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Functional Requirement Specification (FRS) – Titan Track and Track

1. Introduction

1.1 Purpose

The purpose of the Track and Trace Titan Project is to digitize and streamline the manual processes involved in watch factory case manufacturing operations. This FRS document outlines the requirements for the development and implementation of the system, ensuring accuracy and efficiency in operations.

1.2 Scope

The Track and Trace Titan Project will transition manual operations into a digital system. The system will include modules such as User Management, Workflow Management, and Process Tracking to ensure comprehensive traceability of manufacturing operations. This document is scalable to include additional modules in the future.

1.3 Definitions, Acronyms, and Abbreviations

- **CPSF:** Case Processing and Sequencing Framework
- **HOD:** Head of Department



2. Overall Modules

2.1 Day Planning

2.2 Input Screening

2.3 Brass QC

2.4 Brass Audit

2.5 IQF

2.6 Jig Loading

2.7 In process Inspection

2.8 Jig Unloading Zone I

2.9 Jig Unloading Zone II

2.10 Nickle Inspection Zone I

2.11 Nickle Inspection Zone II

2.12 Nickle Audit Zone I

2.13 Nickle Audit Zone II

2.14 Spider Spindle Zone I

2.15 Spider Spindle Zone II

2.16 Tray Identification Module

2.17 Visual Aid Module

2.18 Model Master Management



2.1 Day Planning

This module helps plan and track production batches and trays in a simple, organized way.

This module allows:

- **Bulk Upload:** Quickly add batch planning data from Excel files. The system checks for mistakes and makes sure the data matches what's needed.
- **Batch Management:** Create, view, and update batches. Each batch includes details like model, plating color, polish, version, category, quantity, vendor, and location.
- **Tray Management:** Assign trays to batches, scan trays, remove trays if needed, and keep a history of tray usage.
- **Top Tray Verification:** Special process for checking and setting the quantity in the top tray. Supports saving progress as a draft or marking as complete.
- **Hold/Unhold & Remarks:** Put batches on hold or release them, with reasons recorded. Add notes or remarks for tracking.
- **Auto-Save & Drafts:** Automatically save tray scanning progress so work isn't lost, even if the browser is closed.
- **Role-Based Access:** Only users with the right roles (Admins, NormalUser, Operators) can access certain features.
- **Reporting & Filtering:** View completed batches, filter by date and planning data for reports.

Target Users:

- **Super Admins:** Manage all batch planning and tray setup.
- **HODs:** Manage all batch planning and tray setup.
- **Operators:** Manage all batch planning and tray setup.



2. Day Planning - Functional Requirements

2.1 User Roles & Permissions

User Type	Permissions
Super Admin	Full access: Create, edit, delete batches, trays, and manage planning data.
HOD	Full access: Create, edit, delete batches, trays, and manage planning data.
All User	Full access: Create, edit, delete batches, trays, and manage planning data.

2.2 Batch Creation & Management

2.2.1 Add New Batch

Field Name	Data Type	Sample Data	Validation Rules	Mandator
Batch ID	String	BATCH-2024090501	Unique, auto-generated	<input checked="" type="checkbox"/> Yes
Model Number	String	1805	Alphanumeric, matches master data	<input checked="" type="checkbox"/> Yes
Plating Color	Dropdown	Silver	Predefined options	<input checked="" type="checkbox"/> Yes
Polish Finish	Dropdown	Glossy	Predefined options	<input checked="" type="checkbox"/> Yes
Version	Dropdown	V1	Predefined options	<input checked="" type="checkbox"/> Yes
Category	Dropdown	Ring	Predefined options	<input checked="" type="checkbox"/> Yes
Quantity	Integer	500	Positive number	<input checked="" type="checkbox"/> Yes
Vendor	Dropdown	Titan	Predefined options	<input checked="" type="checkbox"/> Yes
Location	Dropdown	CPSE	Predefined options	<input checked="" type="checkbox"/> Yes
Tray Type	Dropdown	Jumbo	Predefined options	<input checked="" type="checkbox"/> Yes
Tray Capacity	Integer	100	Positive number	<input checked="" type="checkbox"/> Yes



Process Flow:

- User selects "Tray Scan" and fills in the form.
 - System validates inputs and checks for duplicates.
 - On success, batch details are stored and visible in the planning table.
-

2.3 Tray Management

2.3.1 Assign Tray to Batch

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Tray ID	String	TRAY-001	Must exist in tray master table	<input checked="" type="checkbox"/> Yes
Tray Quantity	Integer	100	≤ Tray Capacity	<input checked="" type="checkbox"/> Yes
Tray Type	Dropdown	Jumbo	Predefined options	<input checked="" type="checkbox"/> Yes
Top Tray	Boolean	True/False	Only one per batch	<input type="checkbox"/> No

Process Flow:

- User scans or selects tray for batch.
 - System checks tray availability and compatibility.
 - Tray is linked to batch and marked as scanned.
-

2.4 Hold/Unhold & Remarks

2.4.1 Hold/Unhold Batch

Field Name	Data Type	Sample Data	Validation Rules	Mandatory



Batch ID	String	BATCH-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
Reason	String	Awaiting QC	5-100 characters	<input checked="" type="checkbox"/> Yes
Remarks	String	Urgent batch	Optional	<input checked="" type="checkbox"/> No

❖ Process Flow:

- User scans or selects tray for batch.
 - System checks tray availability and compatibility.
 - Tray is linked to batch and marked as scanned.
-

2.5 Top Tray Verification

2.5.1 Verify Top Tray Quantity

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Tray ID	String	TRAY-001	Must be top tray	<input checked="" type="checkbox"/> Yes
Verified Qty	Integer	100	≤ Tray Capacity	<input checked="" type="checkbox"/> Yes
Verified By	String	John Doe	Must be logged-in user	<input checked="" type="checkbox"/> Yes

❖ Process Flow:

User scans top tray and **enters** verified quantity.

- System checks against tray capacity.
 - Status is updated to "Verified".
-



2.6 Reporting & Filtering

2.6.1 View Completed Batches

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Location	Dropdown	CPSE	Predefined options	<input checked="" type="checkbox"/> No
Category	Dropdown	Ring	Predefined options	<input checked="" type="checkbox"/> No

❖ Process Flow:

- User selects filters and views completed batches.
 - System displays results and allows export.
-

2.2 Input Screening

This module helps inspect, validate, and manage batches and trays after Day Planning is complete.

This module allows:

- **Pick Table Processing:** Work with batches that have finished tray scanning in Day Planning. This is the main table for inspection and validation.
- **Hold/Unhold Management:** Put specific batches on hold with reasons, locking them until released. Easily view hold/unhold history and reasons.
- **Tray Validation & Scanning:** Open tray ID popups, scan and validate tray IDs, and track the validation status for each tray.
- **Accept/Reject Workflows:** Accept entire batches (removes them from the Pick Table) or reject with detailed reasons and quantities.
- **Lot vs Tray Rejection:** Choose to reject whole lots (with remarks) or specific trays with reason codes and tray IDs.



- **Draft Management:** Save incomplete acceptance or rejection decisions as drafts, so users can finish later without losing data.
- **Remarks & Communication:** Add remarks using chat icons, view saved remarks, and keep a history of communication for each batch.
- **Quality Control Tables:**
 - **Completed Table:** See all processed (accepted/rejected) batches, with date filters.
 - **Accept Table:** Track batches that are accepted or partially accepted.
 - **Reject Table:** Manage rejected or partially rejected items, including delinking trays.
- **Model Integration:** View model images by clicking Plating Stock Numbers, and access detailed product info via Info buttons.
- **Delink Operations:** Remove tray associations in bulk or for individual lots, with proper tracking and history.
- **Advanced Filtering:** Filter by date, see active filters, and default views show recent data (from yesterday to today).

Target Users:

- **Super Admins:** Oversee all input screening, manage tray and rejection settings.
- **Operators:** Scan trays, record screening results, and update tray status.

3. Input Screening Module – Functional Requirements

3.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage screening, accept/reject batches, delink trays, and view all data.
HOD	Full access: Manage screening, accept/reject batches, delink trays, and view all data.
End User	Full access: Manage screening, accept/reject batches, delink trays, and view all data.



3.1 Tray Screening & Verification

3.2.1 Screen & Verify Trays

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist in batch data	<input checked="" type="checkbox"/> Yes
Tray ID	String	TRAY-001	Must exist, verified, not rejected	<input checked="" type="checkbox"/> Yes
Tray Quantity	Integer	100	Positive number, ≤ tray capacity	<input checked="" type="checkbox"/> Yes
Top Tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
Delink Tray	Boolean	True/False	Only for empty trays	<input type="checkbox"/> No

Process Flow:

- User scans tray and enters quantity.
 - System validates tray status and quantity.
 - Top tray and delink trays are marked as needed.
 - Screening data is saved and status updated.
-

3.3 Rejection Management

3.3.1 Record Rejections

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Rejection Reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
Rejected Quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes



Tray ID	String	TRAY-002	Optional for shortage	<input checked="" type="checkbox"/> No
Remarks	String	"Damaged tray"	Optional	<input checked="" type="checkbox"/> No

Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

3.4 Hold/Unhold & Remarks

3.4.1 Hold and Un Hold Lot

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
Reason	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> Yes

Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-



3.5 Reporting & Filtering

3.5.1 View Screening Results

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Location	Dropdown	CPSE	Predefined options	<input type="checkbox"/> No
Category	Dropdown	Ring	Predefined options	<input type="checkbox"/> No

❖ Process Flow:

- User selects filters and views screening results.
 - System displays results and allows export.
-

2.3 Brass QC

This module helps check, validate, and manage batches and trays after Input Screening is complete. It also displays Brass Audit lot rejections and IQF Accepted Trays in the table.

This module allows:

- **Tray QC Screening:** Scan trays, check quantities, and verify tray details for each batch.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage) and track rejected quantities.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Unhold & Remarks:** Put lots on hold or release them, with reasons and remarks saved for tracking.



- **Delink Trays:** Remove empty or rejected trays from batches, making them available for reuse.
- **Accept/Reject Workflows:** Accept entire batches or reject with detailed reasons and quantities.
- **Draft Management:** Save incomplete acceptance or rejection decisions as drafts, so users can finish later without losing data.
- **Remarks & Communication:** Add remarks, view saved remarks, and keep a history of communication for each batch.
- **Reporting & Filtering:** View completed QC results, filter by date, and export QC data for reports.
- **Model Integration:** View model images and access detailed product info for each batch.
- **Advanced Filtering:** Filter by date, see active filters, and default views show recent data.

Target Users:

- **Super Admins:** Oversee all Brass QC, manage tray and rejection settings.
- **Operators:** Scan trays, record QC results, and update tray status.

4. Brass QC Module – Functional Requirements

4.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage batches, trays, QC screening, accept/reject, and delink operations.
HOD	Full access: Manage batches, trays, QC screening, accept/reject, and delink operations.
End User	Full access: Manage batches, trays, QC screening, accept/reject, and delink operations.



