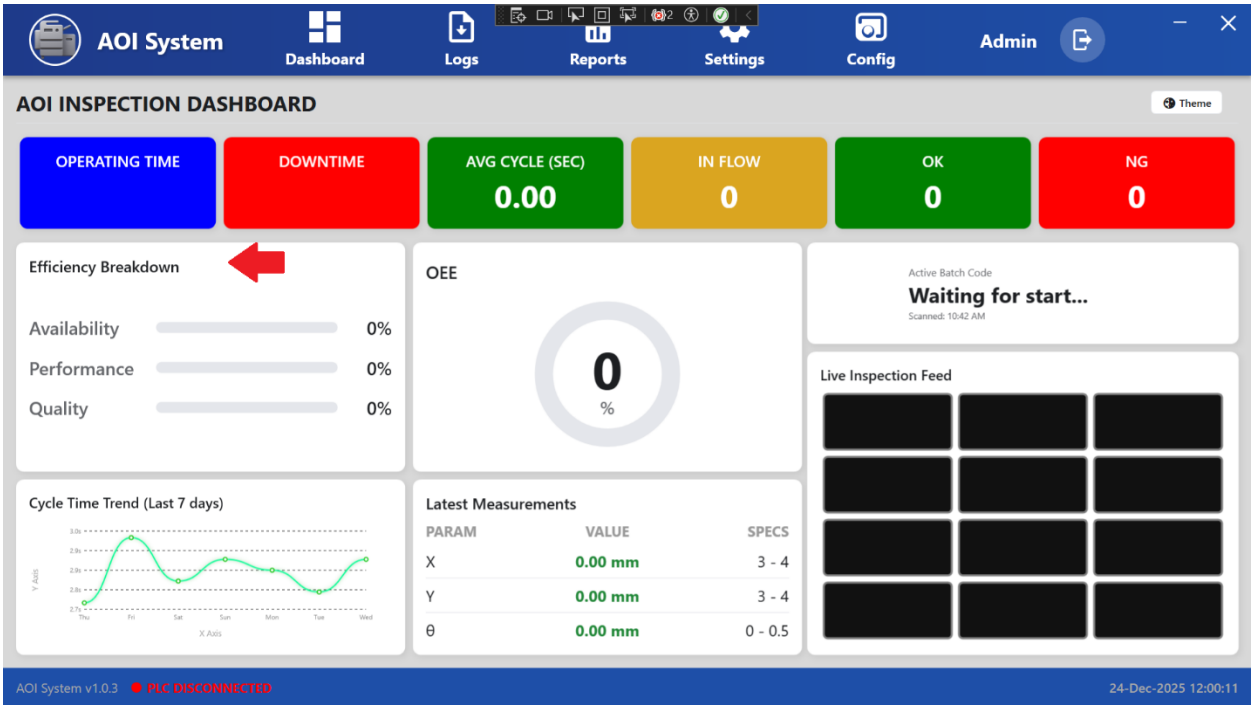
- High NG values indicate quality problems.
- Repeated rejections should be reported immediately.
- Compare NG values with OK and Input data for analysis.

Efficiency Breakdown Details

1. Screen Name

Efficiency Breakdown Details

(Opened when Operator clicks on ***Efficiency Breakdown***)



2. Purpose of the Screen

The **Efficiency Breakdown Details** screen shows the detailed efficiency values used to calculate **OEE**.
It helps the Operator understand **why efficiency is high or low**.

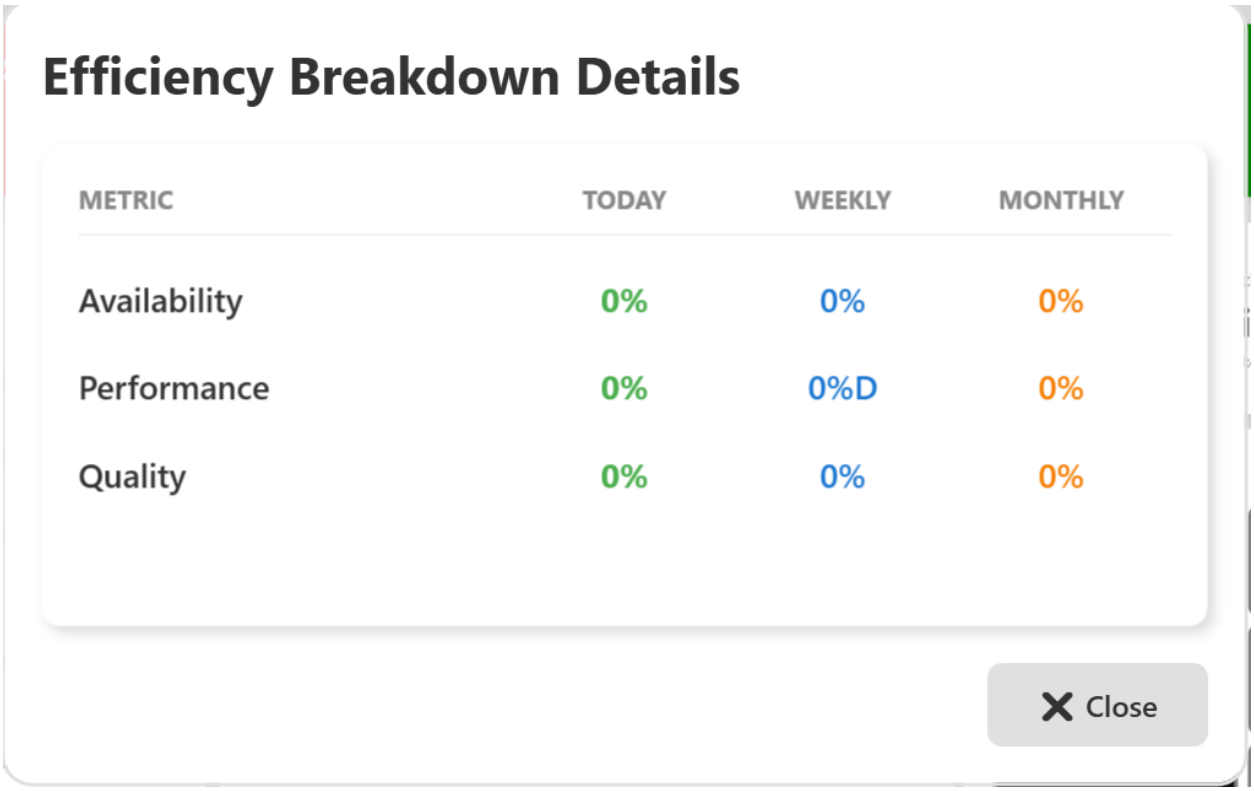
This screen is **view-only** and used for monitoring.

3. Screen Overview

The screen displays efficiency data in a table with the following columns:

- **Metric**
- **Today**
- **Weekly**
- **Monthly**

All values are displayed in **percentage (%)**.



4. Displayed Metrics

4.1 Availability

- Shows how much time the machine was **available for operation**.
- Affected by machine stops and downtime.

4.2 Performance

- Shows how efficiently the machine is running compared to the **ideal cycle time**.
- Lower value indicates slower operation.

4.3 Quality

- Shows the percentage of **good units (OK)** compared to total input.
- Lower value indicates higher rejections (NG).

If values are **0%**, it means:

- Production has not started, or
- No valid data is available, or
- PLC is not connected.

5. Operator Actions

From this screen, the Operator can:

- View Availability, Performance, and Quality values
- Compare Today, Weekly, and Monthly efficiency
- Identify which area is affecting efficiency
- Close the screen after review

No changes or inputs are allowed.

6. Close Action

- Click the **Close (X)** button to exit the **Efficiency Breakdown Details** screen.
- The system returns to the **OEE Inspection Dashboard**.

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7. Important Notes for Operator

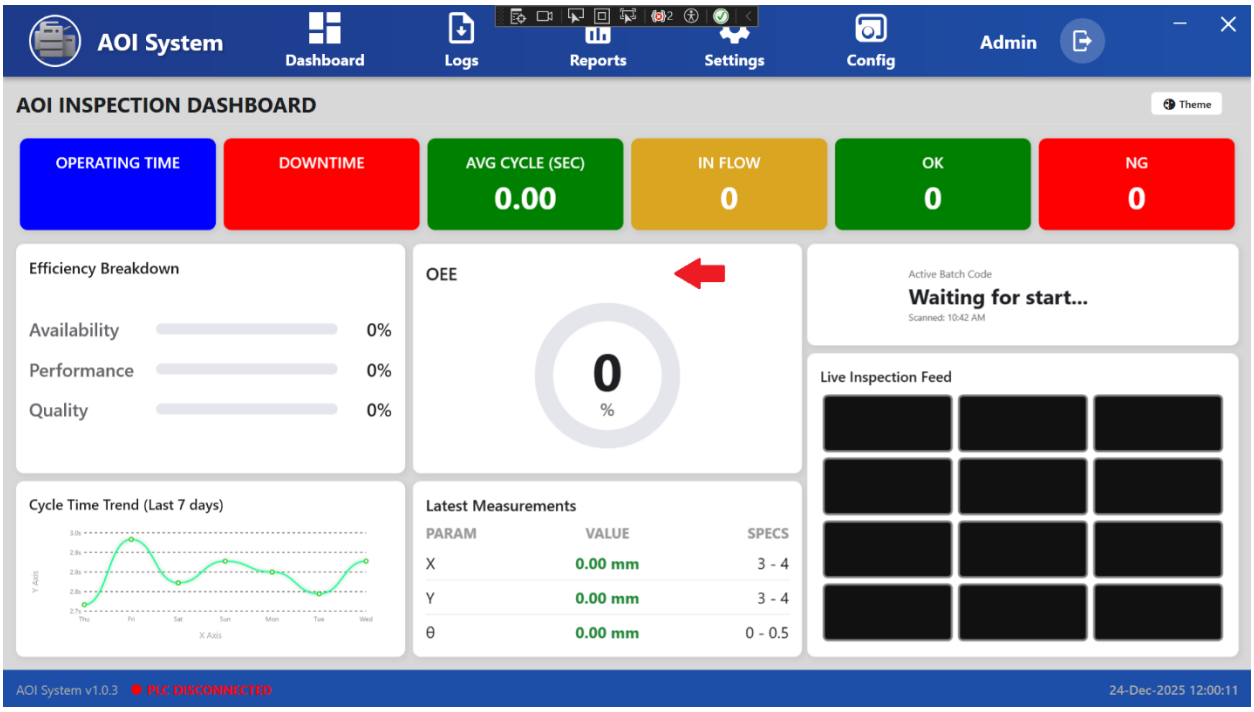
- All three values affect overall OEE.
- Low **Availability** → check Downtime
- Low **Performance** → check Avg Cycle (Sec)
- Low **Quality** → check OK / NG data
- If values remain 0%, check PLC connection and system status.

