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Rework

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Rework

Estimated time to read: 8 minutes

Rework is the process of routing **Material** through a temporary repair **Flow** due to a detected defect or failure. After the repair is completed, the **Material** returns to a specified Return Flow Path position, referred to as the Return Point. This ensures defective **Materials** are reprocessed in a controlled manner, maintaining process integrity and traceability, while reducing waste and improving production efficiency throughout the workflow.

Overview

In this tutorial, we will explore the following key sections:

- **Overview**
Introduction to the Rework operation — its application and value in manufacturing workflows.
- **Rework Configuration Scenarios**
Key configuration elements required to enable and manage Rework operations:
 - Setup
 - Reasons
 - Go To and Return Flow Paths
 - On Rework Rules
 - Applicable States
- **Rework Limits**
Managing Rework Limits and Resetting Counters.
- **Final Considerations**
Supplementary information.

Rework Configuration Scenarios

This section details the configuration required to enable and manage Rework within a **Flow**, covering all necessary elements to guide you through setting up Rework Paths effectively.

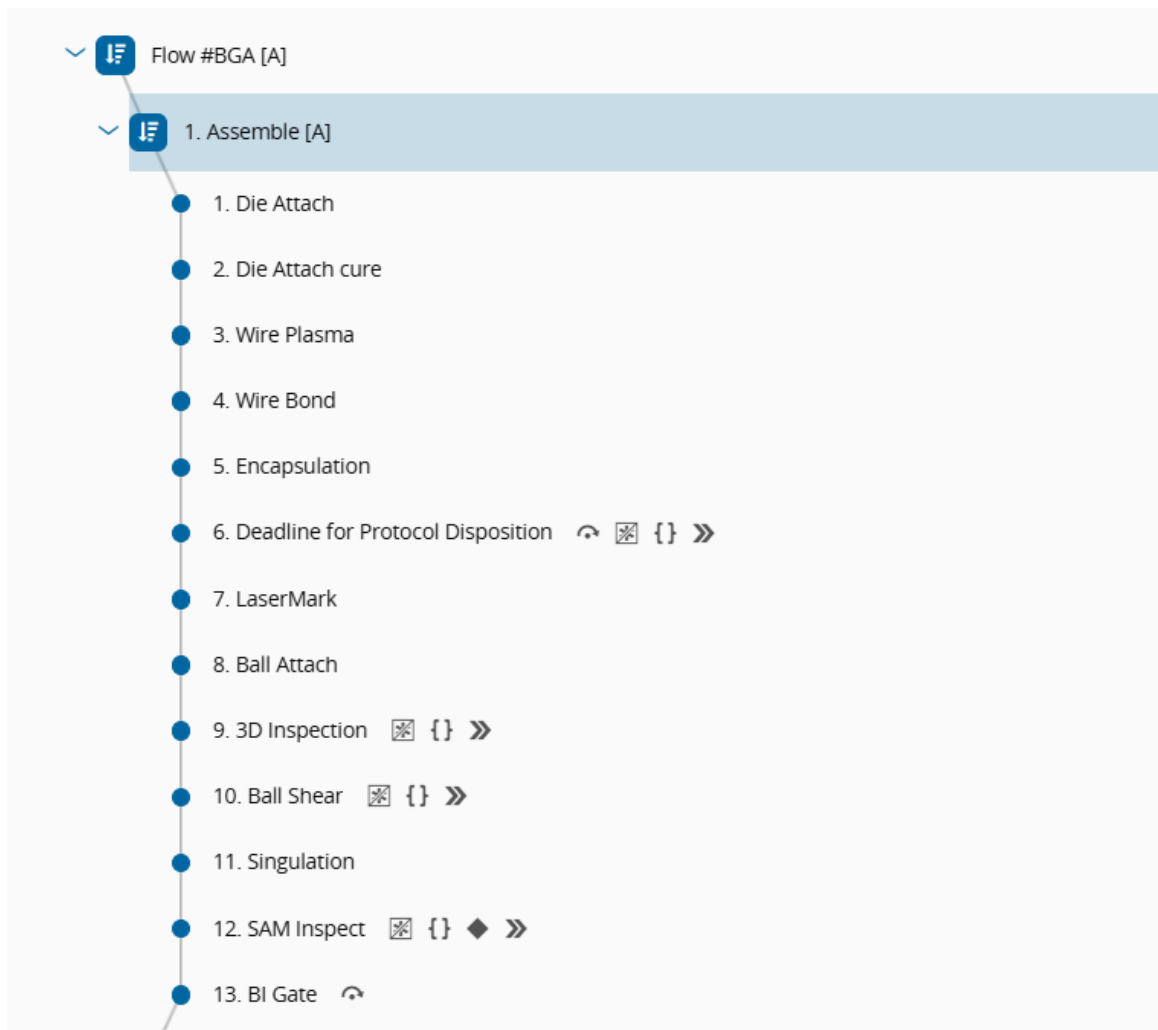
Tip


To follow along with this tutorial, use this [Master Data file](#), which contains all necessary data to replicate the examples.

Setup

Before starting, ensure the Master Data is loaded in your MES, and select the **Flow** you wish to work with.

For this tutorial, consider the Assemble Child **Flow** illustrated below, which contains essential **Steps** involved in semiconductor assembly operations and will be used to demonstrate the configuration of Rework Paths.

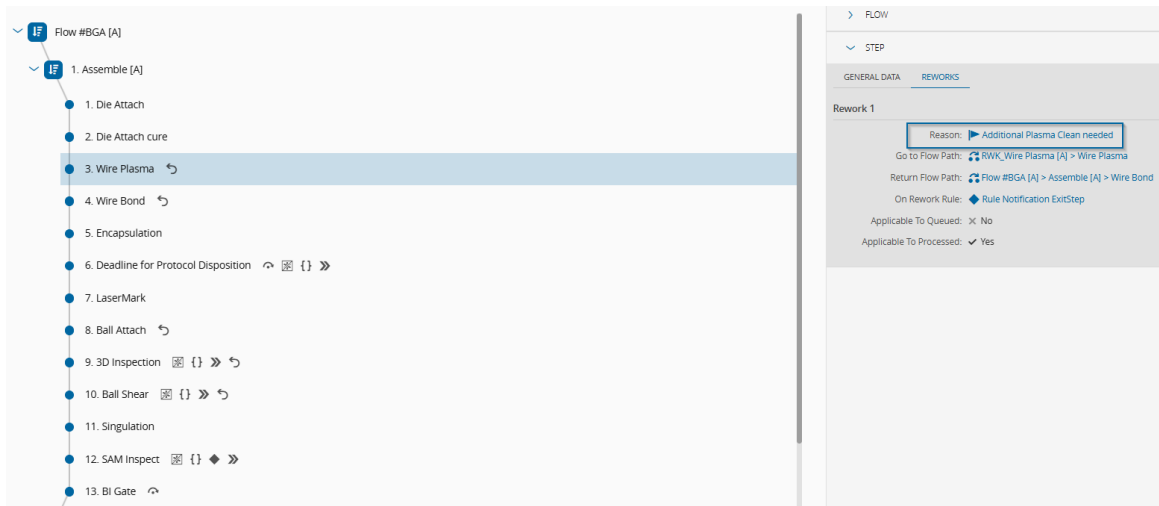


To begin, select **Edit** on the top ribbon and choose the **Step** where Rework will be configured. Then, open the Step Configuration panel by selecting the  icon on the right side of the **Step** section.

Use the  and  icons to add or remove Rework Paths for that **Step**, and for each Rework Path, specify:

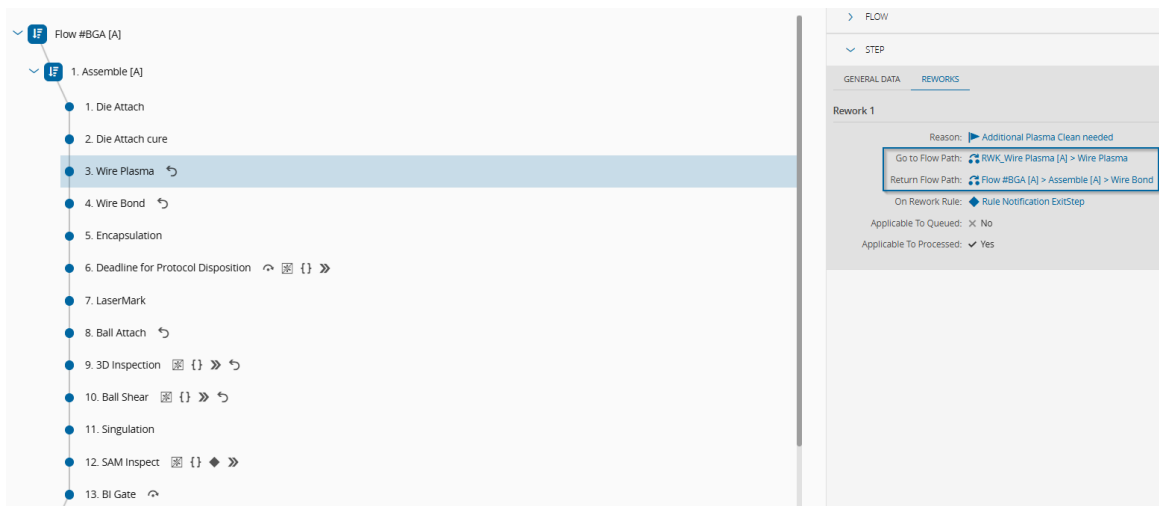
Reasons must be of type Off-Flow. They are configured at the **Step** level, and when assigning a **Reason** to a **Step**, it must be applied specifically for Rework. For more information, see [Manage Reasons](#).

You must associate one or more **Reasons**, and if multiple **Reasons** are defined for a given **Step**, you must select one when performing the operation.



Go To and Return Flow Paths

- **Go To Flow Path:** Specifies the Flow Path where the **Material** will be routed for Rework.
- **Return Flow Path:** Defines the Flow Path where the **Material** will re-enter after completing Rework. This Return Point can be the same **Step** from which Rework was initiated or a different one, depending on your process.



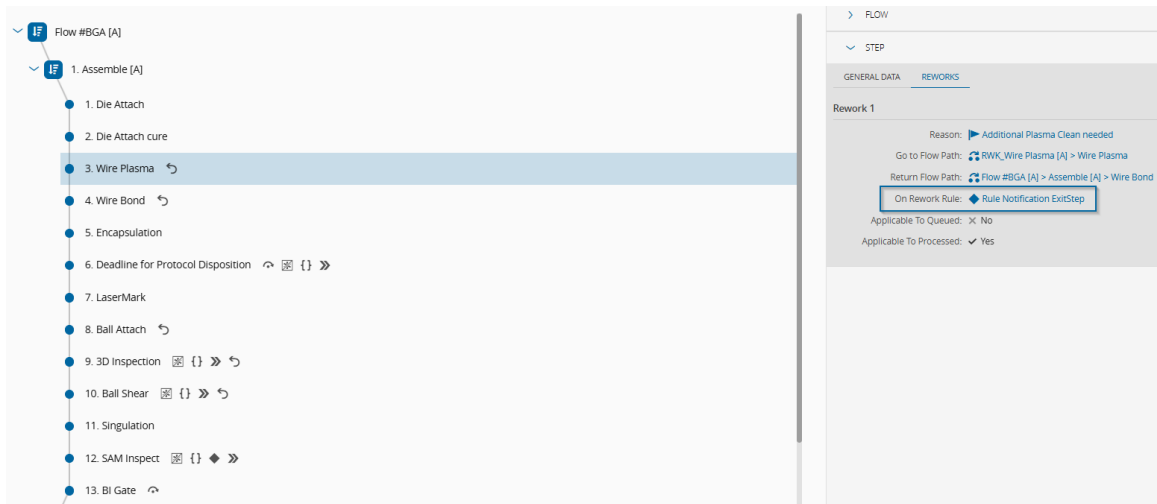
Security Feature

The `Material.ReworkOverride` security feature allows authorized users to override specific steps within the rework process. Access to this feature should be restricted to specific roles to ensure traceability and process control.

On Rework Rule

The On Rework Rule defines a specific **Rule** (linked to **DEE Actions**) of scope Material Tracking, that is triggered when a **Material** is routed through a Rework Path.