4.2 Tray QC Screening & Verification

4.2.1 Screen & Verify Trays

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist in batch data	<input checked="" type="checkbox"/> Yes
Tray ID	String	TRAY-001	Must exist, verified, not rejected	<input checked="" type="checkbox"/> Yes
Tray Quantity	Integer	100	Positive number, ≤ tray capacity	<input checked="" type="checkbox"/> Yes
Top Tray	Boolean	True/False	Only one per lot	<input checked="" type="checkbox"/> No
Delink Tray	Boolean	True/False	Only for empty trays	<input checked="" type="checkbox"/> No

Process Flow:

- User scans tray and enters quantity.
- System validates tray status and quantity.
- The top tray and delink trays are marked as needed.
- QC data is saved and status updated.

4.3 Rejection Management

4.3.1 Record Rejections

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Rejection Reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
Rejected Quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes



Tray ID	String	TRAY-002	Optional for shortage	No
Remarks	String	"Damaged tray"	Optional	No

Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

4.4 Hold/Unhold & Remarks

4.4.1 Hold/Unhold Lot

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	Yes
Action	Dropdown	Hold/Unhold	Predefined options	Yes
Reason	String	"QC pending"	5-100 characters	Yes

Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-

4.5 Accept/Reject Workflows

- Accept Batch: Accept entire batches with confirmation; moves to next process.
- Reject Batch: Reject batches with detailed reasons and quantity specifications.



- Lot vs Tray Rejection: Choose to reject whole lots (with remarks) or specific trays with reason codes and tray IDs.
-

4.6 Draft Management

- Save Drafts: Save incomplete acceptance/rejection decisions as drafts.
 - Resume Work: Users can resume work later with all data preserved.
-

4.7 Delink Operations

- Bulk/Individual Delink: Remove tray associations in bulk or for individual lots, with proper tracking and history.
-

4.8 Reporting & Filtering

4.8.1 View QC Results

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Location	Dropdown	CPSE	Predefined options	<input type="checkbox"/> No
Category	Dropdown	Ring	Predefined options	<input type="checkbox"/> No

Process Flow:

- User selects filters and views QC results.
 - System displays results.
-



2.4 Brass Audit

This module only displays Brass QC lot rejections and Brass tray rejections in the table, helping users check, validate, and manage rejected batches and trays after Brass QC is complete.

This module allows:

- **Tray Audit Screening:** Scan trays, check quantities, and verify tray details for each batch.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage) and track rejected quantities.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Un hold & Remarks:** Put lots on hold or release them, with reasons and remarks saved for tracking.
- **Delink Trays:** Remove empty or rejected trays from batches, making them available for reuse.
- **Accept/Reject Workflows:** Accept entire batches or reject with detailed reasons and quantities.
- **Draft Management:** Save incomplete acceptance or rejection decisions as drafts, so users can finish later without losing data.
- **Remarks & Communication:** Add remarks, view saved remarks, and keep a history of communication for each batch.
- **Reporting & Filtering:** View completed audit results, filter by date, and export audit data for reports.
- **Model Integration:** View model images and access detailed product info for each batch.
- **Advanced Filtering:** Filter by date, see active filters, and default views show recent data.

Target Users:

- **Super Admins:** Oversee all Brass Audit, manage tray and rejection settings.
- **Operators:** Scan trays, record audit results, and update tray status.



5. Brass Audit Module – Functional Requirements

5.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage batches, trays, audit screening, accept/reject, and delink operations.
HOD	Full access: Manage batches, trays, audit screening, accept/reject, and delink operations.
End User	Full access: Manage batches, trays, audit screening, accept/reject, and delink operations.

5.2 Tray Audit Screening & Verification

5.2.1 Screen & Verify Trays

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist in batch data	<input checked="" type="checkbox"/> Yes
Tray ID	String	TRAY-001	Must exist, verified, not rejected	<input checked="" type="checkbox"/> Yes
Tray Quantity	Integer	100	Positive number, ≤ tray capacity	<input checked="" type="checkbox"/> Yes
Top Tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
Delink Tray	Boolean	True/False	Only for empty trays	<input type="checkbox"/> No

Process Flow:

- User scans tray and enters quantity.
- System validates tray status and quantity.
- Top tray and delink trays are marked as needed.
- Audit data is saved and status updated.



5.3 Rejection Management

5.3.1 Record Rejections

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Rejection Reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
Rejected Quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes
Tray ID	String	TRAY-002	Optional for shortage	<input type="checkbox"/> No
Remarks	String	"Damaged tray"	Optional	<input type="checkbox"/> No

❖ Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

5.4 Hold/Unhold & Remarks

5.4.1 Hold/Unhold Lot

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Action	Dropdown	Hold/Un hold	Predefined options	<input checked="" type="checkbox"/> Yes
Reason	String	"Audit pending"	5-100 characters	<input checked="" type="checkbox"/> Yes

❖ Process Flow:

- User selects lot and chooses Hold or Unhold.



- Enters reason.
 - System updates lot status and logs reason
-
-

5.5 Accept/Reject Workflows

- Accept Batch: Accept entire batches with confirmation; moves to next process.
 - Reject Batch: Reject batches with detailed reasons and quantity specifications.
 - Lot vs Tray Rejection: Choose to reject whole lots (with remarks) or specific trays with reason codes and tray IDs.
-

5.6 Draft Management

- Save Drafts: Save incomplete acceptance/rejection decisions as drafts.
 - Resume Work: Users can resume work later with all data preserved.
-

5.7 Delink Operations

- Bulk/Individual Delink: Remove tray associations in bulk or for individual lots, with proper tracking and history.
-

5.8 Reporting & Filtering

5.8.1 View Audit Results

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Location	Dropdown	CPSE	Predefined options	<input type="checkbox"/> No



Category	Dropdown	Ring	Predefined options	No
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Process Flow:

- User selects filters and views audit results.
 - System displays results.
-

2.5 IQF

This module only displays Brass QC lot rejections and Brass tray rejections in the table, helping users check, validate, and manage rejected batches and trays after Input Screening is complete.

This module allows:

- **Tray Screening & Verification:** Scan trays, check quantities, and verify tray details for each batch.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage) and track rejected quantities.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Un hold & Remarks:** Put lots on hold or release them, with reasons and remarks saved for tracking.
- **Delink Trays:** Remove empty or rejected trays from batches, making them available for reuse.
- **Accept/Reject Workflows:** Accept entire batches or reject with detailed reasons and quantities.
- **Draft Management:** Save incomplete acceptance or rejection decisions as drafts, so users can finish later without losing data.
- **Remarks & Communication:** Add remarks, view saved remarks, and keep a history of communication for each batch.
- **Reporting & Filtering:** View completed IQF results, filter by date, and export IQF data for reports.
- **Model Integration:** View model images and access detailed product info for each batch.



- **Advanced Filtering:** Filter by date, see active filters, and default views show recent data.

Target Users:

- **Super Admins:** Oversee all IQF, manage tray and rejection settings.
- **Operators:** Scan trays, record IQF results, and update tray status.

6. IQF Module – Functional Requirements

6.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage batches, trays, IQF screening, accept/reject, and delink operations.
HOD	Full access: Manage batches, trays, IQF screening, accept/reject, and delink operations.
End User	Full access: Manage batches, trays, IQF screening, accept/reject, and delink operations.

6.2 Tray Screening & Verification

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist in batch data	<input checked="" type="checkbox"/> Yes
Tray ID	String	TRAY-001	Must exist, verified, not rejected	<input checked="" type="checkbox"/> Yes
Tray Quantity	Integer	100	Positive number, ≤ tray capacity	<input checked="" type="checkbox"/> Yes
Top Tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
Delink Tray	Boolean	True/False	Only for empty trays	<input type="checkbox"/> No



Process Flow:

- User scans tray and enters quantity.
 - System validates tray status and quantity.
 - Top tray and delink trays are marked as needed.
 - Screening data is saved and status updated.
-

6.3 Rejection Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Rejection Reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
Rejected Quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes
Tray ID	String	TRAY-002	Optional for shortage	<input type="checkbox"/> No
Remarks	String	"Damaged tray"	Optional	<input type="checkbox"/> No

Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

6.4 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes



Reason	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> Yes
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Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-
-

6.5 Accept/Reject Workflows

- Accept Batch: Accept entire batches with confirmation; moves to next process.
 - Reject Batch: Reject batches with detailed reasons and quantity specifications.
 - Lot vs Tray Rejection: Choose to reject whole lots (with remarks) or specific trays with reason codes and tray IDs.
-

6.6 Draft Management

- Save Drafts: Save incomplete acceptance/rejection decisions as drafts.
 - Resume Work: Users can resume work later without losing data.
-

6.7 Delink Operations

- Bulk/Individual Delink: Remove tray associations in bulk or for individual lots, with proper tracking and history.
-

6.8 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
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Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Location	Dropdown	CPSE	Predefined options	<input checked="" type="checkbox"/> No
Category	Dropdown	Ring	Predefined options	<input checked="" type="checkbox"/> No

Process Flow:

- User selects filters and views IQF results.
 - System displays results and allows export.
-

2.6 Jig Loading

This module helps organize, load, and validate JIGs (fixtures) for brass components after Brass audit is complete, making sure trays are assigned correctly and capacity is managed.

This module allows:

- **Pick Table Management:** Show and manage only batches accepted in Brass Audit and Recovery Brass Audit. Filter and search easily.
- **Hold/Un hold Workflows:** Put batches on hold with reasons, lock them during hold, and view hold/un hold history.
- **Interactive Remarks:** Add remarks using a chat icon (green when saved), and view all remarks for each batch.
- **Model Images & Info:** Click Plating Stock Numbers to see model images and get detailed product info.
- **Tray Validation:** Scan and check tray IDs, view tray lists in popups, and make sure trays are assigned properly.
- **Smart JIG Addition:** Automatically calculate how trays should be distributed based on total quantity and tray capacity. Manage delinked trays and auto-fill batch numbers and capacities.



- **Capacity Management:** Make sure empty slots are zero before saving. Faulty slots are limited (max 5 for small JIGs, max 10 for large JIGs).
- **Half-Tray Handling:** Calculate and show partial tray needs, display remaining quantities after delinking, and manage half-filled trays.
- **Multi-Model Support:** Add more than one model to a JIG if they match (same JIG type, tray type, polish finish). Filter models and manage quantities for each.
- **Cycle Limit Monitoring:** Track how many times a JIG QR ID is used (up to 34 cycles). Show warnings for maintenance after 30 cycles and block usage after 34.
- **Draft Management:** Save incomplete JIG setups as drafts, reload and continue drafts, and keep data safe across sessions.
- **JIG Composition Tracking:** Go to special pages to see how cases are distributed by lot, and view model numbers in composition views.
- **Validation:** Check JIG QR IDs (required), make sure tray IDs are entered for delinked trays, and show clear error messages.
- **Completed JIG Management:** Filter completed JIGs by date (default: yesterday to today), show active filters, and keep history.
- **Deletion Controls:** Remove batches with confirmation popups, keeping data safe and accurate.