OEE Score Statistics

1. Screen Name

OEE Score Statistics

*(Opened when Operator clicks on **OEE** score)*



2. Purpose of the Screen

The **OEE Score Statistics** screen shows the **Overall Equipment Effectiveness (OEE) score**.
It gives the Operator a **single percentage value** that represents the overall system efficiency.

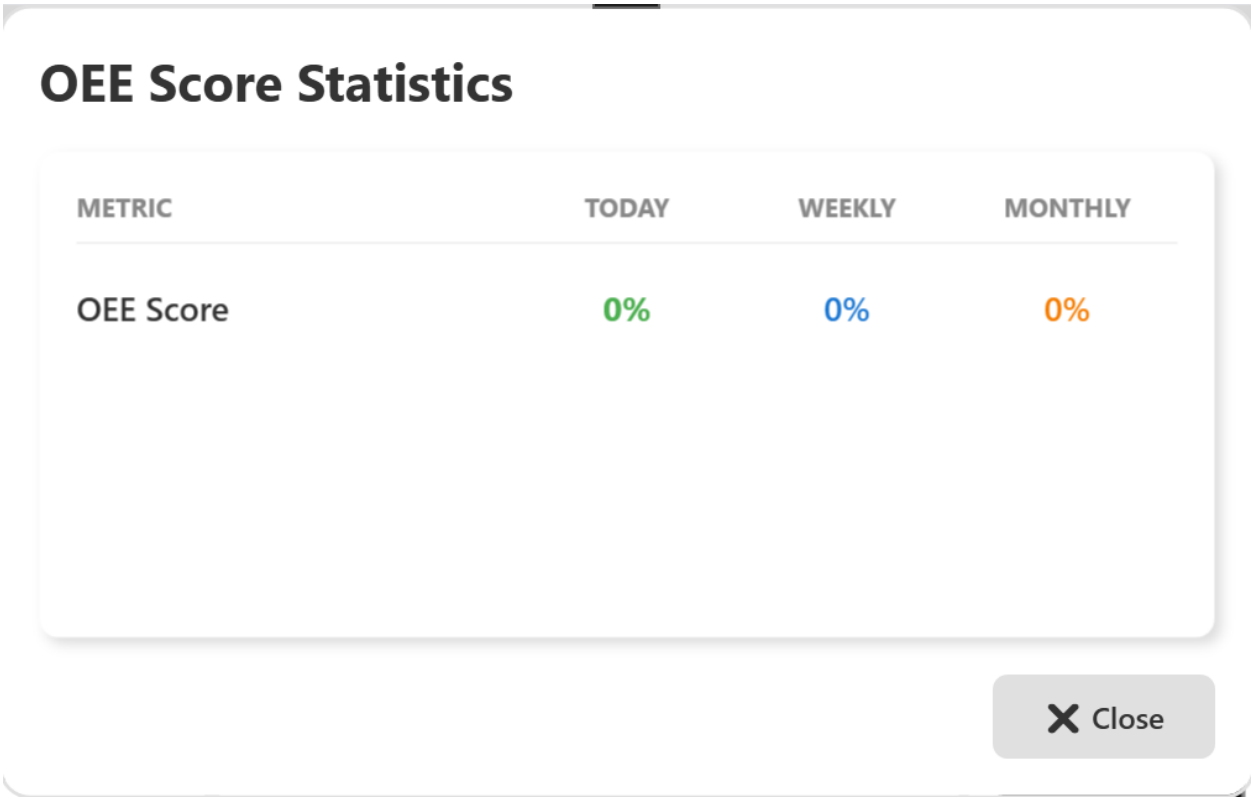
This screen is **view-only** and used for monitoring performance.

3. Screen Overview

The screen displays OEE data in a table format with the following columns:

- **Metric**
- **Today**
- **Weekly**
- **Monthly**

All values are shown in **percentage (%)**.



4. Displayed Metric

4.1 OEE Score

- Shows the overall efficiency of the system.
- OEE score is calculated based on:
  - Availability
  - Performance
  - Quality

A higher OEE score indicates better system performance.

If the value is **0%**, it means:

- Production has not started, or
- Required data is not available, or
- PLC is not connected.

5. Operator Actions

From this screen, the Operator can:

- View the OEE score
- Compare Today, Weekly, and Monthly OEE values
- Monitor overall production efficiency
- Close the screen after review

No editing or control actions are allowed.

6. Close Action

- Click the **Close (X)** button to exit the **OEE Score Statistics** screen.
- The system returns to the **OEE Inspection Dashboard**.

7. Important Notes for Operator

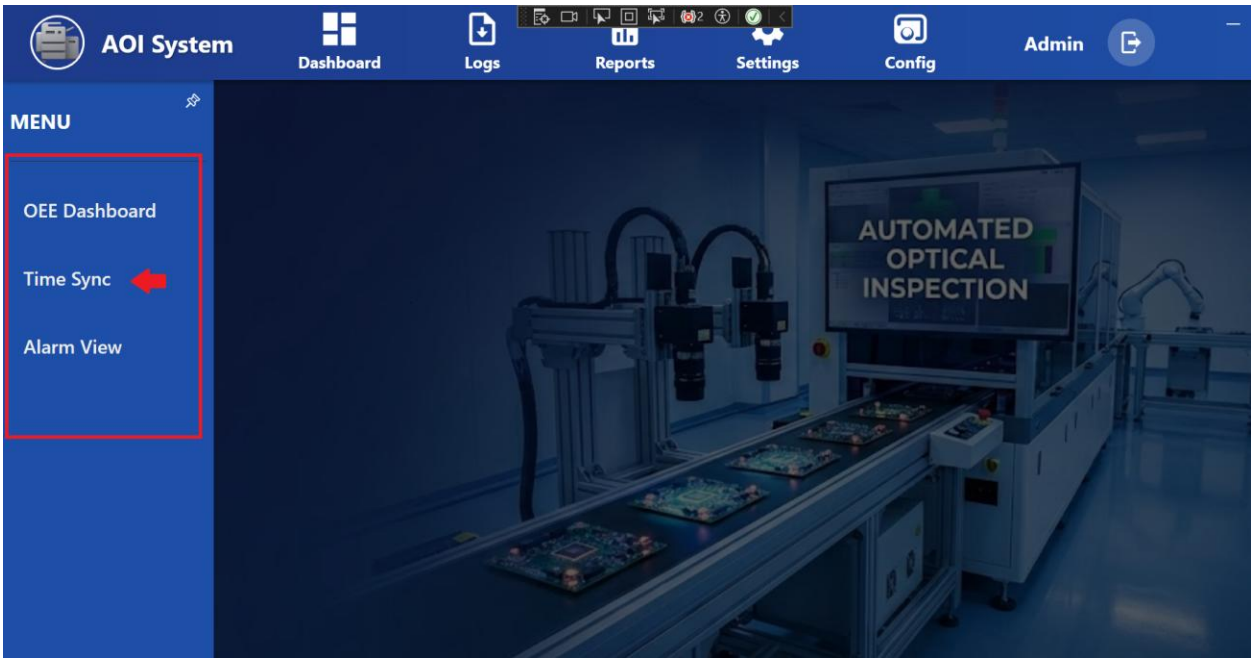
- OEE score depends on Availability, Performance, and Quality.
- Low OEE score means one or more efficiency areas need attention.
- Check **Efficiency Breakdown Details** to understand the reason for low OEE.
- If OEE remains 0% during production, check PLC connection and system status.

Time Sync (System Synchronization)

1. Navigation Path

Dashboard → Time Sync

The **Time Sync** option is available inside the **Dashboard menu**.
The Operator can access it using the left-side menu.