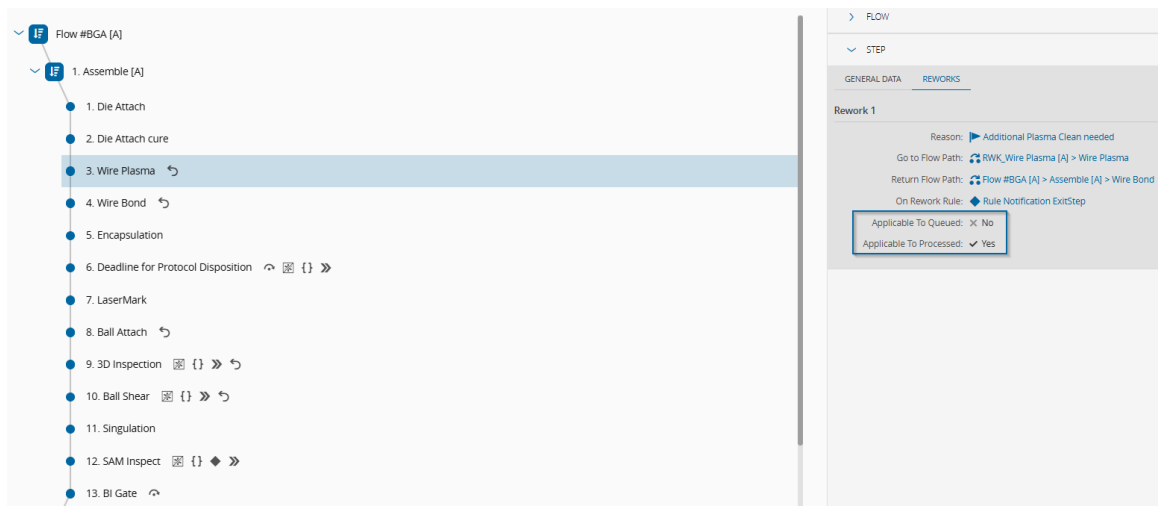
This **Rule** enables automated actions when entering or exiting a specific **Step**, such as sending notifications or opening a quality protocol.




Applicable States

- **Applicable to Queued** - Enables the Rework Path when the **Material** is in a Queued state.
- **Applicable to Processed** - Enables the Rework Path when the **Material** has already been Processed.

If the **Material** is not in the configured state, the system will prevent Rework.



The following video presents a general walkthrough of the Rework Path setup:

 **Note**

For more information, see [Rework Material](#).

Rework Limits

Excessive or uncontrolled Rework can compromise product quality, traceability, and overall efficiency. To prevent this, limits can be configured at the **Product**, **Step**, or **Reason** level, applied individually or in combination, based on your process needs.

This section explains how to set up Rework Limits, track Rework counts, and how to reset counters when needed.

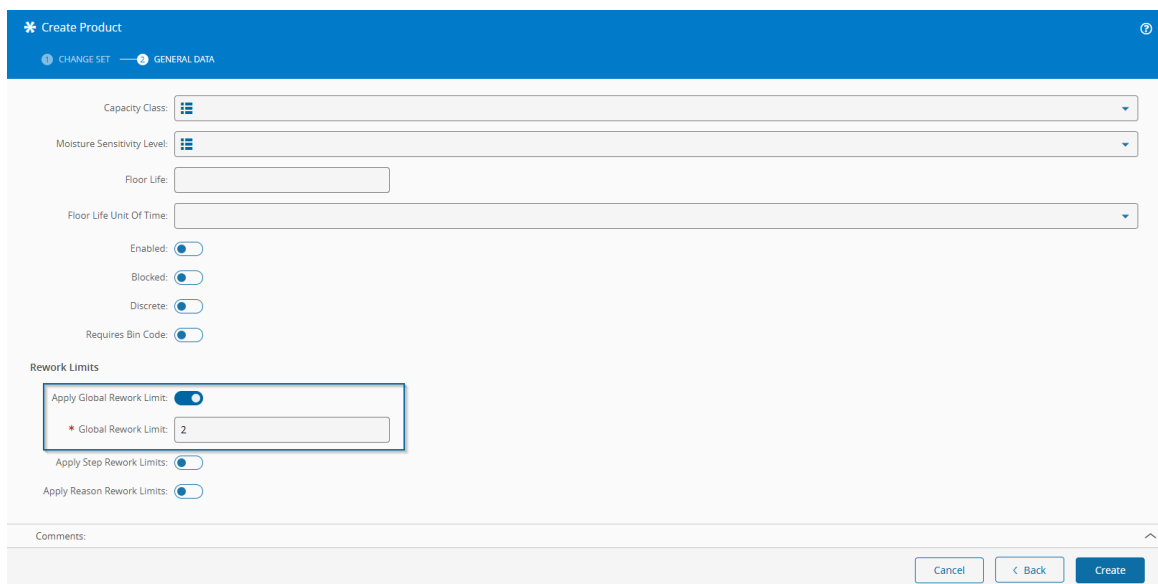
To begin, use the **Rework Limits** section under the General Data section of the [Create Product](#) wizard, as demonstrated below.

