Critical manufacturing
an ASM PT company

Overview

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Equipment Qualification

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Overview

In high-precision manufacturing environments, equipment readiness is critical to ensuring process stability, product quality, and regulatory compliance. After equipment installation, configuration changes, preventive maintenance, or component replacement, a formal validation process must be performed before the equipment is released for production use. This validation process is commonly referred to as **Equipment Qualification**.

Equipment Qualification verifies that a machine meets all operational, safety, and quality requirements. In practice, this is achieved by processing a dedicated **Qualification Material** through a defined **Flow** that includes the equipment or related item to be qualified. Successful validation confirms that the equipment is operating within the required parameters and is fit to process productive **Material**.

The **Qualification Check** feature provides a structured mechanism to manage this process. It enables the system to control, monitor, and enforce qualification requirements for:

- **Resources**
- **Sub-Resources**
- **Services**
- **Recipes**

A Qualification Check defines the validation logic and acceptance criteria. A Qualification Check may qualify multiple Qualification Items; however, each Qualification Item is always governed by exactly one Qualification Check.

Qualification can be triggered under several conditions, including:

- Periodic time-based requalification
- After preventive maintenance execution
- After part replacement or configuration changes
- Manual user request
- Automatic system-triggered events (for example, based on lot count or entity event codes)

The system can also:

- Automatically generate qualification instances
- Restrict equipment usage during tool changes
- Inhibit production until qualification criteria are satisfied
- Release qualification instances based on SPC compliance
- Qualify Services and Recipes based on time or usage

This tutorial demonstrates how to configure and execute Equipment Qualification. By the end of this tutorial, you will understand how to implement a robust qualification workflow that ensures only validated equipment and configurations are authorized for production.

Equipment Qualification Data Model

The following diagram illustrates the relationship between the main MES entities involved in Equipment Qualification.

```
graph LR
    A1[Maintenance<br>Activity] --- A2[Maintenance Activity <br> Qualification Check]
    A2 --- B1[Maintenance Activity <br> Qualification Check<br>Verification]
    A1 --- A3[Maintenance<br>Activity Order]
    A3 --- A4[Maintenance Activity<br>Order Qualification<br>Item]
    A2 --- Main[Qualification<br>Check]
    A4 --- Main
    A5[Maintenance Activity<br>Order Qualification<br>Check] --- Main
    A5 --- B2[Maintenance Activity<br>Order Qualification<br>Check Verification]
    A4 --- A5
    A5 --- A3
    Main --- C1[Resource<br>Service]
    C1 --- C2[Resource]
    C3[Resource Run<br>At Risk] --- C2
    C4[Recipe<br>Resource] --- C2
    Main --- C3
    Main --- C4
    C2 --- D1[Maintenance<br>Plan Instance]
    D1 --- D2[Area]

classDef mermaid_title color:#000, fill:#fafafa, stroke:#fafafa, stroke-width:0x, font-size:100%,
font-weight:200;
classDef mermaid_start color:#000, fill:#fafafa, stroke:#fafafa, color:#fafafa, stroke-width:0x,
font-size:100%, visibility: hidden;
classDef mermaid_businessdata color:#000, fill:#65CDE8, stroke:#65CDE8, stroke-width:0px, font-
size:100%;
classDef mermaid_nonbusinessdata color:#000, fill:#B7DEE8, stroke:#B7DEE8, stroke-width:0px, font-
size:100%;
classDef mermaid_entity color:#000, fill:#FB9F53, stroke:#FB9F53, stroke-width:0px, font-size:100%;
classDef mermaid_entitylinked color:#000, fill:#FCD5B5, stroke:#FCD5B5, stroke-width:0px, font-
size:100%;
classDef mermaid_context color:#000, fill:#B9CDE5, stroke:#B9CDE5, stroke-width:0px, font-
size:100%;
classDef mermaid_optional color:#000, fill:#B7DEE8, stroke:#65CDE8, stroke-width:1px, font-
size:100%, stroke-dasharray: 5 5;
class Main mermaid_entity
class A3,C2,D2,D1 mermaid_businessdata
class A1,A2,A4,A5,B1,B2,C1,C3,C4 mermaid_entitylinked
class L1 mermaid_context
class N1,N2,N3,N4,N5,N6 mermaid_nonbusinessdata

click Main "../../business-data/qualification-check"
click A3 "../../business-data/maintenance-activity-order"
click C2 "../../business-data/resource"
click D1 "../../business-data/maintenance-plan"
click D2 "../../business-data/area"
```

Tip

Continue learning with Configuring a Qualification Check.

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