2. Purpose of Time Sync

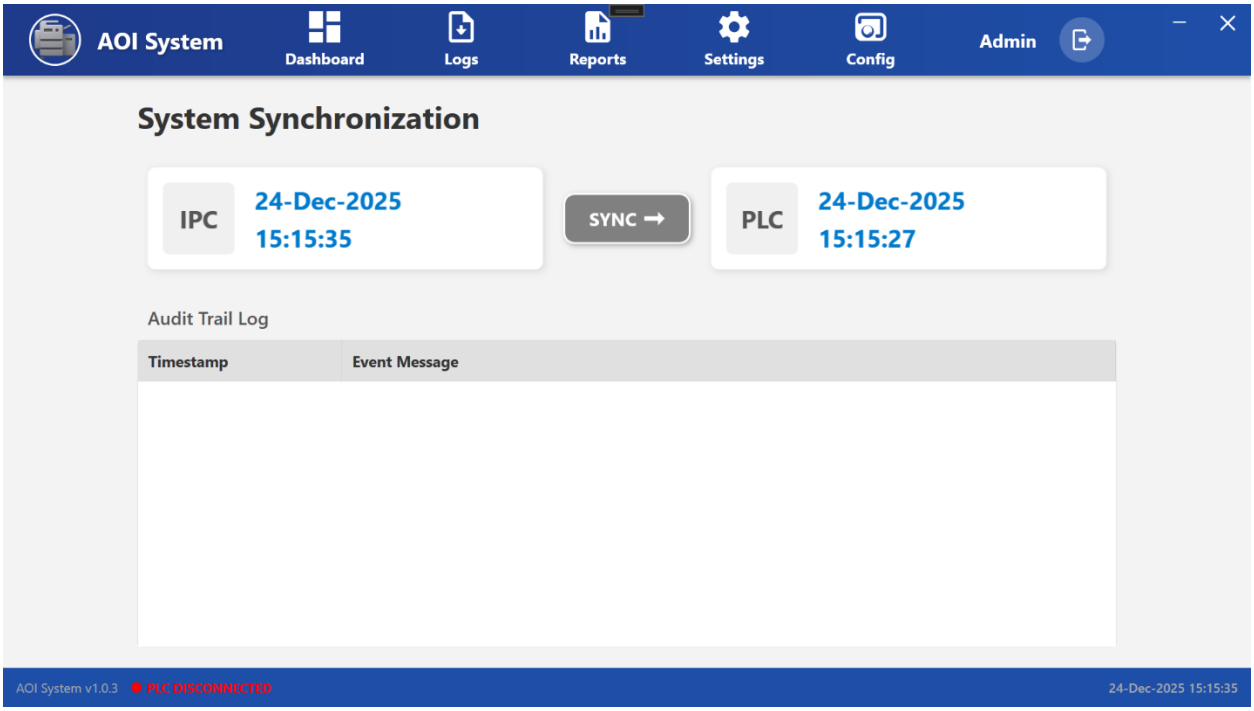
The **Time Sync** function is used to **synchronize date and time between IPC and PLC**.
Correct time synchronization is important for:

- Accurate logs
- Correct reports
- Alarm timestamps
- Audit trail records

3. Screen Name

System Synchronization

*(This screen opens when Operator clicks on **Time Sync**)*



4. Screen Overview

The **System Synchronization** screen contains three main sections:

1. **IPC Time Panel**
2. **PLC Time Panel**
3. **Audit Trail Log**

5. IPC Time Panel

- Displays the **current date and time of the IPC**.
- This time is used as the **reference time**.

Example:

- Date: 24-Dec-2025

- Time: 15:15:35

6. PLC Time Panel

- Displays the **current date and time of the PLC**.
- Used to compare PLC time with IPC time.

Example:

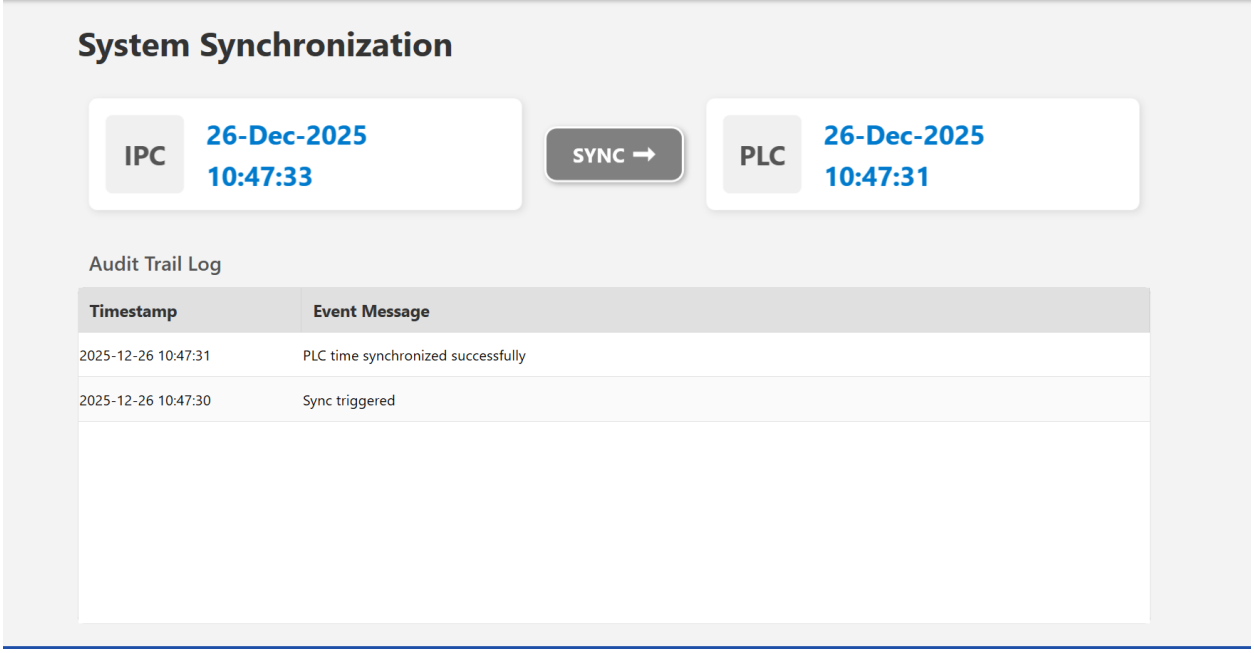
- Date: 24-Dec-2025
- Time: 15:15:27

7. Sync Button (SYNC →)

- Clicking **SYNC →** updates the **PLC time to match the IPC time**.
- After successful synchronization:
  - PLC time is updated
  - An entry is added to the **Audit Trail Log**

- **Important:**

- Time synchronization should be performed only when the PLC is connected.
- Do not perform sync during active inspection.



8. Audit Trail Log

The **Audit Trail Log** records all time synchronization events.

Columns:

- **Timestamp** – Date and time of the sync action
- **Event Message** – Description of the synchronization activity

This log is used for **traceability and audits**.

9. Operator Actions

From the **Time Sync** screen, the Operator can:

- View IPC time
- View PLC time
- Synchronize PLC time with IPC
- Review synchronization history

10. Operator Limitations

- Operator cannot manually edit time values.
- Operator can only sync PLC time with IPC time.
- Advanced time settings are restricted to Admin users.

11. Important Notes for Operator

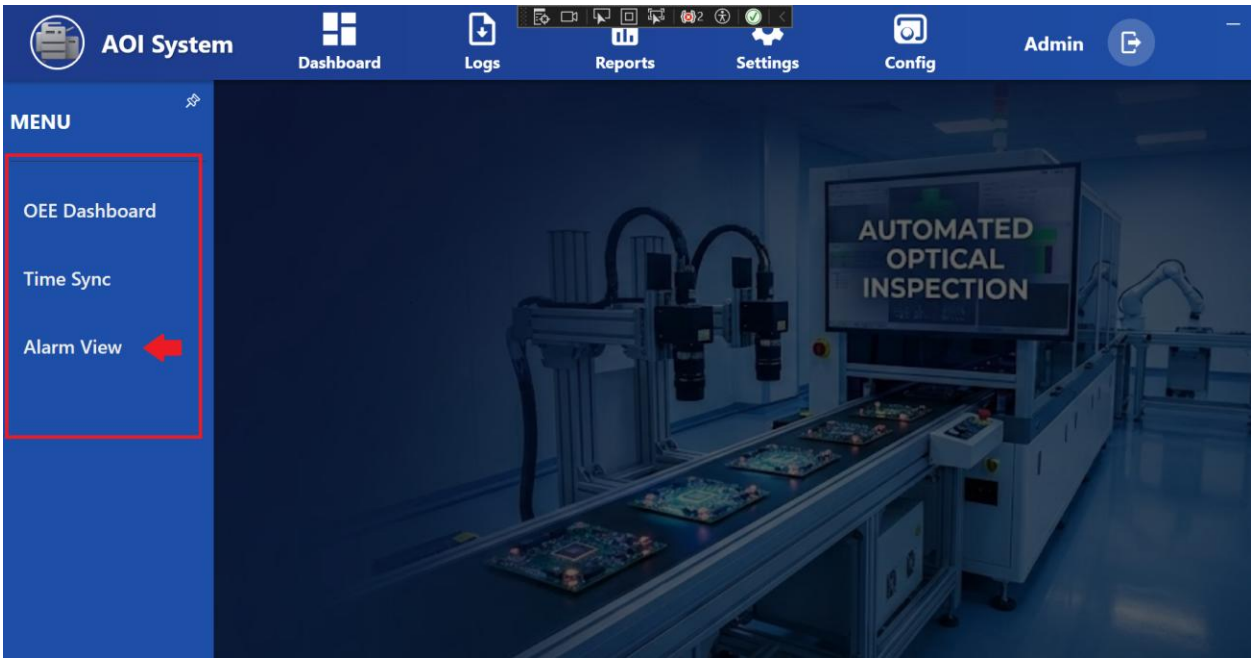
- Always check **PLC connection status** before clicking Sync.
- If **PLC DISCONNECTED** is shown at the bottom:
  - Do not perform sync
  - Inform supervisor or administrator
- Perform time sync before starting production for accurate data.