Apply Global Rework Limit

This limit sets the maximum number of times a **Product** can be reworked.

Select whether to Apply Global Rework Limits (defaults to `false`).

When enabled, define a Global Rework Limit greater than or equal to `0`. If set to `0`, the system will prevent Rework for this **Product**.



The screenshot shows the 'Create Product' wizard in the 'GENERAL DATA' section. The 'Rework Limits' section is highlighted with a red box. It contains the following fields and controls:

- Capacity Class: [Dropdown menu]
- Moisture Sensitivity Level: [Dropdown menu]
- Floor Life: [Text input field]
- Floor Life Unit Of Time: [Dropdown menu]
- Enabled:
- Blocked:
- Discrete:
- Requires Bin Code:
- Rework Limits**
 - Apply Global Rework Limit:
 - * Global Rework Limit: [Text input field with value '2']
 - Apply Step Rework Limits:
 - Apply Reason Rework Limits:

At the bottom of the form, there is a 'Comments' section and three buttons: 'Cancel', '< Back', and 'Create'.

To learn how to Apply Global Rework Limits, watch the following video:

`<iframe src="https://customer-40kvzg4z7gkyofrp.cloudflarestream.com/e96a517da70e12f03852373b9647336b/iframe?"`

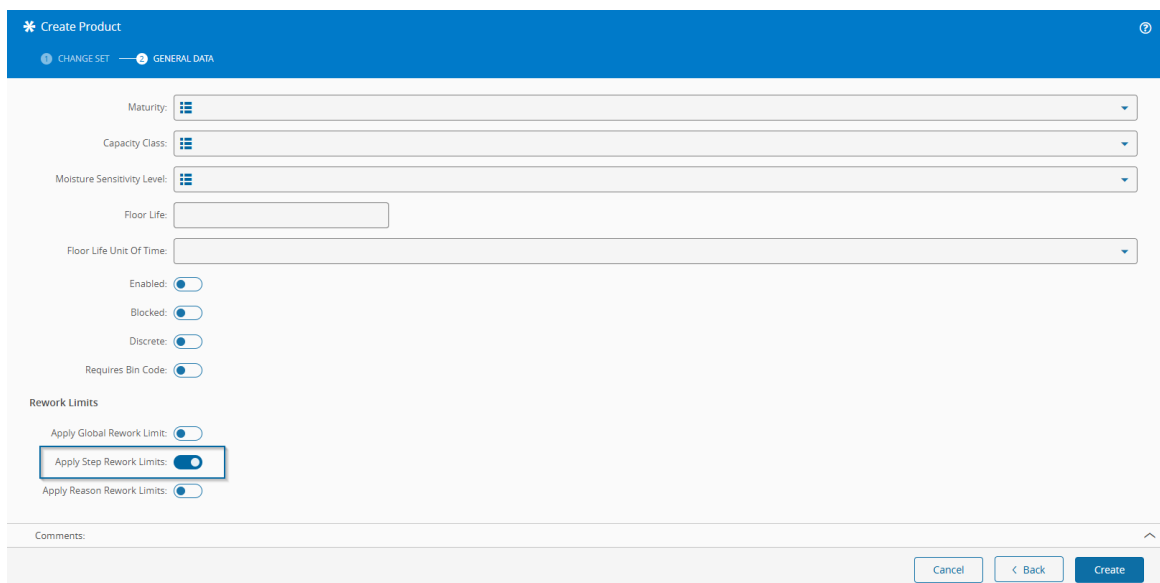
poster=https%3A%2F%2Fcustomer-40kvzg4z7gkyofrp.cloudflarestream.com%2Fe96a517da70e12f03852373b9647336b%2Fthumbnails%2Fthumbnail.jpg%3Ftime%3D%26height%3D600" loading="lazy" style="border: none; position: absolute; top: 0; left: 0; height: 100%; width: 100%;" allow="accelerometer; gyroscope; autoplay; encrypted-media; picture-in-picture;" allowfullscreen="true"

Apply Step Rework Limits

This limit controls how many times a **Material** can be reworked at a specific **Step**.

