

KDD089 - Material and Equipment Serialization

Status	Approved
Owner	HEARD-ext, Kevin
Stakeholders	

Issue

This Key Decision Document (KDD) outlines the decision, considerations and recommendations essential for determining and managing what materials will be serialized and whether equipment serialization is required to support business processes and incorporate new functionalities S/4HANA will bring to Syensqo.

This needs to provide Syensqo with a consistent approach to determining what materials are eligible for serialization from a maintenance perspective so that a global standard is followed for all sites.

Recommendation

Following comprehensive evaluation sessions and multiple business workshops, **Option C – Material Serialization** is confirmed as the chosen approach.

Equipment Serialization was not recommended, as the identified use cases (e.g. seals, motors, pumps) require traceability at the spare-part level rather than as installed equipment within the asset hierarchy.

Equipment Classification without Serialization offers simplicity and low cost but does not enable unit-level traceability, leading to compliance and warranty management limitations.

By contrast, Material Serialization allows individual spare parts to be tracked by serial number across plants, warehouses and maintenance orders, delivering the necessary visibility and control without adding unnecessary complexity to equipment master data. This approach supports global harmonization, regulatory compliance and balanced operational efficiency while maintaining a streamlined data model.

Background & Context

Syensqo is currently using serialization at some plants. While this solution has served its purpose, it has reached a point where it must evolve to accommodate the evolving needs of the organization. The SyWay project is introducing several new capabilities and functionalities that require a standard solution. Among these capabilities are enhanced Fixed Asset and Equipment integration, with seamless integration embedded in the SAP S/4HANA platform.

The primary goal is to standardize the way in which serialization is handled. The transition to SAP S/4HANA presents specific challenges that need to be addressed, particularly around integration and process optimization. In addition, the organization seeks to streamline maintenance workflows, ensuring greater operational efficiency and real-time access to data. The new approach should offer a comprehensive, user-friendly experience that enables users to manage tasks and responsibilities more effectively, while also improving data visibility and supporting informed decision-making.

This is aimed at ensuring a smooth operational transition during the SAP S/4HANA transformation, enabling Syensqo to fully capitalize on the new features within SAP S/4HANA such as real-time asset and material tracking.

Assumptions

- Serialization is only required for selected spare parts (e.g. seals, pumps, motors) where traceability is critical.
- No requirement to manage this equipment master data as a rotatable for these parts, since they will not be installed and dismantled within the functional location structure.
- All sites will adopt the same global rules for identifying serialized materials.
- Plant-level serialization will still be allowed based on the guidelines provided below as the use cases where materials are shared between plants is limited.
- Material type ZIND, UNBW will be used to group serialized spare parts.

Constraints

Project Timeline: The serialization solution must be implemented within the timeline set for the SyWay project.

Master Data: Requires harmonization of material master records to be serialized across business units to avoid duplicate records.

Change Management: Business users must adapt to new processes in stores and maintenance orders involving serialized spare parts.

Training: Warehouse and maintenance personnel will require targeted training to handle serialized materials correctly with stock movements and maintenance orders. Additional guidance will be needed for reporting and process checks related to serialization throughout the asset lifecycle.

Impacts

Benefits:

- Improved traceability of critical spare parts when the material is held in inventory, enhancing visibility across plants and orders.
- Reduced master data and process complexity by avoiding unnecessary equipment rotation (install/dismantle) and the associated complexity around the rotatable process.
- Consistent global approach across all Syensqo business units.
- Better support for regulatory, warranty and compliance tracking.

Challenges:

- Training required for warehouse and maintenance users to handle serialized materials.
- Additional process checks and discipline needed when issuing or returning serialized spares.
- Reporting needs to be adapted to leverage serialization fields.

Business Rules

After a series of workshops conducted with the business, below are the guiding principles to be considered for material serialization eligibility:

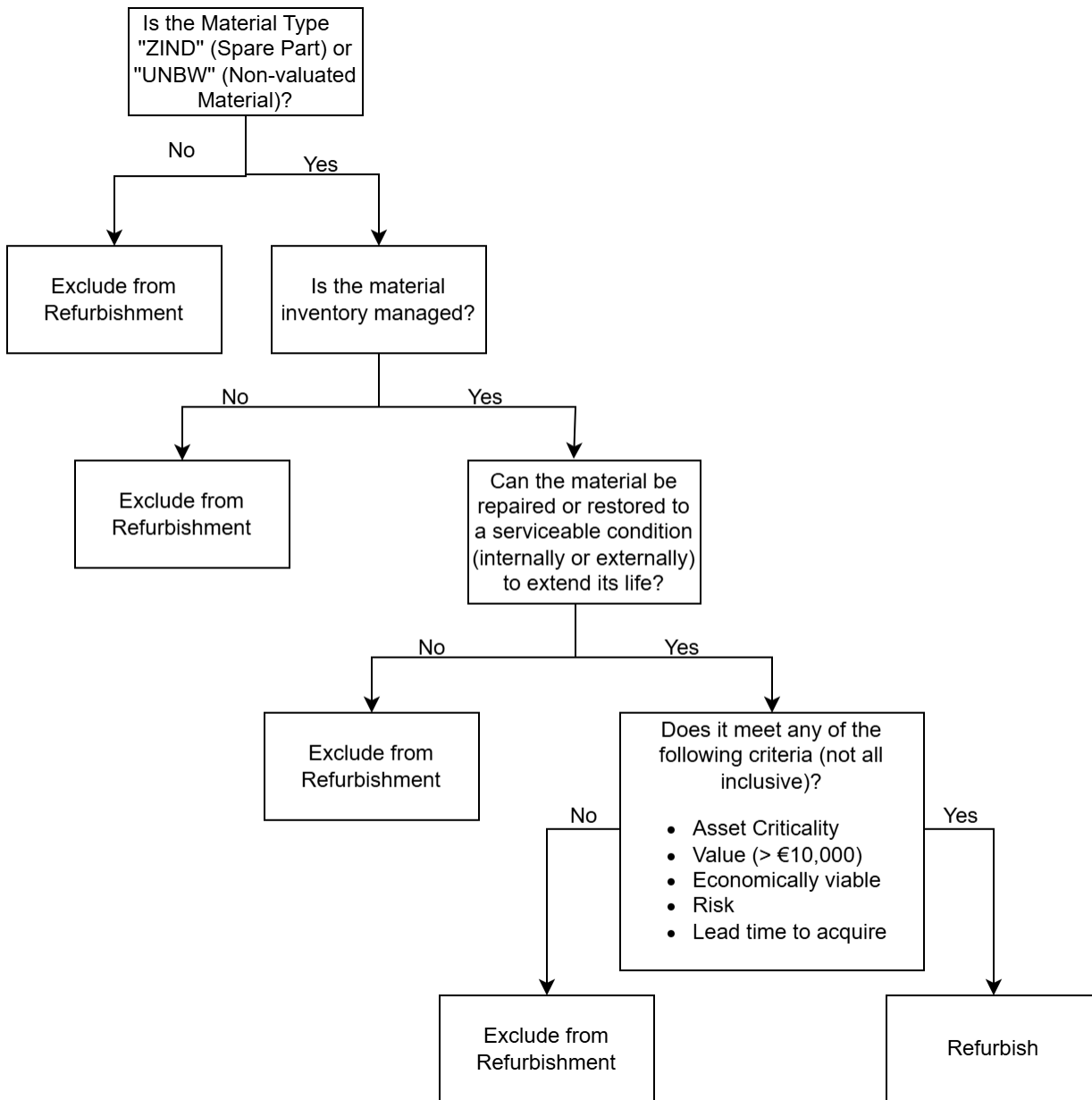
1. **Capital Spares** - All capital spares must be serialized. A spare part is considered a capital spare if its value is €15,000 or higher.
2. **Refurbishable Material** – Any spare parts managed through the formal refurbishment process must be serialized. Serialization ensures that each refurbished item is individually tracked throughout its lifecycle, from initial use to refurbishment and reuse.

This criteria represent the minimum global standard for Serialization.

However, plants may choose to refurbish additional spare parts beyond the mandatory criteria. The following decision tree and points outline additional situations where material refurbishment is recommended. Such flexibility allows sites to maintain additional control where beneficial, while ensuring a consistent global baseline across Syensqo.

Recommended Site-Level Decision Criteria for Refurbishable Materials

Each site is encouraged to review and assess their spare parts against the following considerations to identify additional candidates for refurbishment:



- **Asset Criticality** – Materials essential for maintaining safe, reliable, or continuous operations, where failure or unavailability could impact production or safety.
- **Value (>€10,000)**– Repairable spare parts with a value greater than €10,000.
- **Economically viable** – Material makes economic sense to repair rather than to replace with a new one.
- **High-Risk** – Materials linked to safety, quality, or compliance requirements, or those causing significant downtime if unavailable.
- **Lead Time to Acquire** – Materials that require an extended period to source, manufacture, or deliver, potentially affecting maintenance or production schedules.

Identification of Capital Spares

A Capital Spare to be held in inventory can be identified by the following Material Master attributes:

1. **Material Types** = UNBW
2. **Material Group** = 2130000 Inventory: Spare Parts
3. **Critical Part Flag** = active

If either of the above criteria is met, the spare part must be serialized.

Note:

- The specific parameters of the above guiding principles will be set by the business and detailed in the Material Master MDS relating to the material Serialization profile.

- The configuration workbook will also contain details for the Serialization profile setup.