Alarm View

1. Screen Name

Alarm View

*(Opened when Operator clicks on **Alarm View** from Dashboard menu)*



2. Purpose of the Screen

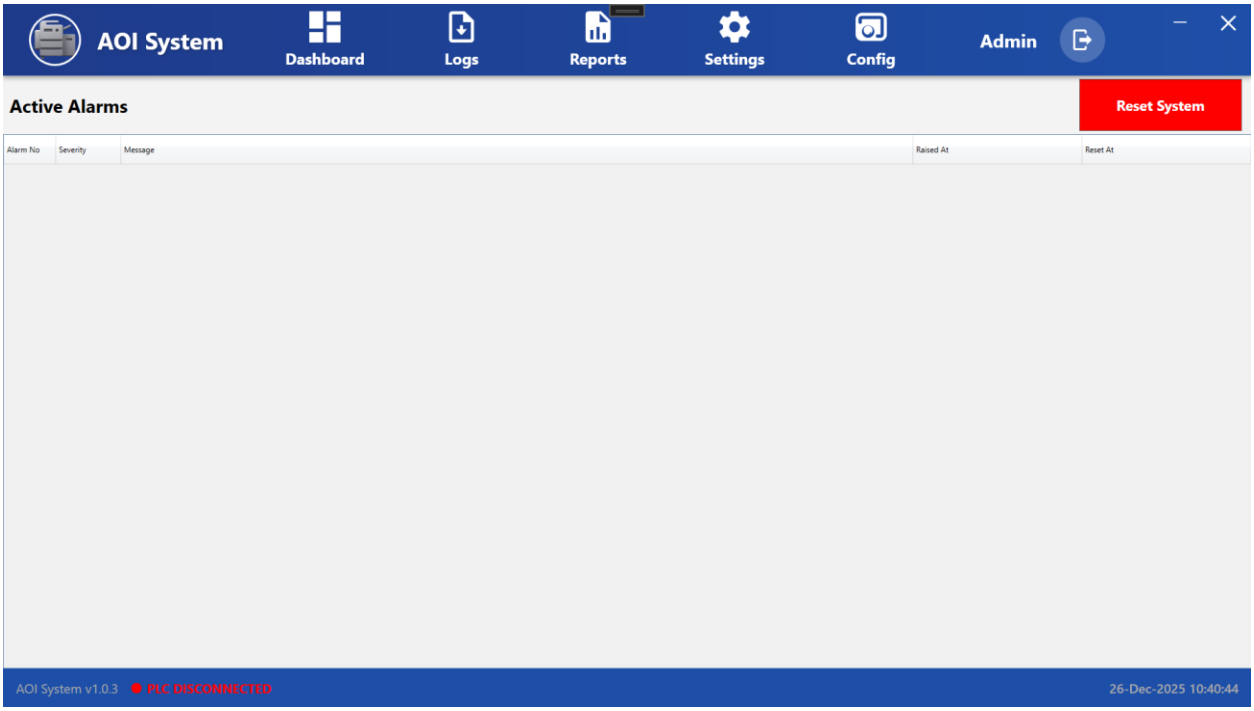
The **Alarm View** screen displays all **active system alarms**.
It helps the Operator quickly identify problems in the system and take immediate action.

This screen is mainly used for monitoring and immediate response.

3. Screen Overview

The Alarm View screen contains:

- **Active Alarms Table**
- **Reset System** button



4. Active Alarms Table

The table displays the list of currently active alarms with the following columns:

- **Alarm No**
  Unique identification number of the alarm.
- **Severity**
  Indicates the seriousness of the alarm
  (for example: High, Medium, Low).
- **Message**
  Describes the alarm reason or issue.
- **Raised At**
  Shows the date and time when the alarm occurred.
- **Reset At**
  Shows the date and time when the alarm was cleared.

If the table is empty, it means:

- No active alarms are present, or
- The system is currently running normally.

5. Reset System Button

Reset System

- The **Reset System** button is used to clear alarms after the issue is resolved.
- This action may require proper authorization depending on system configuration.

⚠ **Important for Operator**:

- Do not reset alarms without understanding the issue.
- Always inform the supervisor before resetting critical alarms.

---

6. Operator Actions

From the Alarm View screen, the Operator can:

- View active alarms
- Check alarm severity and message
- Note the time when alarms occurred
- Reset the system (if permitted)

---

7. Operator Limitations

- Operator cannot edit alarm definitions.
- Alarm configuration is restricted to Admin users.
- Some alarms may not allow reset until the issue is fixed.

8. Important Notes for Operator

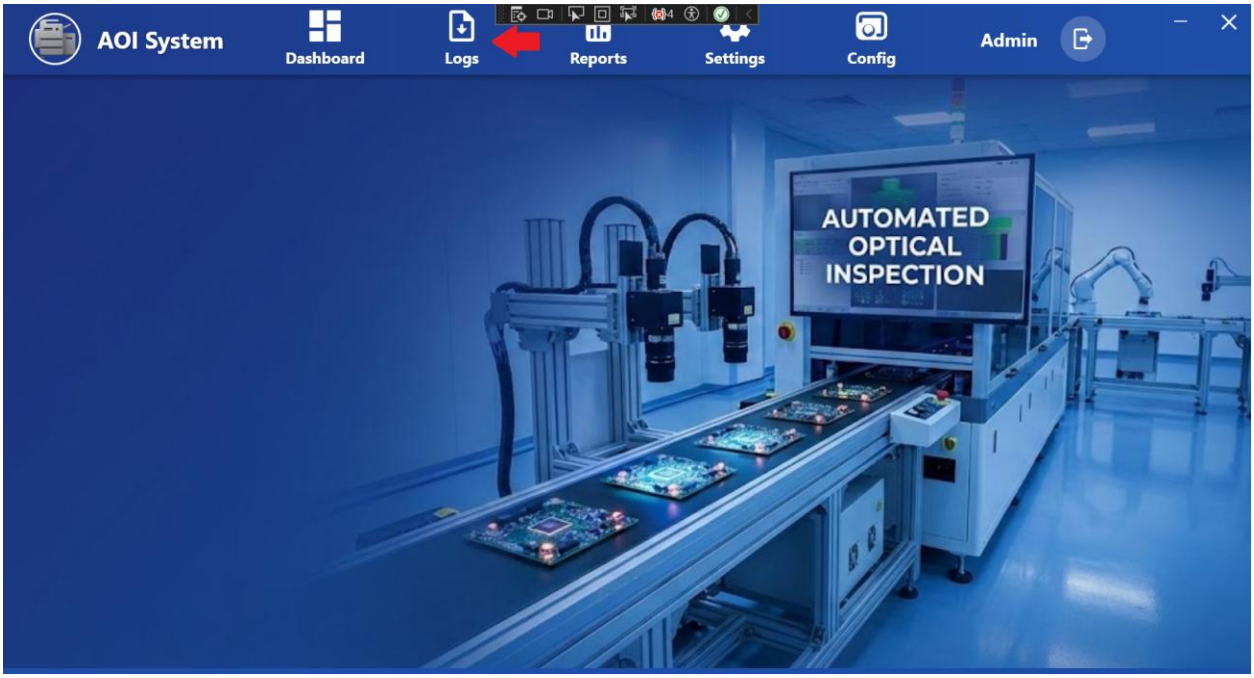
- Always check **PLC connection status** at the bottom of the screen.
- If **PLC DISCONNECTED** is shown:
  - Expect communication-related alarms
  - Inform maintenance or administrator
- Repeated alarms should be escalated immediately.

Logs

1. Navigation Path

Top Menu → Logs

When the Operator clicks on **Logs**, a left-side menu opens with different log categories.

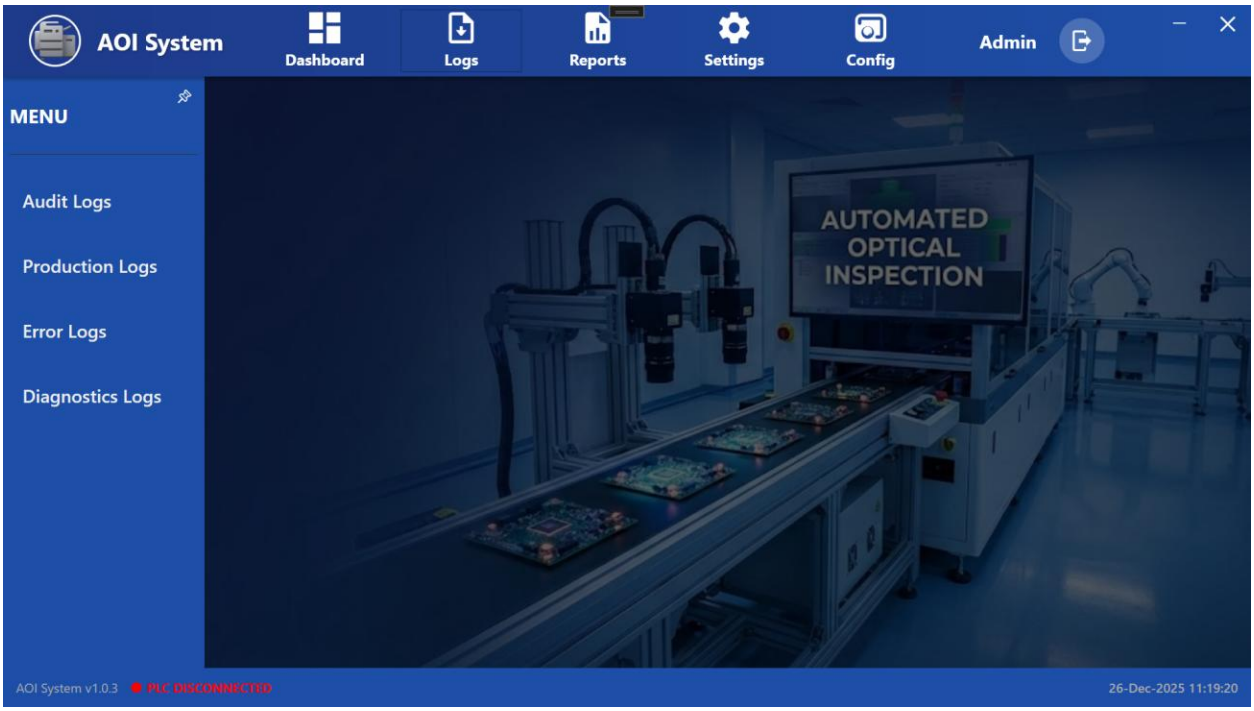


2. Purpose of Logs

The **Logs** section is used to **view system history and events**.
It helps the Operator understand:

- What actions happened
- When issues occurred
- How the system behaved during production

All logs are **view-only** for Operator.



3. Available Log Options

The following log options are available under **Logs**:

- **Audit Logs**
- **Production Logs**
- **Error Logs**
- **Diagnostics Logs**

4. Audit Logs

Screen Name

Audit Logs

Purpose

Audit Logs record **user actions and system events** for traceability.