Select whether to Apply Step Rework Limits (defaults to `false`).

These limits are defined in the [Step Rework Limits Context](#) Smart Table, where each **Step** can be assigned a Rework Limit.



The screenshot shows the 'Create Product' interface with the 'GENERAL DATA' tab selected. The 'Rework Limits' section contains three toggle switches: 'Apply Global Rework Limits' (disabled), 'Apply Step Rework Limits' (enabled and highlighted with a red box), and 'Apply Reason Rework Limits' (disabled). Other fields include 'Maturity', 'Capacity Class', 'Moisture Sensitivity Level', 'Floor Life', and 'Floor Life Unit Of Time'.

To learn how to Apply Step Rework Limits, watch the following video:

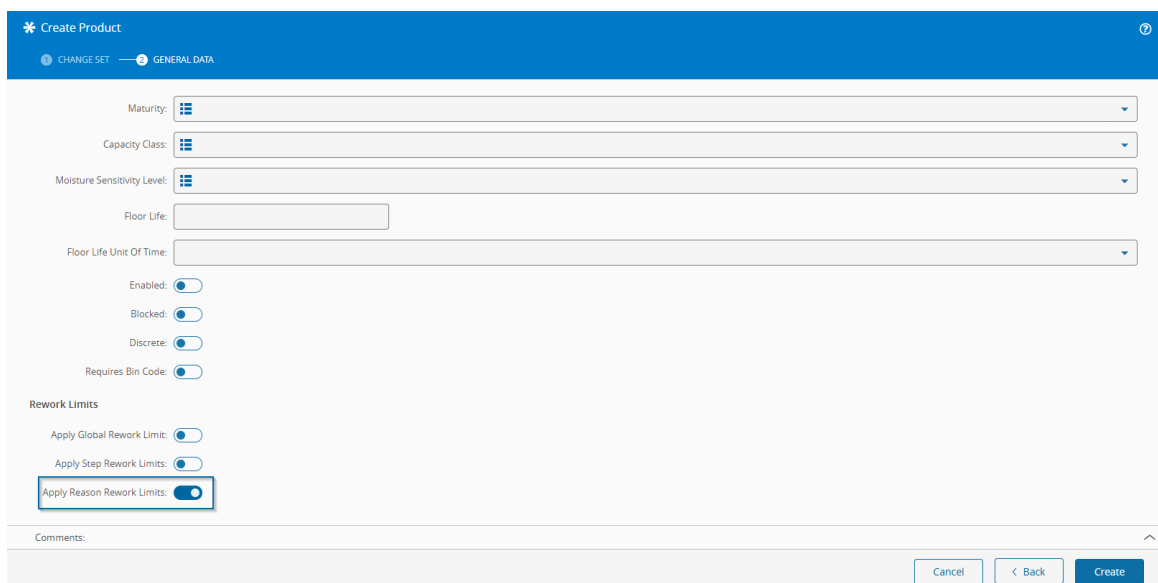
```
<iframe src="https://customer-40kvzg4z7gkyofrp.cloudflarestream.com/ef38720ece3ff82a13b8199432e1fbbe/iframe?poster=https%3A%2F%2Fcustomer-40kvzg4z7gkyofrp.cloudflarestream.com%2Fef38720ece3ff82a13b8199432e1fbbe%2Fthumbnails%2Fthumbnail.jpg%3Ftime%3D%26height%3D600" loading="lazy" style="border: none; position: absolute; top: 0; left: 0; height: 100%; width: 100%;" allow="accelerometer; gyroscope; autoplay; encrypted-media; picture-in-picture;" allowfullscreen="true">
```

Apply Reason Rework Limits

This limit controls how many times a **Material** can be reworked for a specific **Reason**.


Select whether to Apply Reason Rework Limits (defaults to `false`).

These limits are defined in the [Reason Rework Limits Context](#) Smart Table, where each **Reason** can be assigned a Rework Limit.