Options Considered

Option A: Fully Fledged Equipment Serialization

In this approach, each serialized part is created as an equipment record in SAP, meaning individual spare parts, such as a mechanical seal, pump, or motor, exists as an equipment master and can be installed or dismantled within the asset hierarchy. This enables full lifecycle traceability, from procurement to decommissioning and disposal. Each item can be linked to a functional location, capturing detailed usage history. It also supports advanced scenarios such as preventive maintenance, asset performance monitoring, and digital twins at the part level, with strong integration into Asset Accounting and other SAP modules.

However, this approach creates significant master data volumes, potentially thousands of new equipment records for parts that may never require equipment-level management. It adds complexity to maintenance processes due to install and dismantle transactions, requiring additional data entry for each spare part. End users would face higher training and governance efforts, and the solution is generally over-engineered for the stated business need of tracking spare parts rather than managing their rotatable lifecycle. Furthermore, system governance, process discipline and storage requirements would likely increase.

Option B: Equipment Classification without Serialization

This approach manages spare parts through material classification only. Materials can be refurbished and reused, but no unique serial number is assigned. It offers a very simple setup with minimal master data requirements and avoids system complexity, as materials remain generic. End users benefit from easier stock management because there is no need to handle serial numbers. This method works well when part interchangeability is high and unit-level traceability is not required.

The downside is that unit-level tracking is impossible, meaning it is not possible to distinguish between identical parts. Lifecycle information for individual items, such as refurbishment history or usage location, cannot be captured. Support for warranty management, compliance reporting, or investigation of recurring failures is limited, and visibility across plants and maintenance orders is lacking. This approach fits high-volume, low-value, low-criticality spare parts or consumables with short lifecycles where tracking effort outweighs the benefit.

Option C: Material Serialization - Recommended

With material serialization, materials are serialized in the material master so that each unit receives a unique serial number, but no equipment object is created. Serial numbers are tracked through logistics and maintenance processes, including goods receipt, issues to orders, returns, and stock transfers. This approach provides unit-level traceability without the overhead of managing rotatable equipment records.

Material serialization aligns directly with business needs, allowing spare parts to be tracked in stores, across plants, and within maintenance orders. It supports regulatory, warranty, and compliance requirements where unit-level visibility is mandatory, while remaining simpler to manage than full equipment serialization, reducing training needs and process overhead. The approach ensures a globally harmonized process and offers a balanced solution that avoids over-engineering, while still delivering traceability.

The main limitations are that detailed maintenance history per unit, such as install and dismantle information within the asset hierarchy, cannot be recorded. Some reporting adjustments are required to fully leverage the serialization fields, and users must be trained to handle serialized materials correctly within inventory and maintenance orders. This approach is ideal for spare parts such as mechanical seals, motors, and pumps where the business needs to know the part's location and usage but does not require installation tracking. It also works for refurbished or reusable items that move between plants and for materials subject to warranty, compliance, or low-volume, high-value risk where unit-level visibility is essential.

Evaluation










The evaluation focused on four dimensions: complexity, feasibility, implementation effort and cost, and ongoing operational impact, while also testing each option against the program principles of simplicity, standardization, and global harmonization.

Option A would deliver maximum traceability but with very high complexity, cost, and master data overhead, making it disproportionate to Syensqo's needs.

Option B is simple and low-cost but fails to provide unit-level traceability, creating compliance and warranty gaps.

Option C strikes the right balance; it enables serial-level tracking without unnecessary equipment records, is feasible to implement, aligns with program principles of simplicity and harmonization, and minimizes ongoing operational impact.

	Option A - Equipment Serialization	Option B - Equipment Classification w/o Serialization	Option C - Material Serialization
Traceability & Compliance	<ul style="list-style-type: none"> + Full lifecycle traceability, strong compliance support - Over-engineered for spare parts 	<ul style="list-style-type: none"> - No unit-level traceability - Limited compliance and warranty tracking 	<ul style="list-style-type: none"> + Unit-level traceability across plants and orders + Supports regulatory and warranty needs

Complexity & Master Data Effort	<ul style="list-style-type: none">  Significant increase in master data records  Complex maintenance processes 	<ul style="list-style-type: none">  Very low complexity, minimal data effort 	<ul style="list-style-type: none">  Balanced effort – serial numbers without equipment objects  Some reporting and training adjustments needed
Business Fit / Process Alignment	<ul style="list-style-type: none">  Misaligned – designed for installed assets, not spare parts 	<ul style="list-style-type: none">  Simple fit for low-value consumables  Insufficient for critical spares 	<ul style="list-style-type: none">  Aligned to business needs – tracks spares without equipment overhead

See also

[Approval KDD 089 - Serialization.eml](#)

Change log

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v. 47	Nov 17, 2025 13:34	SARUKAN-ext, Ayse	
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