Typical Information

- Login / Logout events

- Time synchronization actions
- Configuration-related activities

Operator Action

- View audit records
- No editing or deletion allowed

5. Production Logs

Screen Name

Production Logs

Purpose

Production Logs record **inspection and production-related activities**.

Typical Information

- Start and stop of inspection
- Batch or job-related events
- Production flow information

Operator Action

- Review production history
- Use logs for production verification

6. Error Logs

Screen Name

Error Logs

Purpose

Error Logs record **system errors and failures**.

Typical Information

- PLC communication errors
- System faults
- Runtime errors

Operator Action

- Identify error messages
- Inform maintenance or administrator

7. Diagnostics Logs

Screen Name

Diagnostics Logs

Purpose

Diagnostics Logs provide **technical diagnostic information**.

Typical Information

- Hardware status
- Communication diagnostics
- System health details

Operator Action

- View diagnostics data
- Share details with technical support if required

8. Operator Limitations

- Operator cannot delete or modify logs.
- Logs are automatically generated by the system.

- Log configuration is restricted to Admin users.

9. Important Notes for Operator

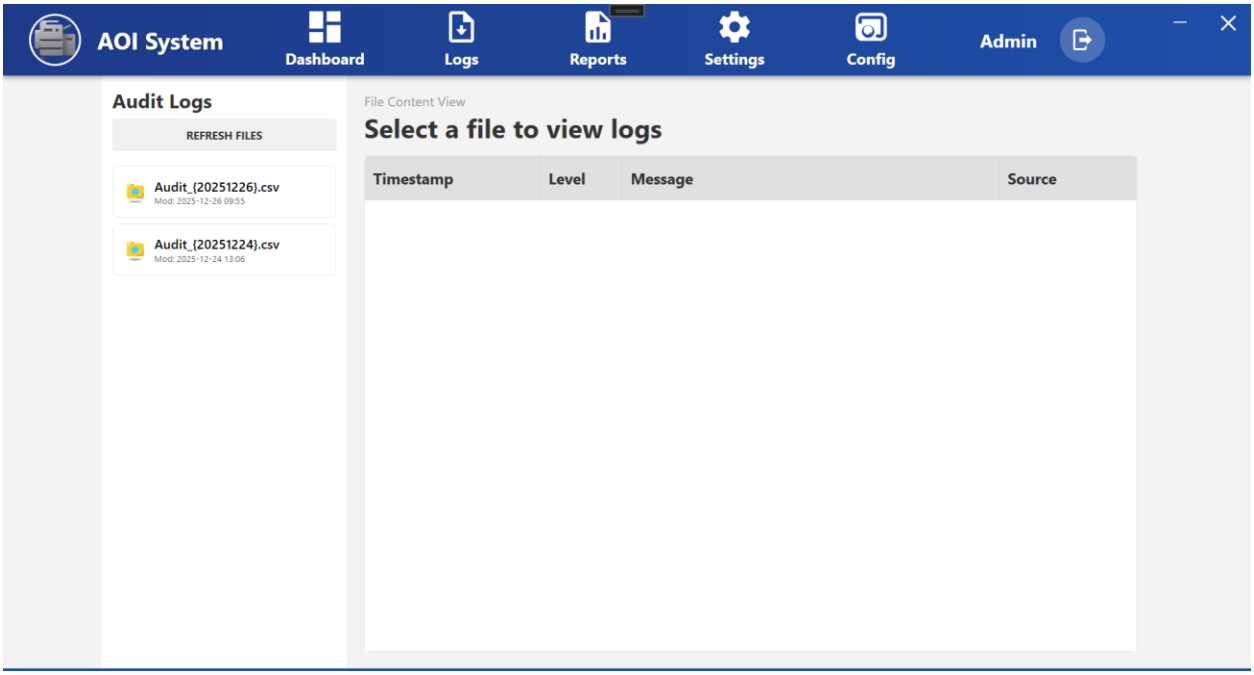
- Always check **Error Logs** if the system behaves abnormally.
- Use **Audit Logs** for tracking important actions.
- Diagnostics Logs should be shared with support during troubleshooting.
- Logs help in audits and issue investigation.

Audit log

1. Screen Name

Audit Logs

*(Opened when Operator clicks on **Logs → Audit Logs**)*



2. Purpose of the Screen

The **Audit Logs** screen is used to **view audit trail records** generated by the system.
These logs help track **important user actions and system events** for traceability and audits.

This screen is **view-only** for the Operator.

3. Screen Layout Overview

The Audit Logs screen is divided into two main sections:

1. **File List Panel (Left Side)**
2. **Log Content View (Right Side)**

4. File List Panel

Available Options

- **Refresh Files**
  Reloads the list of available audit log files.
- **Audit Log Files (.csv)**
  Displays audit log files with date-based names
  (for example: Audit_{20251226}.csv).

Each file also shows:

- **Last Modified Date and Time**

5. Selecting an Audit Log File

To view audit logs:

1. Click on any **Audit_YYYYMMDD.csv** file from the left panel
2. The selected file content is displayed on the right side

6. Log Content View

The log data is displayed in a table with the following columns:

- **Timestamp**
  Date and time when the event occurred.
- **Level**
  Type or severity of the log entry
  (for example: Info, Warning, Error).
- **Message**
  Description of the action or event.
- **Source**
  Indicates the system component that generated the log.

If no file is selected, the message
“Select a file to view logs” is displayed.

7. Operator Actions

From the Audit Logs screen, the Operator can:

- Refresh the list of audit log files
- Select and view audit log files
- Review log entries for:
  - Login / logout events
  - Time synchronization actions
  - System-related activities

8. Operator Limitations

- Operator cannot edit or delete audit logs.
- Log file generation is automatic.
- Audit log configuration is restricted to Admin users.

9. Important Notes for Operator

- Audit logs are important for **compliance and traceability**.
- Always review audit logs if:
  - Unexpected system behavior occurs
  - Time sync or critical actions are questioned

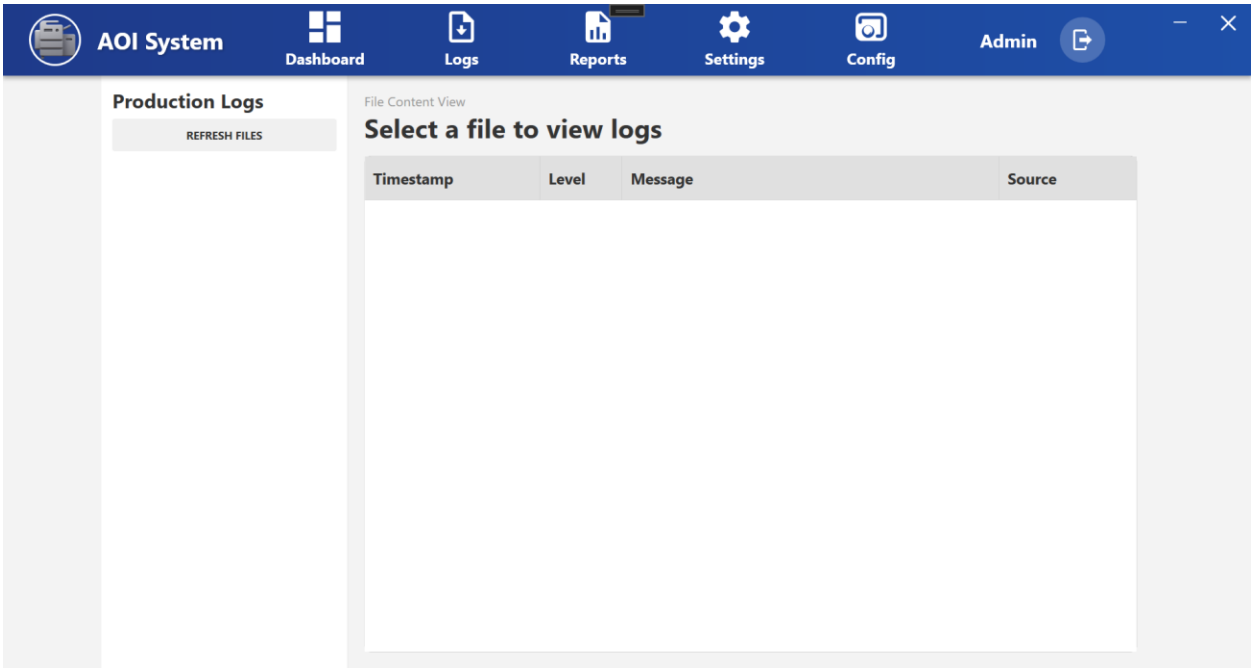
- Share relevant log details with the administrator when required.

Production Logs

1. Screen Name

Production Logs

*(Opened when Operator clicks on **Logs → Production Logs**)*



2. Purpose of the Screen

The **Production Logs** screen is used to **view production and inspection-related events** generated by the AOI System.

It helps the Operator track **what happened during production** and **when it happened**.

This screen is **view-only** for the Operator.

3. Screen Layout Overview

The Production Logs screen is divided into two main sections:

1. **File List Panel (Left Side)**
2. **Log Content View (Right Side)**

4. File List Panel

Available Options

- **Refresh Files**
  Reloads the list of available production log files.
- **Production Log Files**
  Displays production log files saved by date
  (for example: Production_YYYYMMDD.csv).

Each file shows:

- Last modified date and time

5. Selecting a Production Log File

To view production logs:

1. Click on any production log file from the left panel
2. The selected file content is displayed on the right side

If no file is selected, the message
“Select a file to view logs” is displayed.

6. Log Content View

The log data is shown in a table with the following columns:

- **Timestamp**
  Date and time when the production event occurred.
- **Level**
  Type of log entry (Info, Warning, etc.).
- **Message**
  Description of the production or inspection event
  (for example: inspection start, inspection stop, batch change).
- **Source**
  Indicates which system component generated the log.