Target Users:

- **Super Admins:** Oversee all JIG loading, manage tray and batch settings.
- **Operators:** Scan trays, load JIGs, and update batch status.

7. Jig Loading Module – Functional Requirements

7.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage JIG loading, tray assignments, batch updates, and deletion.
HOD	Full access: Manage JIG loading, tray assignments, batch updates, and deletion.
End User	Full access: Manage JIG loading, tray assignments, batch updates, and deletion.



7.1 JIG Loading & Tray Assignment

7.1.1 JIG Loading Table

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
jig_qr_id	String	JIG-QR-12345	Unique, required for final save	<input checked="" type="checkbox"/> Yes
jig_type	String	Type-A	Predefined options	<input checked="" type="checkbox"/> Yes
jig_capacity	Integer	144	Positive number	<input checked="" type="checkbox"/> Yes
faulty_slots	Integer	2	≤5 for capacity <144, ≤10 for ≥144	<input checked="" type="checkbox"/> Yes
empty_slots	Integer	0	Must be zero for final save	<input checked="" type="checkbox"/> Yes
total_cases_loaded	Integer	120	≤ jig_capacity	<input checked="" type="checkbox"/> Yes
lot_id	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
new_lot_ids	Array[String]	[LOT-1, LOT-2]	Multiple lots allowed	<input type="checkbox"/> No
no_of_model_cases	Array[String]	[1805, 1806]	Multiple models allowed	<input type="checkbox"/> No
delink_tray_data	JSON	[{tray_id, qty}]	Valid tray IDs, no duplicates	<input type="checkbox"/> No
half_filled_tray_data	JSON	[{tray_id, qty}]	Valid tray IDs, no duplicates	<input type="checkbox"/> No
draft_save	Boolean	True/False	Indicates draft status	<input type="checkbox"/> No
remarks	String	"Loaded successfully"	Optional, max 50 words	<input type="checkbox"/> No

❖ Process Flow:

- User selects eligible batches from Brass Audit or Recovery Brass Audit.
- User scans and assigns trays, enters quantities, and validates tray IDs.
- System checks for duplicate tray IDs, faulty/empty slot limits, and cycle count.



- User can save as draft or finalize JIG loading.
 - Data is saved in JigDetails and related tables.
-

7.2 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
remark	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> Yes

❖ Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-

7.3 Tray Validation & Distribution

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	12	\leq tray_capacity	<input checked="" type="checkbox"/> Yes
is_top_tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
delink_tray	Boolean	True/False	Only for trays being delinked	<input type="checkbox"/> No



Process Flow:

- User scans tray IDs and assigns quantities.
 - System validates tray status and assignment.
 - Delink and half-filled trays are managed as per optimal distribution logic.
-

7.4 Multi-Model & Multi-Lot Support

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
no_of_model_cases	Array[String]	[1805, 1806]	Models must be compatible	 No
new_lot_ids	Array[String]	[LOT-1, LOT-2]	Lots must be compatible	 No
lot_id_quantities	JSON	{LOT-1: 60, LOT-2: 60}	Sum ≤ jig_capacity	 Yes

Process Flow:

- User selects multiple models/lots for a JIG.
 - System distributes quantities optimally and validates compatibility.
-

7.5 Cycle Limit Monitoring

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
jig_qr_id	String	JIG-QR-12345	Max 34 cycles, warning at 31-34	 Yes
no_of_cycle	Integer	32	≤ 34	 Yes



Process Flow:

- System tracks JIG QR ID usage.
 - Warns user at 31-34 cycles, blocks further use after 34.
-

7.6 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory?
draft_save	Boolean	True/False	Indicates draft status	No

Process Flow:

- User can save incomplete JIG loading as draft.
 - Drafts can be reloaded and continued later.
-

7.7 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	Yes
Model No	String	1805	Predefined options	No
Lot ID	String	LOT-2024090501	Predefined options	No

Process Flow:

- User filters completed JIGs by date, model, or lot.
 - System displays results and allows export.
-



2.7 In process Inspection Module

This module helps inspect, validate, and manage JIGs and trays after JIG Loading is complete, ensuring quality and proper tracking before moving to the next process.

This module allows:

- **Pick Table Management:** View and manage JIGs ready for inprocess inspection, with filtering and search options.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Bath Number Assignment:** Assign bath numbers to JIGs, track bath history, and update process status.
- **Tray & Model Validation:** Check tray IDs, model numbers, polish finish, and other batch details for each JIG.
- **Multi-Lot & Multi-Model Support:** Handle JIGs with multiple lots and models, display all related stock numbers and versions.
- **Draft Management:** Save incomplete inspections as drafts, reload and continue later.
- **Deletion Controls:** Remove JIGs or lots with confirmation, keeping data safe and accurate.
- **Reporting & Filtering:** View completed inspections, filter by date, bath number, or other criteria, and export inspection data.
- **Completed Inspection Tracking:** Track all completed JIG inspections, view details, and maintain historical records.

Target Users:

- **Super Admins:** Oversee all inprocess inspections, manage JIG and batch settings.
- **Operators:** Inspect JIGs, assign baths, add remarks, and update inspection status



8. In process Inspection Module – Functional Requirements

8.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage inspections, batch updates, holds, and deletions.
HOD	Full access: Manage inspections, batch updates, holds, and deletions.
End User	Full access: Manage inspections, batch updates, holds, and deletions.

8.2 Inspection & Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
jig_id	Integer	123	Must exist in JigDetails	<input checked="" type="checkbox"/> Yes
lot_id	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
bath_number	String	BATH-001	Must exist in BathNumbers	<input checked="" type="checkbox"/> Yes
jig_position	String	Top/Middle/Bottom	Predefined options	<input checked="" type="checkbox"/> Yes
remarks	String	"Inspected OK"	Max 50 characters	<input type="checkbox"/> No
pick_remarks	String	"Ready for next"	Max 50 characters	<input type="checkbox"/> No

🔧 Process Flow:

- User selects JIGs for inspection.
- Assigns bath numbers and positions.
- Adds remarks and pick remarks.
- System validates entries and saves inspection data.



8.3 Hold/Un hold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Lot ID	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
Action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
Reason	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> Yes

❖ Process Flow:

- User selects lot and chooses Hold or Unhold.
- Enters reason.
- System updates lot status and logs reason.

8.4 Multi-Lot & Multi-Model Support

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
new_lot_ids	Array[String]	[LOT-1, LOT-2]	Multiple lots allowed	<input type="checkbox"/> No
no_of_model_cases	Array[String]	[1805, 1806]	Multiple models allowed	<input type="checkbox"/> No

❖ Process Flow:

- System displays all lots and models linked to each JIG.
- User can view details and inspection status for each.



8.5 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory?
draft_save	Boolean	True/False	Indicates draft status	No

Process Flow:

- System displays all lots and models linked to each JIG.
 - User can view details and inspection status for each.
-

8.6 Deletion Controls

Field Name	Data Type	Sample Data	Validation Rules	Mandatory?
lot_id	String	LOT-2024090501	Must exist	Yes

Process Flow:

- User deletes JIG or lot with confirmation.
 - System removes records and maintains data integrity.
-

8.7 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	Yes
Bath Number	String	BATH-001	Predefined options	No

Process Flow:

- User filters completed inspections by date or bath number.



- System displays results and allows export.
-

2.8 Jig Unloading Zone I

This module helps inspect, validate, and manage JIGs and trays after In process Inspection is complete, but only displays JIGs with plating colors marked for Zone I unloading (jig_unload_zone_1=True). This ensures that only eligible batches are processed in this zone.

This module allows:

- **Pick Table Management:** View and manage JIGs ready for unloading, with filtering and search options.
- **Tray Unloading & Assignment:** Scan trays, assign quantities, and validate tray IDs for each unload operation.
- **Multi-Lot & Multi-Model Support:** Handle JIGs with multiple lots and models, display all related stock numbers and versions.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete unload operations as drafts, reload and continue later.
- **Tray Validation:** Check tray types and availability, ensure trays are not assigned elsewhere or delinked.
- **Reporting & Filtering:** View completed unloads, filter by date, model, or lot, and export unload data.
- **Completed Unload Tracking:** Track all completed JIG unloads, view details, and maintain historical records.
- **Deletion Controls:** Remove JIGs or lots with confirmation, keeping data safe and accurate.
- **Model Images & Info:** View model images and details for each tray and lot.

Target Users:



- **Super Admins:** Oversee all inprocess inspections, manage JIG and batch settings.
- **Operators:** Scan trays, unload JIGs, and update batch status.

9. Jig Unloading Module – Functional Requirements

9.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage JIG unloading, tray assignments, batch updates, and deletion.
HOD	Full access: Manage JIG unloading, tray assignments, batch updates, and deletion.
End User	Full access: Manage JIG unloading, tray assignments, batch updates, and deletion.

9.1 JIG Un Loading & Tray Assignment

9.1.1 JIG Un Loading Table

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
jig_qr_id	String	JIG-QR-12345	Unique, required for final save	<input checked="" type="checkbox"/> Yes
combine_lot_ids	Array[String]	[LOT-1, LOT-2]	Multiple lots allowed	<input checked="" type="checkbox"/> Yes
lot_id	String	UNLOT20240905001	Auto-generated, unique	<input checked="" type="checkbox"/> Yes
unload_lot_id	String	JUL20240905001	Auto-generated, unique	<input type="checkbox"/> No
total_case_qty	Integer	120	Positive number	<input checked="" type="checkbox"/> Yes
version	FK	V1	Auto-populated from lots	<input type="checkbox"/> No



location	M2M	CPSE	Auto-populated from lots	X No
plating_color	FK	Silver	Auto-populated from lots	X No
plating_stk_no	String	1805X	Auto-populated from lots	X No
polish_stk_no	String	1805Y	Auto-populated from lots	X No
polish_finish	FK	Glossy	Auto-populated from lots	X No
category	String	Ring	Auto-populated from lots	X No
tray_type	String	Jumbo	Auto-populated from lots	X No
tray_capacity	Integer	100	Auto-populated from lots	X No
created_at	DateTime	2024-09-05 10:00	Auto-generated	✓ Yes
selected_user	FK	John Doe	User who created the lot	X No
unload_accepted	Boolean	True/False	Indicates if unload was accepted	X No
accepted_qty	Integer	120	Accepted quantity during unload	X No
last_process_module	String	Jig Unloading	Auto-updated	X No
next_process_module	String	Nickel QC	Auto-updated	X No



draft_save	Boolean	True/False	Indicates draft status	X No
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9.1.2 Tray Assignment

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
tray_id	String	TRAY-001	Must exist, not rejected/delinked	✓ Yes
tray_qty	Integer	12	≤ tray_capacity	✓ Yes
lot_id	String	UNLOT20240905 001	Must exist	✓ Yes
draft_save	Boolean	True/False	Indicates draft status	X No
top_tray	Boolean	True/False	Only one per lot	X No
delink_tray	Boolean	True/False	Only for trays being delinked	X No
rejected_tray	Boolean	True/False	Indicates if tray is rejected	X No

9.1.3 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
draft_id	AutoField	1	Auto-generated	✓ Yes
main_lot_id	String	LOT-2024090501	Must exist	✓ Yes
model_number	String	1805	Must exist	✓ Yes
total_quantity	Integer	120	Positive number	✓ Yes
draft_data	JSON	{...}	Stores all tray data	✓ Yes
combined_lot_ids	JSON	[LOT-1, LOT-2]	Multiple lots allowed	X No



created_by	String	System	User who created the draft	X No
created_at	DateTime	2024-09-05 10:00	Auto-generated	✓ Yes
updated_at	DateTime	2024-09-05 10:05	Auto-updated	✓ Yes

9.1.4 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
nq_holding_reason	String	"QC pending"	5-100 characters	X No
nq_release_reason	String	"QC cleared"	5-100 characters	X No
nq_hold_lot	Boolean	True/False	Indicates hold status	X No
nq_release_lot	Boolean	True/False	Indicates release status	X No
nq_pick_remarks	String	"Ready for next"	Max 100 characters	X No

Process Flow:

- User selects lot and chooses Hold or Unhold.
- Enters reason.
- System updates lot status and logs reason.