To learn how to Apply Reason Rework Limits, watch the following video:

```
<iframe src="https://customer-40kvzg4z7gkyofrp.cloudflarestream.com/dea551a5a1154983927954abe5ad89ee/iframe?poster=https%3A%2F%2Fcustomer-40kvzg4z7gkyofrp.cloudflarestream.com%2Fdea551a5a1154983927954abe5ad89ee%2Fthumbnails%2Fthumbnail.jpg%3Ftime%3D%26height%3D600" loading="lazy" style="border: none; position: absolute; top: 0; left: 0; height: 100%; width: 100%;" allow="accelerometer; gyroscope; autoplay; encrypted-media; picture-in-picture;" allowfullscreen="true">
```

 **Note**

For more information on how to configure Rework Limits on Products, see [Create Product](#).

Information about the Rework status is displayed in the Holds/Off-Flows/Rework section of the **Material**, under the **Reworks & Off-Flows** tab:

DR0225#B-125 (Active) 1

HOLDS/OFF-FLOWS/REWORKS

Refresh

HOLDS **REWORKS & OFF-FLOWS** REWORK COUNTERS

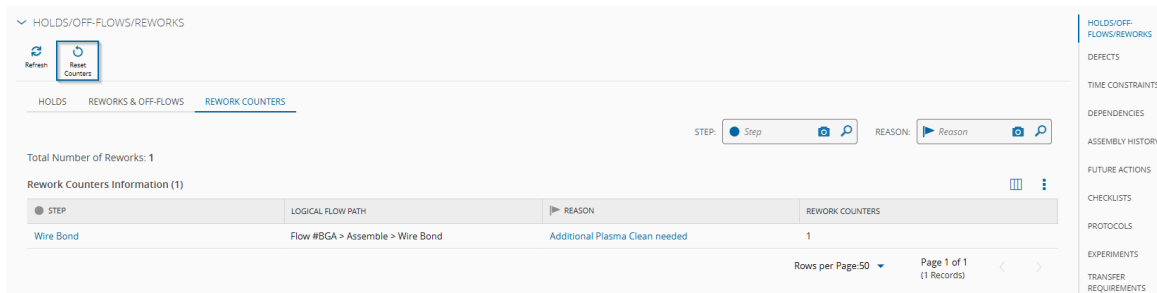
Rework and Off-Flow Information (1)

| ORDER | REASON | TYPE | FROM FLOW PATH | TO FLOW PATH | RETURN FLOW PATH | LINE REWORK TYPE |
|-------|--------------------------------|--------|--|-----------------------------------|--------------------------------------|------------------|
| 1 | Additional Plasma Clean needed | Rework | F-BGA [A] > Assemble [A] > Wire Plasma | RWK_Wire Plasma [A] > Wire Plasma | F-BGA [A] > Assemble [A] > Wire Bond | |

Rows per Page: 50 Page 1 of 1 (1 Records)

Reset Counters

The system tracks the number of times a **Material** has undergone Rework. If a **Material** has reached its configured Rework Limit but additional Rework is considered necessary, the `Material.ResetMaterialReworkCounters` security feature allows authorized users to perform a reset of the counters. For more information, see [Reset Material Rework Counters](#).



Refresh **Reset Counters**

HOLDS REWORKS & OFF-FLOWS **REWORK COUNTERS**

STEP: Step REASON: Reason

Total Number of Reworks: 1

Rework Counters Information (1)

| STEP | LOGICAL FLOW PATH | REASON | REWORK COUNTERS |
|-----------|----------------------------------|--------------------------------|-----------------|
| Wire Bond | Flow #BGA > Assemble > Wire Bond | Additional Plasma Clean needed | 1 |

Rows per Page: 50 Page 1 of 1 (1 Records)

Security Feature

Access to the `Material.ResetMaterialReworkCounters` security feature should be restricted to specific roles to ensure traceability and process control.

Final Considerations

Return Point

- **Prior to version 11.0:** the Return Point for a Rework Path was required to be within the same Child **Flow**.
- **Since version 11.1:** the Return Point can be set to to any **Step** within the Main **Flow**, making the configuration more flexible and practical.

Rework Path Inheritance

Flows inherit Rework Paths from their Child **Flows**. Therefore, Rework Paths configured within Child **Flows** are automatically available for **Materials** processed in the Parent **Flow**. For more information on this inheritance behavior, see [Rework Flow Paths](#).



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