7. Operator Actions

From the Production Logs screen, the Operator can:

- Refresh the production log file list
- Select and view production log files
- Review production history for:
  - Inspection start/stop
  - Batch or job events
  - Production flow issues

8. Operator Limitations

- Operator cannot edit or delete production logs.
- Logs are automatically generated by the system.
- Production log settings are restricted to Admin users.

9. Important Notes for Operator

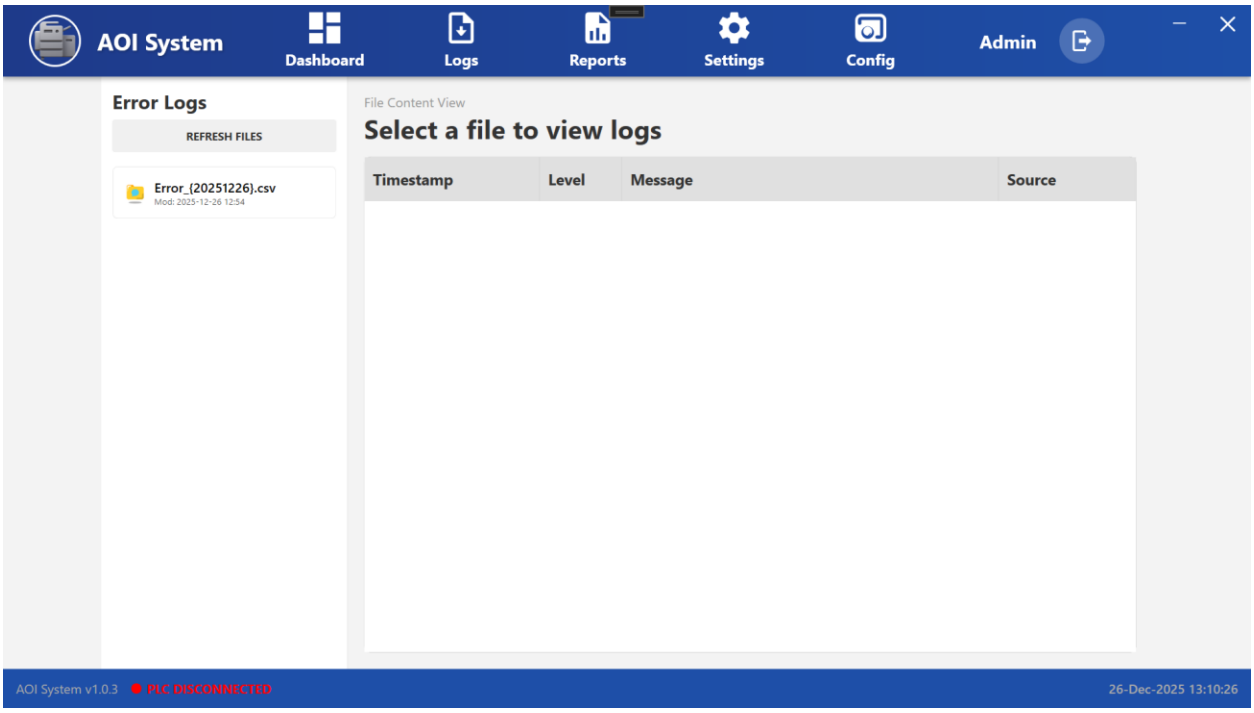
- Use Production Logs to verify production activities.
- If inspection stops unexpectedly, check Production Logs first.
- Share log details with the supervisor or support team if required.
- Logs are useful for audits and issue investigation.

Error Logs

1. Screen Name

Error Logs

*(Opened when Operator clicks on **Logs → Error Logs**)*



2. Purpose of the Screen

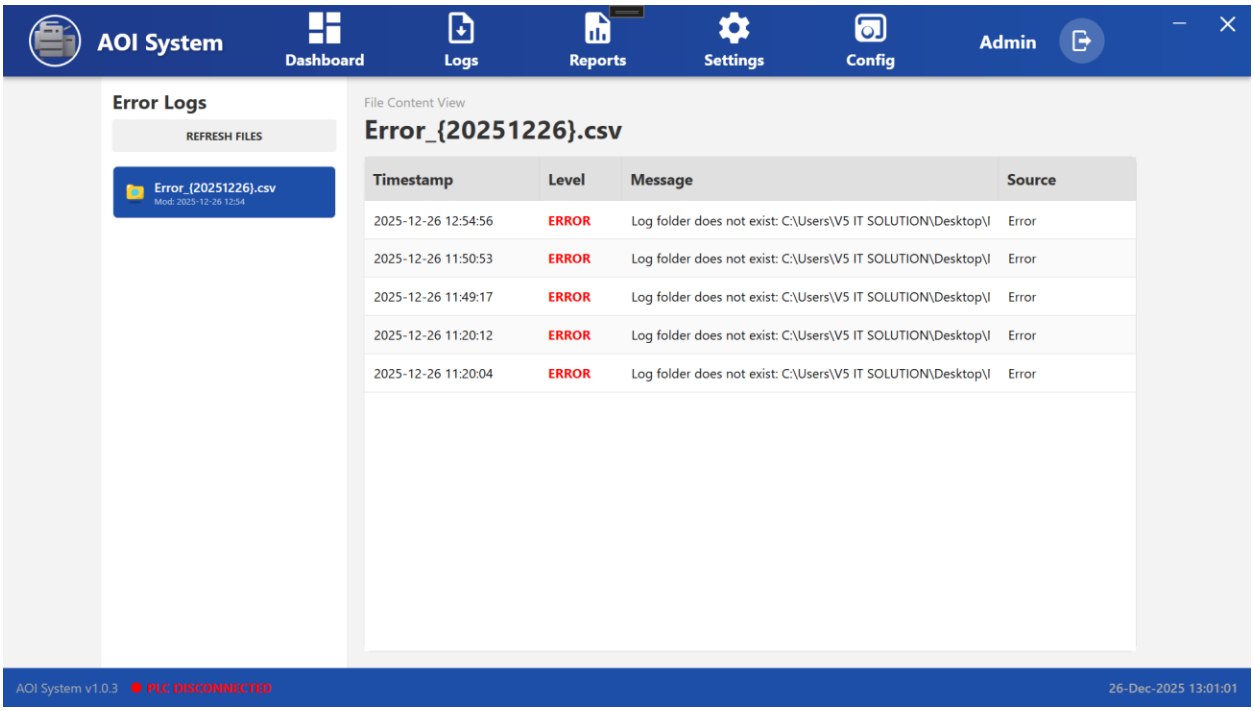
The **Error Logs** screen is used to **view system error records**.
It helps the Operator identify **system-level problems** that may affect inspection or operation.

This screen is **view-only** for the Operator.

3. Navigation Flow

Logs → Error Logs → Select Error File (.csv)

After selecting an error log file, the system displays the list of recorded errors.



4. Screen Layout Overview

The Error Logs screen is divided into two sections:

1. **File List Panel (Left Side)**
2. **Error Log Content View (Right Side)**

5. File List Panel

Available Options

- **Refresh Files**
  Reloads the list of available error log files.
- **Error Log Files**
  Displays error log files with date-based names
  (for example: Error_{20251226}.csv).

Each file shows:

- **Last Modified Date and Time**

6. Selecting an Error Log File

To view error details:

1. Click on an **Error_YYYYMMDD.csv** file from the left panel
2. The error entries are displayed in the right-side table

7. Error Log Content View

The error list is displayed in a table with the following columns:

- **Timestamp**
  Date and time when the error occurred.
- **Level**
  Error severity level (for example: **ERROR**).
- **Message**
  Description of the error
  (for example: missing folder, communication issue, system failure).
- **Source**
  Indicates the source of the error (system component).

8. Operator Actions

From the Error Logs screen, the Operator can:

- Refresh the error log file list
- Select and view error log files
- Review error messages and timestamps
- Identify repeated or critical errors

9. Operator Responsibilities

- **Do not ignore repeated ERROR entries**
- Note the **error message and timestamp**
- Inform the supervisor, maintenance, or administrator
- Share error details for troubleshooting

10. Operator Limitations

- Operator cannot edit or delete error logs.

- Error logs are generated automatically by the system.
- Error handling and fixes are performed by Admin or support team.

11. Important Notes for Operator

- Red **ERROR** entries indicate serious system issues.
- If errors appear continuously:
  - Stop operation if required
  - Inform support immediately
- Check **PLC connection status** at the bottom of the screen.
- Error Logs are critical for troubleshooting and audits.