9.1.5 Tray Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory



tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_qty	Integer	12	\leq tray_capacity	<input checked="" type="checkbox"/> Yes
top_tray	Boolean	True/False	Only one per lot	<input checked="" type="checkbox"/> No

Process Flow:

- User scans tray IDs and assigns quantities.
 - System validates tray status and assignment.
-

9.1.6 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Model No	String	1805	Predefined options	<input checked="" type="checkbox"/> No
Lot ID	String	UNLOT20240905001	Predefined options	<input checked="" type="checkbox"/> No

Process Flow:

- User filters completed JIG unloads by date, model, or lot.
 - System displays results .
-

2.9 Jig Unloading Zone II

This module helps inspect, validate, and manage JIGs and trays after In process Inspection is complete, but only displays JIGs with plating colors marked for Zone II unloading



(jig_unload_zone_2=True). This ensures that only eligible batches are processed in this zone.

This module allows:

- **Pick Table Management:** View and manage JIGs ready for unloading, with filtering and search options.
- **Tray Unloading & Assignment:** Scan trays, assign quantities, and validate tray IDs for each unload operation.
- **Multi-Lot & Multi-Model Support:** Handle JIGs with multiple lots and models, display all related stock numbers and versions.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete unload operations as drafts, reload and continue later.
- **Tray Validation:** Check tray types and availability, ensure trays are not assigned elsewhere or delinked.
- **Reporting & Filtering:** View completed unloads, filter by date, model, or lot, and export unload data.
- **Completed Unload Tracking:** Track all completed JIG unloads, view details, and maintain historical records.
- **Deletion Controls:** Remove JIGs or lots with confirmation, keeping data safe and accurate.
- **Model Images & Info:** View model images and details for each tray and lot.

❖ Target Users:

- **Super Admins:** Oversee all inprocess inspections, manage JIG and batch settings.
- **Operators:** Scan trays, unload JIGs, and update batch status.



10. Jig Unloading Module – Functional Requirements

10.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage JIG unloading, tray assignments, batch updates, and deletion.
HOD	Full access: Manage JIG unloading, tray assignments, batch updates, and deletion.
End User	Full access: Manage JIG unloading, tray assignments, batch updates, and deletion.

10.1 JIG Un Loading & Tray Assignment

10.1.1 JIG Un Loading Table

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
jig_qr_id	String	JIG-QR-12345	Unique, required for final save	<input checked="" type="checkbox"/> Yes
combine_lot_ids	Array[String]	[LOT-1, LOT-2]	Multiple lots allowed	<input checked="" type="checkbox"/> Yes
lot_id	String	UNLOT20240905001	Auto-generated, unique	<input checked="" type="checkbox"/> Yes
unload_lot_id	String	JUL20240905001	Auto-generated, unique	<input type="checkbox"/> No
total_case_qty	Integer	120	Positive number	<input checked="" type="checkbox"/> Yes
version	FK	V1	Auto-populated from lots	<input type="checkbox"/> No
location	M2M	CPSE	Auto-populated from lots	<input type="checkbox"/> No



plating_color	FK	Silver	Auto-populated from lots	X No
plating_stk_no	String	1805X	Auto-populated from lots	X No
polish_stk_no	String	1805Y	Auto-populated from lots	X No
polish_finish	FK	Glossy	Auto-populated from lots	X No
category	String	Ring	Auto-populated from lots	X No
tray_type	String	Jumbo	Auto-populated from lots	X No
tray_capacity	Integer	100	Auto-populated from lots	X No
created_at	DateTime	2024-09-05 10:00	Auto-generated	✓ Yes
selected_user	FK	John Doe	User who created the lot	X No
unload_accepted	Boolean	True/False	Indicates if unload was accepted	X No
accepted_qty	Integer	120	Accepted quantity during unload	X No
last_process_module	String	Jig Unloading	Auto-updated	X No
next_process_module	String	Nickel QC	Auto-updated	X No
draft_save	Boolean	True/False	Indicates draft status	X No



10.1.2 Tray Assignment

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_qty	Integer	12	≤ tray_capacity	<input checked="" type="checkbox"/> Yes
lot_id	String	UNLOT20240905001	Must exist	<input checked="" type="checkbox"/> Yes
draft_save	Boolean	True/False	Indicates draft status	<input type="checkbox"/> No
top_tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
delink_tray	Boolean	True/False	Only for trays being delinked	<input type="checkbox"/> No
rejected_tray	Boolean	True/False	Indicates if tray is rejected	<input type="checkbox"/> No

10.1.3 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
draft_id	AutoField	1	Auto-generated	<input checked="" type="checkbox"/> Yes
main_lot_id	String	LOT-2024090501	Must exist	<input checked="" type="checkbox"/> Yes
model_number	String	1805	Must exist	<input checked="" type="checkbox"/> Yes
total_quantity	Integer	120	Positive number	<input checked="" type="checkbox"/> Yes
draft_data	JSON	{...}	Stores all tray data	<input checked="" type="checkbox"/> Yes
combined_lot_ids	JSON	[LOT-1, LOT-2]	Multiple lots allowed	<input type="checkbox"/> No
created_by	String	System	User who created the draft	<input type="checkbox"/> No



created_at	DateTime	2024-09-05 10:00	Auto-generated	<input checked="" type="checkbox"/> Yes
updated_at	DateTime	2024-09-05 10:05	Auto-updated	<input checked="" type="checkbox"/> Yes

10.1.4 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
nq_holding_reason	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> No
nq_release_reason	String	"QC cleared"	5-100 characters	<input checked="" type="checkbox"/> No
nq_hold_lot	Boolean	True/False	Indicates hold status	<input checked="" type="checkbox"/> No
nq_release_lot	Boolean	True/False	Indicates release status	<input checked="" type="checkbox"/> No
nq_pick_remarks	String	"Ready for next"	Max 100 characters	<input checked="" type="checkbox"/> No

Process Flow:

- User selects lot and chooses Hold or Unhold.
- Enters reason.
- System updates lot status and logs reason.

10.1.5 Tray Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_qty	Integer	12	\leq tray_capacity	<input checked="" type="checkbox"/> Yes



top_tray	Boolean	True/False	Only one per lot	No
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Process Flow:

- User scans tray IDs and assign quantities.
 - System validates tray status and assignment.
-

10.1.6 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	Yes
Model No	String	1805	Predefined options	No
Lot ID	String	UNLOT20240905001	Predefined options	No

Process Flow:

- User filters completed JIG unloads by date, model, or lot.
 - System displays results.
-

2.10 Nickel Inspection Zone I

This module helps inspect, validate, and manage JIGs and trays after Jig Unloading is complete, but only displays JIGs with plating colors marked for Zone I un loading (jig_unload_zone_1=True). This ensures only eligible batches are processed in Nickel Inspection.

This module allows:



- **Zone I Pick Table:** View and manage only JIGs and lots with plating colors approved for Zone I Nickel Inspection.
- **Tray Inspection & Validation:** Scan trays, assign quantities, and validate tray IDs for each eligible inspection operation.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage), track rejected quantities, and manage batch-level rejections with remarks.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete inspection operations as drafts, reload and continue later.
- **Tray Validation:** Check tray types and availability, ensure trays are not assigned elsewhere, rejected, or delinked.
- **Delink Operations:** Remove empty or rejected trays from batches, making them available for reuse.
- **Reporting & Filtering:** View completed inspections, filter by date, model, or lot.
- **Completed Inspection Tracking:** Track all completed Nickel inspections for Zone I, view details, and maintain historical records.
- **Model Images & Info:** View model images and details for each tray and lot.

Target Users:

- **Super Admins:** Oversee all Zone I Nickel inspections, manage tray and batch settings.
- **Operators:** Scan trays, inspect JIGs, and update batch status for Zone I eligible items.



10. Nickle Inspection Module – Functional Requirements

10.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage Nickel inspections, tray assignments, batch updates, holds, and deletions.
HOD	Full access: Manage Nickel inspections, tray assignments, batch updates, holds, and deletions.
End User	Full access: Manage Nickel inspections, tray assignments, batch updates, holds, and deletions.

10.2 Zone I Filtering

Only JIGs/lots with plating colors marked for Zone I unloading (jig_unload_zone_1=True) are shown and processed.

10.3 Tray Inspection & Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NQ20240905001	Must exist in JigUnloadAfterTable	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	12	≤ tray_capacity	<input checked="" type="checkbox"/> Yes
top_tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
delink_tray	Boolean	True/False	Only for trays being delinked	<input type="checkbox"/> No



Process Flow:

- User scans trays and enters quantities.
 - System validates tray status, type, and assignment.
 - Top tray and delink trays are managed as needed.
-

10.4 Rejection Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NQ20240905001	Must exist	<input checked="" type="checkbox"/> Yes
rejection_reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
rejected_quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-002	Optional for shortage	<input type="checkbox"/> No
remarks	String	"Damaged tray"	Optional	<input type="checkbox"/> No

Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

10.5 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NQ20240905001	Must exist	<input checked="" type="checkbox"/> Yes
action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
remark	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> Yes



Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-

10.6 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
draft_save	Boolean	True/False	Indicates draft status	 No

Process Flow:

- User can save incomplete inspections, rejections, or tray scans as drafts.
 - Drafts can be reloaded and continued later.
-

10.7 Tray Delink & Top Tray Calculation

- Delink trays: Remove empty or rejected trays from batches, making them available for reuse.
 - Top tray calculation: Automatically calculate and update top tray quantities after rejections or delink operations.
-

10.8 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	 Yes



Model No	String	1805	Predefined options	No
Lot ID	String	NQ20240905001	Predefined options	No

Process Flow:

- User filters completed Nickel inspections by date, model, or lot.
 - System displays results.
-

2.11 Nickel Inspection Zone II

This module helps inspect, validate, and manage JIGs and trays after Jig Unloading is complete, but only displays JIGs with plating colors marked for Zone II un loading (jig_unload_zone_2=True). This ensures only eligible batches are processed in Nickel Inspection.

