

# Process-orientated material management

One of the central instruments for the effective management of order or recipe controlled production processes, is a material management system working close to the process that offers transaction-accurate online views on material movements. They are recorded based on a warehouse structure defined compliant to the process and beside a precise inventory management they also allow examination and analysis, especially tracking & tracing. Plant iT material provides this functionality as a module that is flexibly combinable with all other Plant iT components, so that especially production data management applications can be enhanced by adding a material-related view.

## Master data management

The relevant properties of storage locations, materials and storage transactions are parameterized within the system. Beside a comprehensive set of properties Plant iT material particularly considers the requirements of the process industry regarding the definition of storage locations by distinguishing between different types:

- **Automatic storage location (Storage Unit):**  
permanently attached to the plant, material movements controlled by automation system (e.g. tanks, silos)
- **Manual storage location:**  
not connected to the plant, material movements done manually (e.g. fork lift) or controlled by external system (e.g. automatic transport system)
- **Docking storage location:**  
temporarily connected to the plant by automated docking device, material movements controlled by automation system (e.g. containers, big bags)

Materials with an identical set of relevant properties are summarized in material classes (e.g. liquid goods, granulates, finished products) and described by parameterizing these properties. The system distinguishes between

- Material parameters and
- Batch parameters,

which enable the correct consideration of material properties that may change with every single batch of this material (e.g. agent concentration). Storage transactions are in the first step categorized by booking type (e.g. inflow, outflow) and then rendered more precisely by means of transaction keys (e.g. stock receipt bulk ingredients, automatic dosing). Each warehouse transaction is allocated to one booking type and one transaction key for allowing more accurate selections during data analysis. The recording of material movements normally takes place automatically, triggered via system-internal standard interfaces by the single system components. But they can also be entered manually via the operator front end of Plant iT material.

## Investigations and analysis

Stock overviews (warehouse status) as well as transaction overview (list of selected warehouse transactions) are directly available within Plant iT material. The flexible combination of

- warehouse/storage location,
- materials/material classes,
- time period,
- order/batch ID,
- goods receipt ID,
- supplier's batch ID,
- booking types and
- transaction keys

makes these standard views to be very efficient tools. The details of every warehouse transaction is directly accessible online and the use of special archiving methods keep the system response time high even with large quantity of data without losing detail information. Depending on the type of storage location Plant iT material allows direct operator interaction ranging from spontaneous stock taking to triggering the connection or disconnection of a container.

## **Tracking & Tracing**

From the standard views (stock and transaction overview) there is direct access available to the consistent tracking & tracing function of Plant iT material. Starting from an arbitrary entry point batch tracking analysis can be carried out in both directions. A view splitted in predecessors (upstream) and successors (downstream) with visualization structured the same way as in stock and transaction overview makes it easy to navigate and survey.

When running order-related production using Plant Batch iT or Plant Liqui iT, their batch records are seamlessly interconnected with the tracking & tracing. Plant iT material allows to navigate directly to the batch records of Plant Batch iT or Plant Liqui iT and back, so that even units not defined as a storage location can be subject to tracking & tracing.

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