Diagnostics Log

1. Screen Name

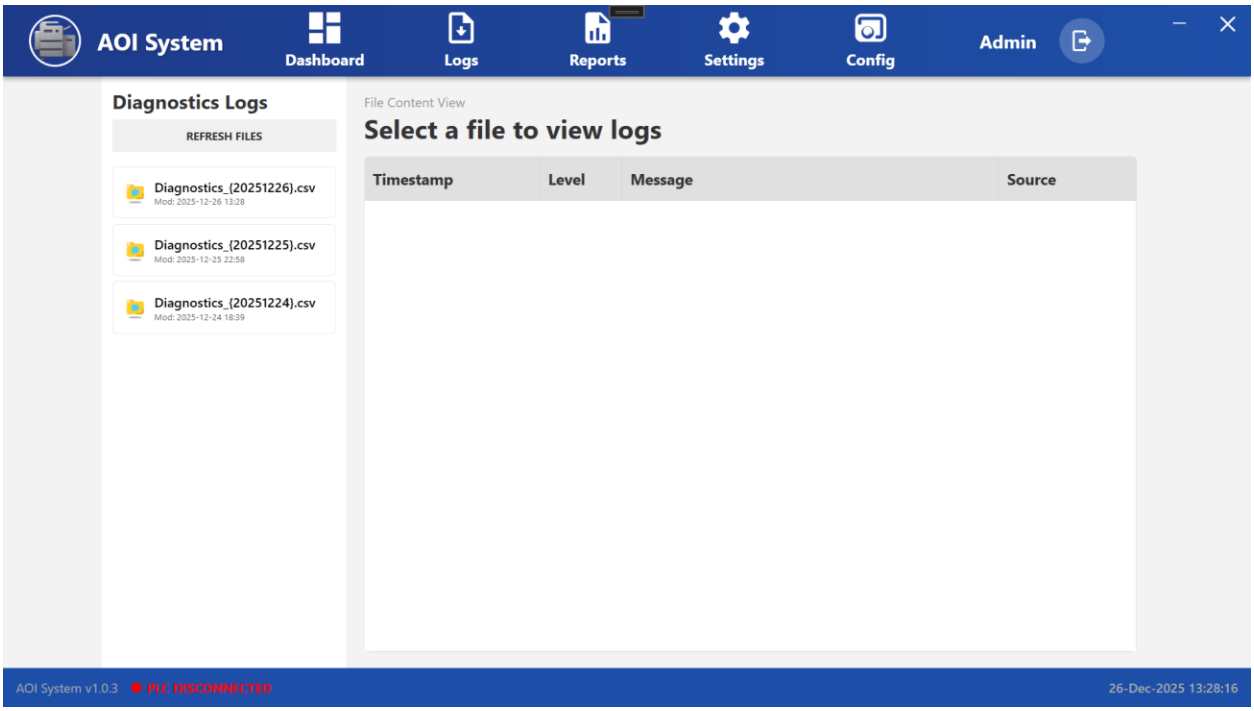
Diagnostics Logs

*(Opened when Operator clicks on **Logs → Diagnostics Logs**)*

2. Purpose of the Screen

The **Diagnostics Logs** screen is used to **view detailed technical and communication-related logs** generated by the AOI System.
These logs help in identifying **system health, communication issues, and internal diagnostic errors**.

This screen is mainly used for **troubleshooting and support analysis**.



3. Navigation Flow

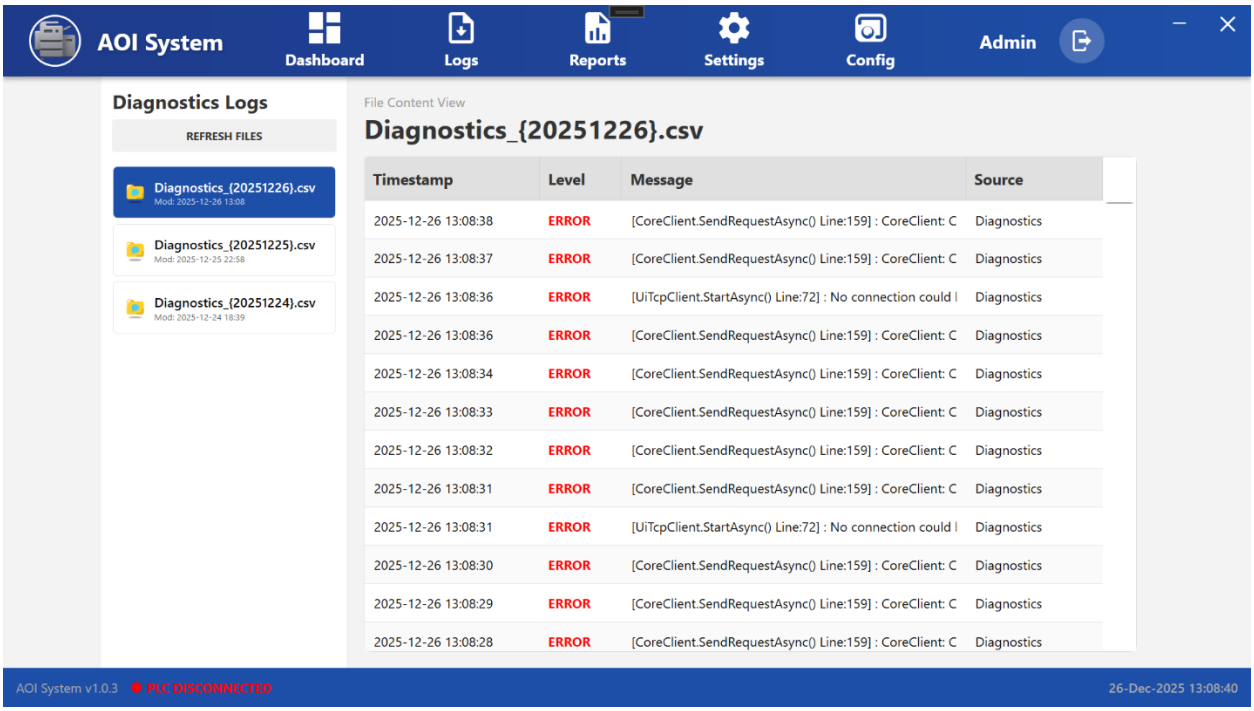
Logs → Diagnostics Logs → Select Diagnostics File (.csv)

After selecting a diagnostics log file, the system displays detailed diagnostic entries.

4. Screen Layout Overview

The Diagnostics Logs screen is divided into two main sections:

1. **File List Panel (Left Side)**
2. **Diagnostics Log Content View (Right Side)**



5. File List Panel

Available Options

- **Refresh Files**
  Reloads the list of available diagnostics log files.
- **Diagnostics Log Files**
  Displays diagnostics log files with date-based names
  (for example: Diagnostics_20251226.csv).

Each file shows:

- **Last Modified Date and Time**

6. Selecting a Diagnostics Log File

To view diagnostics details:

1. Click on a **Diagnostics_YYYYMMDD.csv** file from the left panel
2. The diagnostics entries are displayed in the right-side table

7. Diagnostics Log Content View

The diagnostics data is displayed in a table with the following columns:

- **Timestamp**
  Date and time when the diagnostic event occurred.
- **Level**
  Severity of the event (for example: **ERROR**).
- **Message**
  Technical description of the issue
  (for example: communication failure, request timeout, internal method error).
- **Source**
  Indicates the system component generating the diagnostic message
  (for example: Diagnostics, Core Client, TCP Client).

8. Operator Actions

From the Diagnostics Logs screen, the Operator can:

- Refresh diagnostics log file list
- Select and view diagnostics log files
- Observe repeated or continuous diagnostic errors
- Note timestamps and error messages

9. Operator Responsibilities

- **Do not attempt to fix technical errors directly**
- Note down:
  - Error message
  - Timestamp
  - File name
- Share diagnostics details with:
  - Maintenance team
  - Administrator
  - Technical support

10. Operator Limitations

- Operator cannot edit or delete diagnostics logs.
- Diagnostics logs are automatically generated.
- System-level fixes are handled by Admin or support team only.

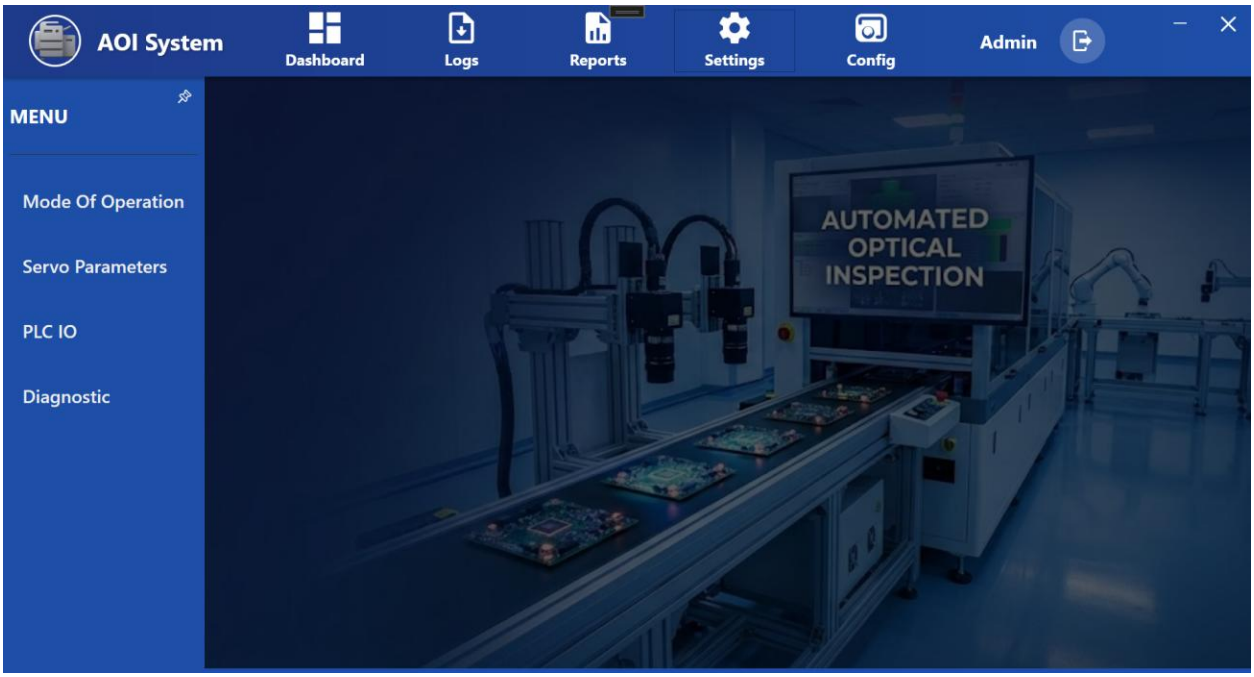
11. Important Notes for Operator

- Continuous **ERROR** entries usually indicate:
  - PLC communication failure
  - Network or TCP connection issues
  - Internal service problems
- Always check **PLC connection status** at the bottom of the screen.
- Diagnostics Logs are critical for root cause analysis.

Settings

When the operator clicks on the **Settings** option from the top menu bar, a **side menu** appears on the **left side of the screen**.

This side menu provides access to various configuration and monitoring options related to the AOI system. Each option allows the operator to view or adjust specific machine parameters.