This module allows:

- **Zone II Pick Table:** View and manage only JIGs and lots with plating colors approved for Zone I Nickel Inspection.
- **Tray Inspection & Validation:** Scan trays, assign quantities, and validate tray IDs for each eligible inspection operation.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage), track rejected quantities, and manage batch-level rejections with remarks.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete inspection operations as drafts, reload and continue later.



- **Tray Validation:** Check tray types and availability, ensure trays are not assigned elsewhere, rejected, or delinked.
- **Delink Operations:** Remove empty or rejected trays from batches, making them available for reuse.
- **Reporting & Filtering:** View completed inspections, filter by date, model, or lot.
- **Completed Inspection Tracking:** Track all completed Nickel inspections for Zone II, view details, and maintain historical records.
- **Model Images & Info:** View model images and details for each tray and lot.

Target Users:

- **Super Admins:** Oversee all Zone II Nickel inspections, manage tray and batch settings.
- **Operators:** Scan trays, inspect JIGs, and update batch status for Zone II eligible items.

11. Nickle Inspection Module – Functional Requirements

11.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage Nickel inspections, tray assignments, batch updates, holds, and deletions.
HOD	Full access: Manage Nickel inspections, tray assignments, batch updates, holds, and deletions.
End User	Full access: Manage Nickel inspections, tray assignments, batch updates, holds, and deletions.

11.2 Zone II Filtering

Only JIGs/lots with plating colors marked for Zone II unloading (jig_unload_zone_2=True) are shown and processed.



11.3 Tray Inspection & Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NQ20240905001	Must exist in JigUnloadAfterTable	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	12	≤ tray_capacity	<input checked="" type="checkbox"/> Yes
top_tray	Boolean	True/False	Only one per lot	<input checked="" type="checkbox"/> No
delink_tray	Boolean	True/False	Only for trays being delinked	<input checked="" type="checkbox"/> No

🔧 Process Flow:

- User scans trays and enters quantities.
- System validates tray status, type, and assignment.
- Top tray and delink trays are managed as needed.

11.4 Rejection Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NQ20240905001	Must exist	<input checked="" type="checkbox"/> Yes
rejection_reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
rejected_quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-002	Optional for shortage	<input checked="" type="checkbox"/> No
remarks	String	"Damaged tray"	Optional	<input checked="" type="checkbox"/> No



Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

11.5 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NQ20240905001	Must exist	<input checked="" type="checkbox"/> Yes
action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
remark	String	"QC pending"	5-100 characters	<input checked="" type="checkbox"/> Yes

Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-

11.6 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
draft_save	Boolean	True/False	Indicates draft status	<input checked="" type="checkbox"/> No

Process Flow:

- User can save incomplete inspections, rejections, or tray scans as drafts.
 - Drafts can be reloaded and continued later.
-



11.7 Tray Delink & Top Tray Calculation

- Delink trays: Remove empty or rejected trays from batches, making them available for reuse.
 - Top tray calculation: Automatically calculate and update top tray quantities after rejections or delink operations.
-

11.8 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Model No	String	1805	Predefined options	<input checked="" type="checkbox"/> No
Lot ID	String	NQ20240905001	Predefined options	<input checked="" type="checkbox"/> No

Process Flow:

- User filters completed Nickel inspections by date, model, or lot.
 - System displays results.
-

2.12 Nickel Audit Zone I

This module helps inspect, validate, and manage JIGs and trays after Nickle Inspection is complete, but only displays JIGs with plating colors marked for Zone I unloading (jig_unload_zone_1=True). This ensures only eligible batches are processed in Nickel Audit Zone I.

This module allows:



- **Zone I Pick Table:** View and manage only JIGs and lots with plating colors approved for Zone I Nickel Audit.
- **Tray Audit & Validation:** Scan trays, assign quantities, and validate tray IDs for each eligible audit operation.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage), track rejected quantities and manage batch-level rejections with remarks.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete audit operations as drafts, reload and continue later.
- **Tray Validation:** Check tray types and availability, ensure trays are not assigned elsewhere, rejected, or delinked.
- **Delink Operations:** Remove empty or rejected trays from batches, making them available for reuse.
- **Reporting & Filtering:** View completed audits, filter by date, model, or lot, and export audit data.
- **Completed Audit Tracking:** Track all completed Nickel audits for Zone I, view details, and maintain historical records.
- **Model Images & Info:** View model images and details for each tray and lot.

Target Users:

- **Super Admins:** Oversee all Zone I Nickel audits, manage tray and batch settings.
- **Operators:** Scan trays, audit batches, and update batch status for Zone I eligible items.

12. Nickle Audit Module – Functional Requirements

12.1 Roles & Permissions

User Type	Permissions
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Super Admin	Full access: Manage Nickel Audit, tray assignments, batch updates, holds, and deletions.
HOD	Full access: Manage Nickel Audit, tray assignments, batch updates, holds, and deletions.
End User	Full access: Manage Nickel Audit, tray assignments, batch updates, holds, and deletions.

12.2 Zone I Filtering

Only JIGs/lots with plating colors marked for Zone I unloading (jig_unload_zone_1=True) are shown and processed.

1.3 Tray Audit & Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NA20240905001	Must exist in JigUnloadAfterTable	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	12	≤ tray_capacity	<input checked="" type="checkbox"/> Yes
top_tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
delink_tray	Boolean	True/False	Only for trays being delinked	<input type="checkbox"/> No

Process Flow:

- User scans trays and enters quantities.
- System validates tray status, type, and assignment.
- Top tray and delink trays are managed as needed.



12.4 Rejection Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NA20240905001	Must exist	<input checked="" type="checkbox"/> Yes
rejection_reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
rejected_quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-002	Optional for shortage	<input checked="" type="checkbox"/> No
remarks	String	"Damaged tray"	Optional	<input checked="" type="checkbox"/> No

❖ Process Flow:

- User selects rejection reason and enters quantity.
- System validates against available tray quantities.
- Rejection is recorded and tray status updated.

12.5 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NA20240905001	Must exist	<input checked="" type="checkbox"/> Yes
action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes
remark	String	"Audit pending"	5-100 characters	<input checked="" type="checkbox"/> Yes

❖ Process Flow:

- User selects lot and chooses Hold or Unhold.
- Enters reason.
- System updates lot status and logs reason.



12.6 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
draft_save	Boolean	True/False	Indicates draft status	X No

❖ Process Flow:

- User can save incomplete inspections, rejections, or tray scans as drafts.
- Drafts can be reloaded and continued later.

12.7 Tray Delink & Top Tray Calculation

- Delink trays: Remove empty or rejected trays from batches, making them available for reuse.
 - Top tray calculation: Automatically calculate and update top tray quantities after rejections or delink operations.
-

12.8 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	✓ Yes
Model No	String	1805	Predefined options	X No
Lot ID	String	NQ20240905001	Predefined options	X No

❖ Process Flow:

- User filters completed Nickel inspections by date, model, or lot.



- System displays results.
-

2.13 Nickel Audit Zone II

This module helps inspect, validate, and manage JIGs and trays after Nickel Inspection is complete, but only displays JIGs with plating colors marked for Zone II unloading (jig_unload_zone_2=True). This ensures only eligible batches are processed in Nickel Audit Zone II.

This module allows:

- **Zone II Pick Table:** View and manage only JIGs and lots with plating colors approved for Zone II Nickel Audit.
- **Tray Audit & Validation:** Scan trays, assign quantities, and validate tray IDs for each eligible audit operation.
- **Rejection Management:** Record reasons for rejected trays (like shortage or damage), track rejected quantities and manage batch-level rejections with remarks.
- **Top Tray Verification:** Special workflow to check and confirm the quantity in the top tray, with options to save as draft or complete.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete audit operations as drafts, reload and continue later.
- **Tray Validation:** Check tray types and availability, ensure trays are not assigned elsewhere, rejected, or delinked.
- **Delink Operations:** Remove empty or rejected trays from batches, making them available for reuse.
- **Reporting & Filtering:** View completed audits, filter by date, model, or lot, and export audit data.
- **Completed Audit Tracking:** Track all completed Nickel audits for Zone II, view details, and maintain historical records.
- **Model Images & Info:** View model images and details for each tray and lot.



Target Users:

- **Super Admins:** Oversee all Zone II Nickel audits, manage tray and batch settings.
- **Operators:** Scan trays, audit batches, and update batch status for Zone II eligible items.

13. Nickle Audit Module – Functional Requirements

13.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage Nickel Audit, tray assignments, batch updates, holds, and deletions.
HOD	Full access: Manage Nickel Audit, tray assignments, batch updates, holds, and deletions.
End User	Full access: Manage Nickel Audit, tray assignments, batch updates, holds, and deletions.

13.2 Zone II Filtering

Only JIGs/lots with plating colors marked for Zone II unloading (jig_unload_zone_2=True) are shown and processed.

13.3 Tray Audit & Validation

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NA20240905001	Must exist in JigUnloadAfterTable	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-001	Must exist, not rejected/delinked	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	12	≤ tray_capacity	<input checked="" type="checkbox"/> Yes
top_tray	Boolean	True/False	Only one per lot	<input type="checkbox"/> No
delink_tray	Boolean	True/False	Only for trays being delinked	<input type="checkbox"/> No



Process Flow:

- User scans trays and enters quantities.
 - System validates tray status, type, and assignment.
 - Top tray and delink trays are managed as needed.
-

13.4 Rejection Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NA20240905001	Must exist	<input checked="" type="checkbox"/> Yes
rejection_reason	Dropdown	Shortage, Damage	Predefined options	<input checked="" type="checkbox"/> Yes
rejected_quantity	Integer	10	Positive number, ≤ tray quantity	<input checked="" type="checkbox"/> Yes
tray_id	String	TRAY-002	Optional for shortage	<input type="checkbox"/> No
remarks	String	"Damaged tray"	Optional	<input type="checkbox"/> No

Process Flow:

- User selects rejection reason and enters quantity.
 - System validates against available tray quantities.
 - Rejection is recorded and tray status updated.
-

13.5 Hold/Unhold & Remarks

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
lot_id	String	NA20240905001	Must exist	<input checked="" type="checkbox"/> Yes
action	Dropdown	Hold/Unhold	Predefined options	<input checked="" type="checkbox"/> Yes



remark	String	"Audit pending"	5-100 characters	<input checked="" type="checkbox"/> Yes
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❖ Process Flow:

- User selects lot and chooses Hold or Unhold.
 - Enters reason.
 - System updates lot status and logs reason.
-

13.6 Draft Management

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
draft_save	Boolean	True/False	Indicates draft status	<input checked="" type="checkbox"/> No

❖ Process Flow:

- User can save incomplete inspections, rejections, or tray scans as drafts.
 - Drafts can be reloaded and continued later.
-

13.7 Tray Delink & Top Tray Calculation

- Delink trays: Remove empty or rejected trays from batches, making them available for reuse.
 - Top tray calculation: Automatically calculate and update top tray quantities after rejections or delink operations.
-

13.8 Reporting & Filtering

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
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Date Range	Date	2024-09-01 to 2024-09-05	Valid date format	<input checked="" type="checkbox"/> Yes
Model No	String	1805	Predefined options	<input checked="" type="checkbox"/> No
Lot ID	String	NQ20240905001	Predefined options	<input checked="" type="checkbox"/> No

Process Flow:

- User filters completed Nickel inspections by date, model, or lot.
 - System displays results.
-

2.14 Spider Spindle Zone I

This module helps inspect, validate, and manage JIGs and trays after Jig Unloading is complete, but only displays JIGs with plating colors marked for Zone I unloading (`jig_unload_zone_1=True`). This ensures only eligible batches are processed in Spider Spindle Zone I.

This module allows:

- **Zone I Pick Table:** View and manage only JIGs and lots with plating colors approved for Zone I unloading.
- **Tray Management & Validation:** Scan trays, assign quantities, and validate tray IDs for each eligible operation. Handles delinked trays, half-filled trays, top tray verification, and rejected trays.
- **JIG Management:** Add, update, and track JIG details including QR ID, type, capacity, faulty/empty slots, cycles, bath assignment, and multi-model/multi-lot support.
- **Optimal Tray Distribution:** Automatically calculate and distribute trays based on required quantity and tray capacity, including multi-model and multi-lot scenarios.
- **Cycle Limit Monitoring:** Track JIG QR ID usage up to 34 cycles, provide maintenance warnings from cycles 31-34, and prevent usage beyond cycle limits.



- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete JIG configurations as drafts, reload and continue later, and maintain data persistence.
- **Tray Validation APIs:** Validate tray IDs, check for duplicates, and ensure proper assignment for both delinked and half-filled trays.
- **Reporting & Filtering:** View completed Spider Spindle operations, filter by date, model, or lot, and export data.
- **Composition Tracking:** Visualize lot-based total case quantities and model numbers in composition views, with color-coded cards for each model.
- **Deletion Controls:** Remove JIGs or lots with confirmation, keeping data safe and accurate.
- **Model Images & Info:** View model images and details for each tray and lot, using ModelMaster integration.

Target Users:

- **Super Admins:** Oversee all Spider Spindle Zone I operations, manage tray and batch settings.
- **Operators:** Scan trays, load/unload JIGs, and update batch status for Zone I eligible items.

14. Spider Spindle Module – Functional Requirements

14.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage Spider Spindle operations, tray assignments, batch updates, holds, and deletions.
HOD	Full access: Manage Spider Spindle operations, tray assignments, batch updates, holds, and deletions.



End User	Full access: Manage Spider Spindle operations, tray assignments, batch updates, holds, and deletions.
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14.2 Zone I Filtering

Only JIGs/lots with plating colors marked for Zone I unloading (jig_unload_zone_1=True) are shown and processed.

14.3 Tray Management & Validation

14.3.1 Tray Table

Field Name	Data Type	Description / Validation Rules	Mandatory
tray_id	String	Unique tray identifier	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	Quantity in tray, ≤ tray_capacity	<input checked="" type="checkbox"/> Yes
lot_id	String	Associated lot ID	<input checked="" type="checkbox"/> Yes
batch_id	FK	Related batch (ModelMasterCreation)	<input type="checkbox"/> No
date	DateTime	Tray scan date	<input checked="" type="checkbox"/> Yes
user	FK	User who scanned tray	<input type="checkbox"/> No
top_tray	Boolean	Marks top tray for verification	<input type="checkbox"/> No
delink_tray	Boolean	Marks tray as delinked (reusable)	<input type="checkbox"/> No
delink_tray_qty	String	Quantity delinked	<input type="checkbox"/> No
IP_tray_verified	Boolean	Tray verified in IP	<input type="checkbox"/> No
rejected_tray	Boolean	Tray rejected	<input type="checkbox"/> No
new_tray	Boolean	Tray is new	<input type="checkbox"/> No
tray_type	String	Tray type (Jumbo, Normal, etc.)	<input type="checkbox"/> No
tray_capacity	Integer	Capacity of tray	<input type="checkbox"/> No



14.4 JIG Management & Details

14.4.1 JIG Details Table

Field Name	Data Type	Description / Validation Rules	Mandatory
jig_qr_id	String	Unique JIG QR code	<input checked="" type="checkbox"/> Yes
faulty_slots	Integer	Faulty slots (≤ 5 for capacity < 144 , ≤ 10 for ≥ 144)	<input checked="" type="checkbox"/> Yes
jig_type	String	JIG type	<input checked="" type="checkbox"/> Yes
jig_capacity	Integer	JIG capacity	<input checked="" type="checkbox"/> Yes
bath_tub	String	Bath Tub reference	<input type="checkbox"/> No
plating_color	String	Plating color	<input checked="" type="checkbox"/> Yes
empty_slots	Integer	Must be zero for final save	<input checked="" type="checkbox"/> Yes
ep_bath_type	String	Bath type	<input type="checkbox"/> No
total_cases_loaded	Integer	Total cases loaded	<input checked="" type="checkbox"/> Yes
jig_cases_remaining_count	Integer	Remaining cases after loading	<input type="checkbox"/> No
forging	String	Forging info	<input type="checkbox"/> No
no_of_model_cases	Array[String]	Multiple models per JIG	<input type="checkbox"/> No
no_of_cycle	Integer	JIG cycle count (max 34, warning at 31-34)	<input checked="" type="checkbox"/> Yes
lot_id	String	Primary lot ID	<input checked="" type="checkbox"/> Yes
new_lot_ids	Array[String]	Multiple lots per JIG	<input type="checkbox"/> No
electroplating_only	Boolean	Marks if only for electroplating	<input type="checkbox"/> No
lot_id_quantities	JSON	Quantity per lot	<input checked="" type="checkbox"/> Yes



draft_save	Boolean	Indicates draft status	X No
delink_tray_data	JSON	Delink tray info	X No
half_filled_tray_data	JSON	Half-filled tray info	X No
date_time	DateTime	JIG loading date	✓ Yes
bath_numbers	FK	Related bath numbers	X No
jig_position	String	JIG position (Top, Middle, Bottom)	X No
remarks	String	General remarks (max 50 words)	X No
pick_remarks	String	Pick remarks (max 50 words)	X No
jig_unload_draft	Boolean	Indicates unload draft status	X No
combined_lot_ids	Array[String]	Combined lots info	X No
jig_loaded_date_time	DateTime	Last process date/time	X No
IP_loaded_date_time	DateTime	IP last process date/time	X No
last_process_module	String	Last process module	X No
unload_over	Boolean	Marks if unloading is complete	X No
Un_loaded_date_time	DateTime	Unloading date/time	X No

14.5 Zone I Pick Table:

- Only shows JIGs and lots with plating colors marked for Zone I unloading.
- Displays combined lots, model numbers, plating color, tray type, capacity, and batch status.

14.5 Zone I Pick Table:

- Only shows JIGs and lots with plating colors marked for Zone I unloading.
- Displays combined lots, model numbers, plating color, tray type, capacity, and batch status.



14.6 Tray Validation & Assignment:

- Scan and validate tray IDs, assign quantities, and check tray types/capacities.
- Delink trays and manage half-filled trays with proper status indicators.
- Ensure no duplicate tray IDs in delink or half-filled sections.

14.7 JIG Loading & Cycle Management:

- Add multiple models/lots to a single JIG if compatible.
- Track JIG QR ID usage up to 34 cycles, warn at 31-34, block after 34.
- Save incomplete JIG configurations as drafts, reload and continue later.

14.8 Hold/Unhold Workflows:

- Put lots on hold or release with reasons, lock access during hold, and view hold/unhold history.

14.9 Remarks & Communication:

- Add remarks for JIGs and lots, save and view remarks, use chat icons for easy communication.

14.10 Optimal Tray Distribution:

- Automatically calculate tray distribution based on required quantity and tray capacity.
- Handle both full and partial tray scenarios, including multi-model/multi-lot support.

14.11 Reporting & Filtering:

- View completed Spider Spindle operations, filter by date, model, or lot, and export data.
- Track all completed JIG operations for Zone I, view details, and maintain historical records.

14.12 Deletion Controls:

- Remove JIGs or lots with confirmation, keeping data safe and accurate.



14.13 Model Images & Info:

- View model images and details for each tray and lot, using ModelMaster integration.

14.14 Composition Tracking:

- Visualize lot-based total case quantities and model numbers in composition views.

14.15. API & Backend Logic

- **Tray validation, optimal distribution, and half-filled tray calculation** are handled via backend logic and API endpoints.
 - **Draft management, cycle count, and batch status** are tracked and updated through dedicated API views.
 - **Composition views** provide color-coded model and case breakdowns for easy visualization.
-

2.15 Spider Spindle Zone II

This module helps inspect, validate, and manage JIGs and trays after Jig Unloading is complete, but only displays JIGs with plating colors marked for Zone II unloading (jig_unload_zone_2=True). This ensures only eligible batches are processed in Spider Spindle Zone I.

This module allows:

- **Zone II Pick Table:** View and manage only JIGs and lots with plating colors approved for Zone II unloading.
- **Tray Management & Validation:** Scan trays, assign quantities, and validate tray IDs for each eligible operation. Handles delinked trays, half-filled trays, top tray verification, and rejected trays.
- **JIG Management:** Add, update, and track JIG details including QR ID, type, capacity, faulty/empty slots, cycles, bath assignment, and multi-model/multi-lot support.
- **Optimal Tray Distribution:** Automatically calculate and distribute trays based on required quantity and tray capacity, including multi-model and multi-lot scenarios.



- **Cycle Limit Monitoring:** Track JIG QR ID usage up to 34 cycles, provide maintenance warnings from cycles 31-34, and prevent usage beyond cycle limits.
- **Hold/Unhold Workflows:** Put lots on hold or release them with reasons, lock access during hold, and view hold/unhold history.
- **Remarks System:** Add remarks for JIGs and lots, save and view remarks, and use chat icons for easy communication.
- **Draft Management:** Save incomplete JIG configurations as drafts, reload and continue later, and maintain data persistence.
- **Tray Validation APIs:** Validate tray IDs, check for duplicates, and ensure proper assignment for both delinked and half-filled trays.
- **Reporting & Filtering:** View completed Spider Spindle operations, filter by date, model, or lot, and export data.
- **Composition Tracking:** Visualize lot-based total case quantities and model numbers in composition views, with color-coded cards for each model.
- **Deletion Controls:** Remove JIGs or lots with confirmation, keeping data safe and accurate.
- **Model Images & Info:** View model images and details for each tray and lot, using ModelMaster integration.