Available Side Menu Options

The following options are displayed in the left side panel after selecting **Settings**:

- **Mode of Operation**
- **Servo Parameters**
- **PLC IO**
- **Diagnostic**

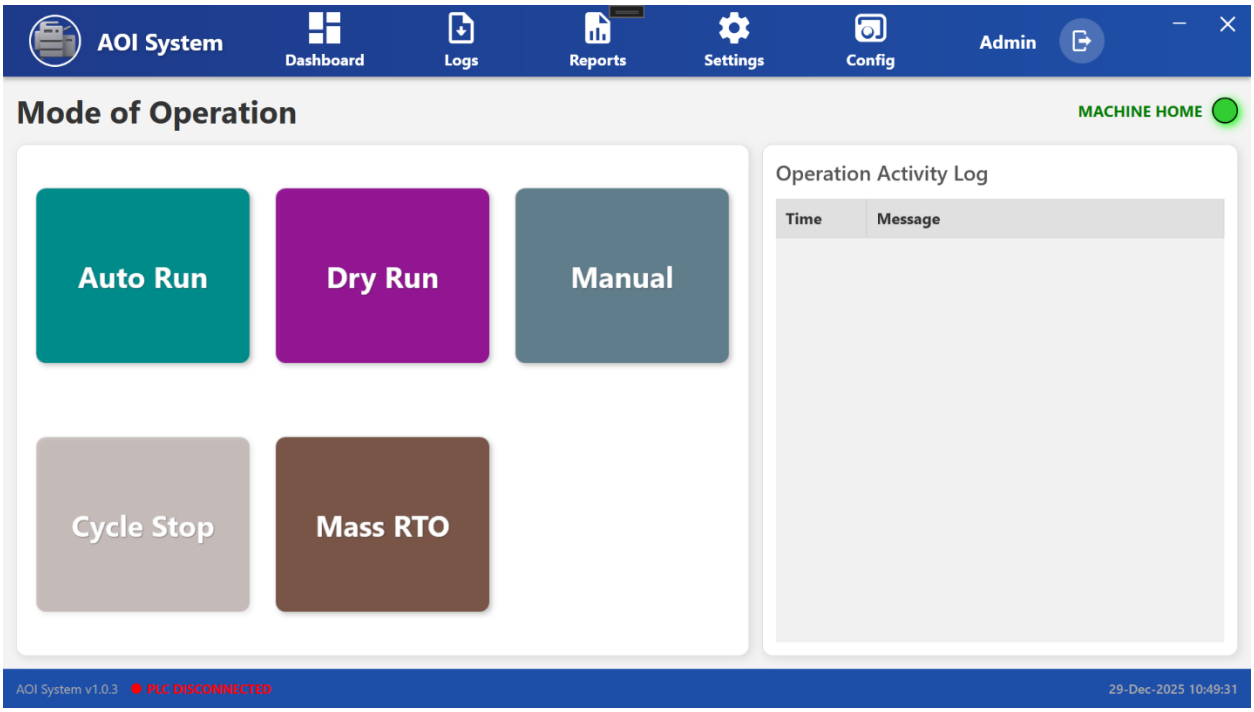
By selecting any option from the side menu, the corresponding detailed screen is displayed in the **main display area** of the application.

Operator Guidelines

- The side menu is visible only when the **Settings** section is active.
- Operators should modify parameters only if authorized and properly trained.
- Incorrect parameter changes may affect machine performance or operation.

Mode of Operation

When the operator selects **Mode of Operation** from the **Settings** side menu, the *Mode of Operation* screen is displayed.
This screen is used to control and select the operational mode of the AOI system.



Available Operation Modes

The following operation modes and controls are available on this screen:

Auto Run

- Used for fully automatic inspection operation.
- The machine runs continuously based on predefined inspection parameters.
- Recommended for normal production runs.

Dry Run

- Used to test machine movement without performing actual inspection.
- Helpful for setup verification, debugging, and maintenance checks.
- No inspection results are generated in this mode.

Manual

- Allows the operator to manually control machine functions.
- Used mainly for setup, calibration, and maintenance activities.
- Requires trained personnel to operate safely.

Cycle Stop

- Stops the machine operation after completing the current inspection cycle.
- Prevents sudden interruption during an active process.

Mass RTO

- Used to perform a mass Return to Origin (RTO) operation.
- All relevant machine axes move back to their reference/home position.

Operation Activity Log

On the right side of the screen, the **Operation Activity Log** panel is displayed.

- Displays time-stamped operation messages and status updates.
- Helps operators track mode changes and system activities.
- Useful for troubleshooting and operation verification.

System Status Indicators

- **Machine Home** indicator (green) shows that the machine is in home position and ready for operation.
- Bottom status bar displays system version, PLC connection status, and current date/time.

Operator Guidelines

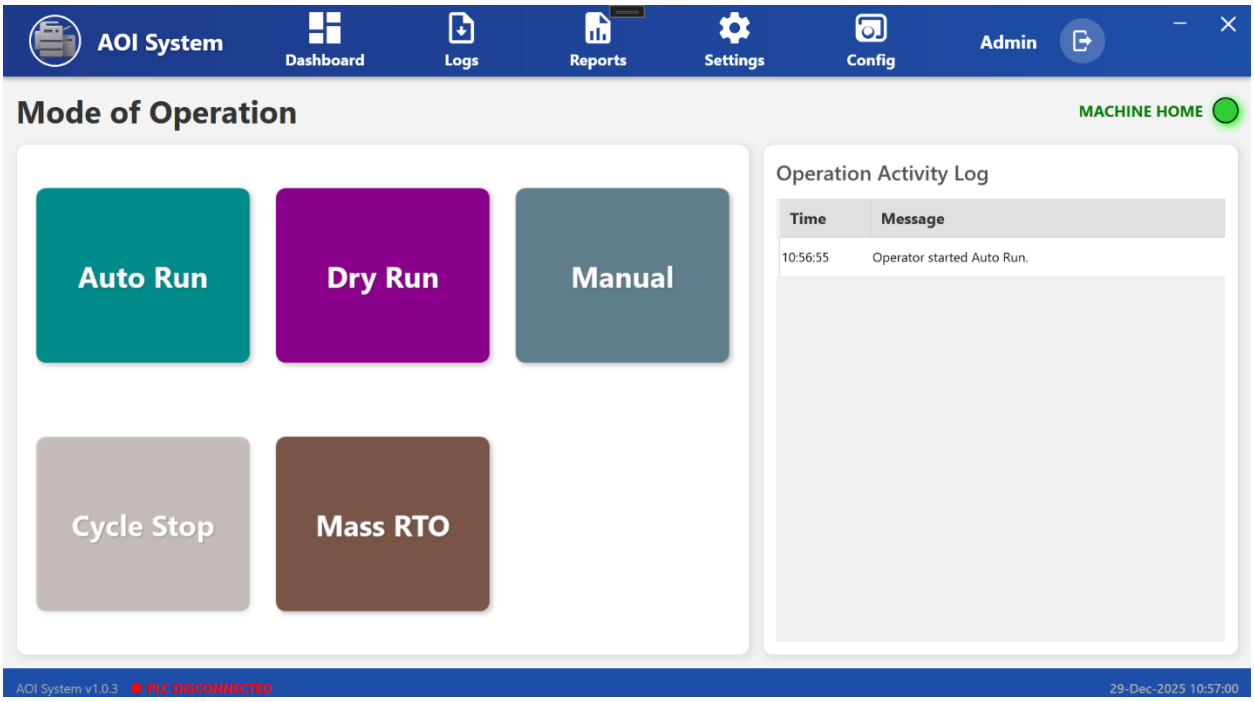
- Ensure the correct operation mode is selected before starting the machine.
- Use **Manual** and **Dry Run** modes only with proper training.
- Monitor the **Operation Activity Log** for confirmation of actions.
- If PLC is disconnected, do not start machine operation.

Auto Run Mode Selection

When the operator clicks on **Auto Run** in the *Mode of Operation* screen, the AOI system switches to **automatic operation mode**.

System Behavior After Selecting Auto Run

- The **Auto Run** button becomes active, indicating that automatic mode has been selected.
- The system prepares to execute inspection cycles automatically based on the configured parameters.
- No manual intervention is required during normal operation.



Operation Activity Log Update

Once **Auto Run** is selected, an entry is recorded in the **Operation Activity Log** panel on the right side of the screen.

Example log message:

Operator started Auto Run.

This log entry includes:

- **Time** of the action
- **Message** describing the operation performed

The activity log helps in tracking operator actions and verifying system operations.

Machine Status Indication

- The **Machine Home** indicator (green) confirms that the machine is in the home position and ready for operation.
- If the PLC connection is not available, the system status bar displays **PLC Disconnected**, and automatic operation should not be started.

Operator Guidelines

- Ensure all safety checks and prerequisites are completed before selecting **Auto Run**.
- Verify PLC connectivity before starting automatic operation.
- Monitor the **Operation Activity Log** to confirm successful mode activation.
- In case of abnormal behavior, use **Cycle Stop** to safely stop the operation.

Dry Run Mode Selection

When the operator clicks on **Dry Run** in the *Mode of Operation* screen, the AOI system switches to **Dry Run mode**.

System Behavior After Selecting Dry Run

- The system enters **test operation mode** without performing actual inspection.
- Machine movements are executed based on configured paths and sequences.
- No inspection results or production data are generated in this mode.

Operation Activity Log Update

After selecting **Dry Run**, the system records the action in the **Operation Activity Log**.

Example log message:

Operator started Dry Run.

This log entry contains:

- **Time** when the mode was activated
- **Message** describing the operator action

The activity log ensures traceability of operational changes.

Typical Use Cases

- Machine setup verification
- Motion path and sequence testing
- Maintenance and troubleshooting activities
- Operator training and validation

Operator Guidelines

- Use **Dry Run** only after ensuring the work area is clear.
- Do not load production material during Dry Run.
- Monitor machine movement closely during test operation.
- Switch to **Auto Run** only after successful Dry Run verification.