Target Users:

- **Super Admins:** Oversee all Spider Spindle Zone I operations, manage tray and batch settings.
- **Operators:** Scan trays, load/unload JIGs, and update batch status for Zone I eligible items.

15. Spider Spindle Module – Functional Requirements

15.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: Manage Spider Spindle operations, tray assignments, batch updates, holds, and deletions.



HOD	Full access: Manage Spider Spindle operations, tray assignments, batch updates, holds, and deletions.
End User	Full access: Manage Spider Spindle operations, tray assignments, batch updates, holds, and deletions.

15.2 Zone I Filtering

Only JIGs/lots with plating colors marked for Zone II unloading (jig_unload_zone_1=True) are shown and processed.

15.3 Tray Management & Validation

15.3.1 Tray Table

Field Name	Data Type	Description / Validation Rules	Mandatory
tray_id	String	Unique tray identifier	<input checked="" type="checkbox"/> Yes
tray_quantity	Integer	Quantity in tray, ≤ tray_capacity	<input checked="" type="checkbox"/> Yes
lot_id	String	Associated lot ID	<input checked="" type="checkbox"/> Yes
batch_id	FK	Related batch (ModelMasterCreation)	<input type="checkbox"/> No
date	DateTime	Tray scan date	<input checked="" type="checkbox"/> Yes
user	FK	User who scanned tray	<input type="checkbox"/> No
top_tray	Boolean	Marks top tray for verification	<input type="checkbox"/> No
delink_tray	Boolean	Marks tray as delinked (reusable)	<input type="checkbox"/> No
delink_tray_qty	String	Quantity delinked	<input type="checkbox"/> No
IP_tray_verified	Boolean	Tray verified in IP	<input type="checkbox"/> No
rejected_tray	Boolean	Tray rejected	<input type="checkbox"/> No
new_tray	Boolean	Tray is new	<input type="checkbox"/> No
tray_type	String	Tray type (Jumbo, Normal, etc.)	<input type="checkbox"/> No
tray_capacity	Integer	Capacity of tray	<input type="checkbox"/> No



15.4 JIG Management & Details

15.4.1 JIG Details Table

Field Name	Data Type	Description / Validation Rules	Mandatory
jig_qr_id	String	Unique JIG QR code	<input checked="" type="checkbox"/> Yes
faulty_slots	Integer	Faulty slots (≤ 5 for capacity < 144 , ≤ 10 for ≥ 144)	<input checked="" type="checkbox"/> Yes
jig_type	String	JIG type	<input checked="" type="checkbox"/> Yes
jig_capacity	Integer	JIG capacity	<input checked="" type="checkbox"/> Yes
bath_tub	String	Bath Tub reference	<input type="checkbox"/> No
plating_color	String	Plating color	<input checked="" type="checkbox"/> Yes
empty_slots	Integer	Must be zero for final save	<input checked="" type="checkbox"/> Yes
ep_bath_type	String	Bath type	<input type="checkbox"/> No
total_cases_loaded	Integer	Total cases loaded	<input checked="" type="checkbox"/> Yes
jig_cases_remaining_count	Integer	Remaining cases after loading	<input type="checkbox"/> No
forging	String	Forging info	<input type="checkbox"/> No
no_of_model_cases	Array[String]	Multiple models per JIG	<input type="checkbox"/> No
no_of_cycle	Integer	JIG cycle count (max 34, warning at 31-34)	<input checked="" type="checkbox"/> Yes
lot_id	String	Primary lot ID	<input checked="" type="checkbox"/> Yes
new_lot_ids	Array[String]	Multiple lots per JIG	<input type="checkbox"/> No
electroplating_only	Boolean	Marks if only for electroplating	<input type="checkbox"/> No
lot_id_quantities	JSON	Quantity per lot	<input checked="" type="checkbox"/> Yes



draft_save	Boolean	Indicates draft status	X No
delink_tray_data	JSON	Delink tray info	X No
half_filled_tray_data	JSON	Half-filled tray info	X No
date_time	DateTime	JIG loading date	✓ Yes
bath_numbers	FK	Related bath numbers	X No
jig_position	String	JIG position (Top, Middle, Bottom)	X No
remarks	String	General remarks (max 50 words)	X No
pick_remarks	String	Pick remarks (max 50 words)	X No
jig_unload_draft	Boolean	Indicates unload draft status	X No
combined_lot_ids	Array[String]	Combined lots info	X No
jig_loaded_date_time	DateTime	Last process date/time	X No
IP_loaded_date_time	DateTime	IP last process date/time	X No
last_process_module	String	Last process module	X No
unload_over	Boolean	Marks if unloading is complete	X No
Un_loaded_date_time	DateTime	Unloading date/time	X No

15.5 Zone I Pick Table:

- Only shows JIGs and lots with plating colors marked for Zone II unloading.
- Displays combined lots, model numbers, plating color, tray type, capacity, and batch status.

15.6 Zone I Pick Table:

- Only shows JIGs and lots with plating colors marked for Zone II unloading.
- Displays combined lots, model numbers, plating color, tray type, capacity, and batch status.



15.7 Tray Validation & Assignment:

- Scan and validate tray IDs, assign quantities, and check tray types/capacities.
- Delink trays and manage half-filled trays with proper status indicators.
- Ensure no duplicate tray IDs in delink or half-filled sections.

15.8 JIG Loading & Cycle Management:

- Add multiple models/lots to a single JIG if compatible.
- Track JIG QR ID usage up to 34 cycles, warn at 31-34, block after 34.
- Save incomplete JIG configurations as drafts, reload and continue later.

15.9 Hold/Unhold Workflows:

- Put lots on hold or release with reasons, lock access during hold, and view hold/unhold history.

15.10 Remarks & Communication:

- Add remarks for JIGs and lots, save and view remarks, use chat icons for easy communication.

15.11 Optimal Tray Distribution:

- Automatically calculate tray distribution based on required quantity and tray capacity.
- Handle both full and partial tray scenarios, including multi-model/multi-lot support.

15.12 Reporting & Filtering:

- View completed Spider Spindle operations, filter by date, model, or lot, and export data.
- Track all completed JIG operations for Zone I, view details, and maintain historical records.

15.13 Deletion Controls:

- Remove JIGs or lots with confirmation, keeping data safe and accurate.



15.14 Model Images & Info:

- View model images and details for each tray and lot, using ModelMaster integration.

15.15 Composition Tracking:

- Visualize lot-based total case quantities and model numbers in composition views.

15.16. API & Backend Logic

- **Tray validation, optimal distribution, and half-filled tray calculation** are handled via backend logic and API endpoints.
 - **Draft management, cycle count, and batch status** are tracked and updated through dedicated API views.
 - **Composition views** provide color-coded model and case breakdowns for easy visualization.
-

2.16 Tray Identification Module

This module allows users to quickly fetch and view all details for a tray using its Tray ID. It supports barcode scanning and manual entry, showing all relevant batch, model, and process information in a modal popup.

This module allows:

- **Tray Lookup:** Enter or scan a Tray ID to instantly fetch all related data.
- **Model & Batch Details:** View model number, version, polish finish, plating color, source, type of input, and category.
- **Process Tracking:** See last process date & time, last process module, and next process module.
- **Image Preview:** Display model images, with zoom and preview options.
- **Tray Info:** Show tray type, tray capacity, and tray assignment history.
- **Error Handling:** If Tray ID is not found, display a clear error message.
- **Responsive Modal:** Modal popup adapts for desktop, tablet, and mobile screens.
- **Barcode Support:** Input field is auto-focused for fast barcode scanning.



- **Frontend Integration:** Data is shown in a structured modal or tabbed view, with color badges for process status.

16. Tray Identification Module – Functional Requirements

16.1 Roles & Permission

User Type	Permissions
Super Admin	Full access: Can scan any tray, view all details.
HOD	Full access: Can scan any tray, view all details.
End User	Full access: Can scan any tray, view all details.

16.2 Tray Identification & Data Fetch

Field Name	Data Type	Sample Data	Validation Rules	Mandatory
tray_id	String	TRAY-001	Must exist in TrayId table	<input checked="" type="checkbox"/> Yes
model_no	String	2648	Auto-fetched from batch/model	<input checked="" type="checkbox"/> Yes
version	String	TestB	Auto-fetched	<input checked="" type="checkbox"/> Yes
polish_finish	String	Bi-Finish	Auto-fetched	<input checked="" type="checkbox"/> Yes
plating_color	String	IPS	Auto-fetched	<input checked="" type="checkbox"/> Yes
source	String	Source	Auto-fetched	<input checked="" type="checkbox"/> Yes
type_of_input	String	40	Auto-fetched	<input checked="" type="checkbox"/> Yes
last_process_date_time	DateTime	2025-08-27T...	Auto-fetched	<input checked="" type="checkbox"/> Yes



last_process_module	String	Brass Audit	Auto-fetched	<input checked="" type="checkbox"/> Yes
next_process_module	String	Jig Loading	Auto-fetched	<input checked="" type="checkbox"/> Yes
images	Array	[img1, img2]	Model images, if available	<input checked="" type="checkbox"/> No

❖ Process Flow:

- User scans or enters Tray ID in the modal.
- System fetches all related data (model, batch, process status, images).
- Data is displayed in a structured modal popup.
- If Tray ID is not found, an error banner is shown.

16.3 Modal Features (Frontend)

- **Barcode Scanning:** Supports direct barcode input for Tray ID.
- **Auto-Focus:** Input field is always focused for fast scanning.
- **Error Handling:** Shows a banner if Tray ID is not found.
- **Image Preview:** Displays model images with zoom on tablet/mobile.
- **Process Status:** Highlights last and next process modules with color badges.
- **Responsive Design:** Modal adapts to desktop, tablet, and mobile screens.

16.4 Reporting & Filtering

- **No reporting/export:** This module is for instant lookup only.



2.17 Visual Aid Module

This module allows users to view detailed visual and tabular information for any model, batch, or tray, including images, variants, and similar models. It supports lookup by batch ID, lot ID, plating stock number, or model number.

This module allows:

- **Model Lookup:** Search by batch ID, lot ID, plating stock number, or model number to fetch all related data.
- **Image Gallery:** View all model images in a scrollable gallery, with zoom and preview options.
- **Variant Table:** See all available versions for the selected model.
- **Similar Models:** Display similar models with clickable links for quick navigation.
- **Tabular Data:** View master data for Model Master, Polish Finish, Plating Colors, Tray Types, Source, Model Images, Tray IDs, Category, and Rejection Reasons.
- **Responsive Design:** Adapts to desktop, tablet, and mobile screens.
- **Pagination & Bulk Actions:** Paginated tables with select-all, multi-select, and bulk delete functionality.
- **Error Handling:** Displays clear error messages if no data found for the lookup.
- **Frontend Integration:** Data is shown in a structured tabbed view, with color-coded tabs and badges.

Target Users:

- **Super Admins, HODs, Supervisors, Line Incharges, End Users:** All can use this module to visually identify models, view images, and compare variants/similar models for Zone I eligible JIGs.



17. Visual Aid Module – Functional Requirements

17.1 Roles & Permissions

User Type	Permissions
Super Admin	Full access: View all models, batches, images, and variants.
HOD	Full access: View all models, batches, images, and variants.
End User	Full access: View all models, batches, images, and variants.

17.2 Data Fetch & Display

17.2.1 Lookup Parameters

Parameter	Description
batch_id	Fetches data for a specific batch
lot_id	Fetches data for a specific lot
plating_stk_no	Fetches data for a specific plating stock number
model_no	Fetches data for a specific model number

17.3 Main Data Fields (from ModelMaster, ModelMasterCreation, LookLikeModel, etc.)

Field Name	Data Type	Description / Validation Rules	Mandatory
model_no	String	Model number	<input checked="" type="checkbox"/> Yes
plating_stk_no	String	Plating stock number	<input checked="" type="checkbox"/> Yes
version	String	Version name	<input checked="" type="checkbox"/> Yes
polish_finish	String	Polish finish type	<input checked="" type="checkbox"/> Yes
ep_bath_type	String	Bath type	<input type="checkbox"/> No



brand	String	Brand name	No
gender	String	Gender	No
changes	String	Change log (from ModelMasterCreation)	No
variants	Array	List of all versions for the model	No
similar_models	Array	List of similar models (from LookLikeModel)	No
image_urls	Array	List of model images	No
batch_id	String	Batch identifier	No
lot_id	String	Lot identifier	No
plating_color	String	Plating color	Yes
jig_unload_zone_1	Boolean	Only show if True	Yes

17.4 Visual Features

- **Big Image View:** Shows main model image with zoom and navigation controls.
- **360° Gallery:** Scrollable gallery of all images for the model.
- **Variants Table:** Lists all available versions for the model.
- **Similar Models Table:** Lists similar models with clickable links for quick navigation.
- **Data Source Badge:** Indicates if data is from ModelMasterCreation or ModelMaster.
- **Responsive Design:** Adapts to desktop, tablet, and mobile screens.
- **Error Handling:** Displays clear error messages if no data found for the lookup.

17.5 API & Backend Logic

- **Visual_AidView:** Handles lookup by batch_id, lot_id, or plating_stk_no, fetches images, variants, and similar models.
- **Rec_Visual_AidView:** Handles lookup for recovery batches, fetches images and variants from RecoveryMasterCreation.



- **Other_Visual_AidView:** Handles lookup by model_no, batch_id, or plating_stk_no, fetches images, variants, and similar models.

17.6 Reporting & Filtering

- **No reporting/export:** This module is for instant lookup and visual aid only.

17.7 Key Tables (from models.py)

- **ModelMaster:** Stores model details, plating stock number, polish finish, version, bath type, brand, gender, images.
- **ModelMasterCreation:** Stores batch-level details, changes, images, version, polish finish, plating stock number.
- **LookLikeModel:** Links similar models for cross-reference.
- **RecoveryMasterCreation:** Stores recovery batch details and images.
- **ModelImage:** Stores all images for models, used in galleries and big image view.

2.18 Model Master Module

This module allows users to manage and view all master data related to models, polish finishes, plating colors, tray types, images, categories, locations, tray IDs, and rejection reasons.

This module allows:

- **Model Management:** Create, edit, delete, and view model details including model number, version, polish finish, plating color, tray type, tray capacity, source, category, brand, gender, and images.
- **Polish Finish & Plating Color:** Manage polish finish and plating color master data, including zone eligibility for unloading modules.
- **Tray Type & Capacity:** Define tray types and capacities, auto-fill tray capacity in forms.
- **Image Gallery:** Upload, preview, and assign multiple images to models.
- **Category & Location:** Manage categories and locations for models and batches.



- **Tray ID Assignment:** Create, edit, and track tray IDs, including tray type, capacity, lot/batch linkage, and tray status (top tray, delinked, rejected).
- **Rejection Reasons:** Manage rejection reasons for IP, Brass/IQF, and Nickel processes.
- **Dropdown Data:** All forms use dropdowns populated from master tables for consistency.
- **Bulk Actions:** Multi-select and bulk delete records in tabular views.
- **Responsive UI:** Tabbed navigation, responsive design for desktop, tablet, and mobile.
- **Error Handling:** Inline validation and friendly error messages.

Target Users:

- **Super Admins, HODs, End Users:** All can use this module to manage or view master data for models and related entities.

18. Model Master Module– Functional Requirements

18.1 Roles & Permissions

This module manages all master data for models, polish finishes, plating colors, tray types, images, categories, locations, tray IDs, and rejection reasons. It provides creation, editing, deletion, and lookup features, with responsive tabbed UI and bulk actions.

User Type	Permissions
Super Admin	Full access: Create, edit, delete all master data.
HOD	Full access: Create, edit, delete all master data.
End User	Full access: Create, edit, delete all master data.



18.2 Master Data Management (Tabs & APIs)

18.2.1 Model Master (DP_ModelmasterView, ModelMasterAPIView)

- **Fields:** Model No, Polish Finish, EP Bath Type, Tray Type, Tray Capacity, Version, Images, Source, Category, Brand, Gender, Wiping Required, Plating Stock No.
- **Features:** Create, edit, delete, view all models. Assign multiple images. Auto-fill tray capacity from tray type.
- **Bulk Actions:** Multi-select and bulk delete.
- **Dropdowns:** All fields use dropdowns populated from master tables.

18.3 Polish Finish (PolishFinishAPIView)

- **Fields:** Polish Finish, Internal ID, Date/Time.
- **Features:** Create, edit, delete, view all polish finishes. Used in model master dropdowns.

18.4 Plating Color (PlatingColorAPIView)

- **Fields:** Plating Color, Internal Code, Jig Unload Zone 1/2, Date/Time.
- **Features:** Create, edit, delete, view all plating colors. Zone checkboxes control eligibility for unloading modules.

18.5 Tray Type (TrayTypeAPIView)

- **Fields:** Tray Type, Tray Capacity, Tray Color, Date/Time.
- **Features:** Create, edit, delete, view all tray types. Used for tray capacity auto-fill.

18.6 Model Images (ModelImageAPIView)

- **Fields:** Master Image, Date/Time.
- **Features:** Upload, delete, view all images. Multi-select for model assignment. Gallery preview in UI.

18.7 Location (LocationAPIView)

- **Fields:** Location Name, Date/Time.
- **Features:** Create, edit, delete, view all locations. Used as source dropdown.



18.8 Category (CategoryAPIView)

- **Fields:** Category Name, Date/Time.
- **Features:** Create, edit, delete, view all categories. Used in model master dropdown.

18.9 Tray ID (TrayIdAPIView)

- **Fields:** Tray ID, Tray Type, Tray Capacity, Lot ID, Batch ID, Date, User, Top Tray, Delink Tray, Rejected Tray, Tray Status.
- **Features:** Create, edit, delete, view all tray IDs. Auto-fill tray capacity from tray type. Status tracking (scanned, delinked, rejected).

18.10 IP Rejection (IPRejectionAPIView)

- **Fields:** Rejection Reason, Group, Reason ID, Count.
- **Features:** Create, edit, delete, view all IP rejection reasons.

18.11 Brass/IQF Rejection (BrassIQFRejectionAPIView)

- **Fields:** Rejection Reason, Reason ID, Count.
- **Features:** Create, edit, delete, view all Brass QC, Brass Audit, and IQF rejection reasons (synced across tables).

18.12 Nickel Audit/QC Rejection (NickelAuditQCRejectionAPIView)

- **Fields:** Rejection Reason, Reason ID, Count.
- **Features:** Create, edit, delete, view all Nickel QC and Nickel Audit rejection reasons (synced across tables).

18.13 Dropdown Data (ModelMasterDropdown-DataAPIView)

- **Features:** Provides all dropdown data for forms (polish finishes, plating colors, tray types, vendors, images, versions, locations, tray IDs, categories).



18.14 UI Features (HTML: dp_modelmaster 5.html)

- **Tabbed Navigation:** Elegant tabs for each master (Model, Polish Finish, Plating Color, Tray Type, Images, Category, Location, Tray ID, IP Rejection, Brass/IQF Rejection, Nickel Rejection).
- **Responsive Design:** Adapts to desktop, tablet, and mobile.
- **Form Validation:** Inline error messages, auto-hide success messages.
- **Bulk Actions:** Multi-select, select-all, and bulk delete for each tab.
- **Dropdowns:** All dropdowns auto-populate from master tables.
- **Autofill:** Tray capacity auto-fills from tray type selection.
- **Image Upload:** Multi-image upload with preview and gallery.
- **Zone Filtering:** Plating color zone checkboxes control eligibility for unloading modules.
- **AJAX Pagination:** Fast, paginated tables for all master data.
- **Error Handling:** Friendly error messages for validation and API errors.

18.15. Key Tables (from models.py)

- **ModelMaster, ModelMasterCreation:** Main model data, batch linkage, images, versions, polish finish, tray type, plating color, etc.
- **PolishFinishType, Plating_Color, TrayType, Location, Category:** Master tables for dropdowns.
- **ModelImage:** Stores all images for models.
- **TrayId, DraftTrayId:** Tray assignment, status, and batch linkage.
- **IP_Rejection_Table, Brass_QC_Rejection_Table, Nickel_QC_Rejection_Table:** Rejection reasons for each process.
- **LookLikeModel:** Links similar models for visual aid.
- **TotalStockModel:** Tracks overall stock and process status.

18.16 Process Flow

1. User navigates to Model Master Management.
2. Selects tab for desired master data (Model, Polish Finish, etc.).
3. Creates, edits, or deletes records using forms.
4. Dropdowns auto-populate from master tables.



5. Bulk actions available for multi-select and delete.
 6. All changes reflected instantly in UI and available for lookup in other modules.
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Conclusion

The Track and Trace Titan Project FRS document provides a detailed framework for digitizing and streamlining production operations. It defines the system's functional requirements, user roles, workflows, and validation rules to support robust traceability and process control at every stage. By following these specifications, the project will enhance operational efficiency, improve data integrity, and support informed decision-making. The FRS will be updated as the project progresses, reflecting stakeholder feedback and evolving business needs. With its modular and scalable architecture, the system is designed to accommodate future expansion and deliver sustained value to all stakeholders.
