DOS Innovations

Version 5.12

Manual

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Content

1 Concept

ⓘ This manual assumes knowledge in the use of FORCAM FORCE IIOT.
If you do not have any knowledge of using FORCAM FORCE IIOT, take the time to familiarize yourself with the basics.

We recommend that you use our Academy.

The FORCAM Academy (https://forcam.com/academie/) provides the knowledge to effectively use the methods for digital transformation and the technologies for the Smart Factory.
Based on lean manufacturing and TPM methods, our institute team will guide you to initiate changes in the company and to use the technologies correctly.

The Detailed Order Scheduling (DOS) is a module in FORCAM FORCE IIOT for detailed production planning and -control. The basic purpose is to determine machine occupancy of the workplaces to be scheduled, while also considering the limited capacity.
The DOS is designed for use in the operational production environment and is intended to support the dispatcher in reacting quickly to changes in the production environment (e. g. machine malfunctions, urgent orders, etc.).
In addition, helping the dispatcher with the task of optimally guiding the ever-increasing number of orders through the production process from a scheduling perspective.

The general functions of the DOS are described in the manual **Detailed Order Scheduling**.
This document informs about newest functions of the DOS and guides the user on how to use them correctly.

2 Alternative workplaces per operation

The FORCAM FORCE IIOT DOS supports the scheduling of alternative workplaces, which is used when planning in groups of workplaces.
Alternative workplaces are used whenever there are bottlenecks or downtimes on machines. This means that production is shifted to other machines of equal capacity so that there is no interruption.

The designation of workplaces as alternative workplaces is done using the **Maintain alternative workplaces** function.

To call up the alternative workplaces window:

1. Right-click in the relevant planning area and click on **Maintain alternative workplaces** in the context menu.
   ➔ The display changes to the selection of alternative workplaces (see below).

The following figure shows the existing configuration page of workplaces:

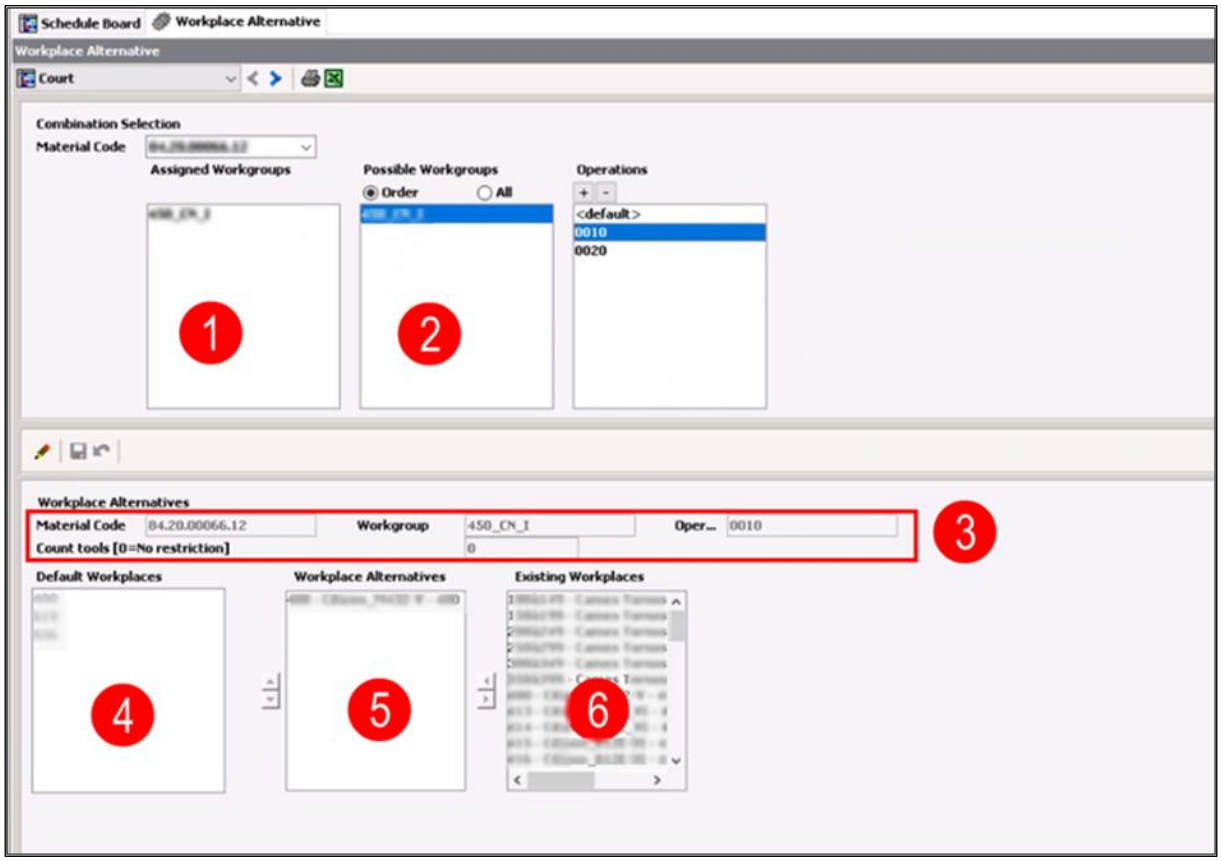

Figure 1: Maintain alternative workplaces

(1) List of all workplaces where an alternative workplace has been defined for the selected material
(2) List of all available SAP workplaces
Order:
All possible workplace groups for the selected material

All:
All possible groups of workstations (regardless of the material)

(3) Additional information about which material can be processed at which workplace group and if tools restrict scheduling
(4) List of all default workplaces that belong to the workplace group
(5) List of all alternative workplaces that were selected manually and belong to the workplace group
(6) Complete list of all available workplaces that can be designated as alternative workplaces

The function to determine an alternative workplace per operation has been added in FORCAM FORCE IIOT release version 5.11. If two or more operations of an order have the same ERP workplace, but the alternative workplaces are different, the alternative workplaces can be determined per operation.

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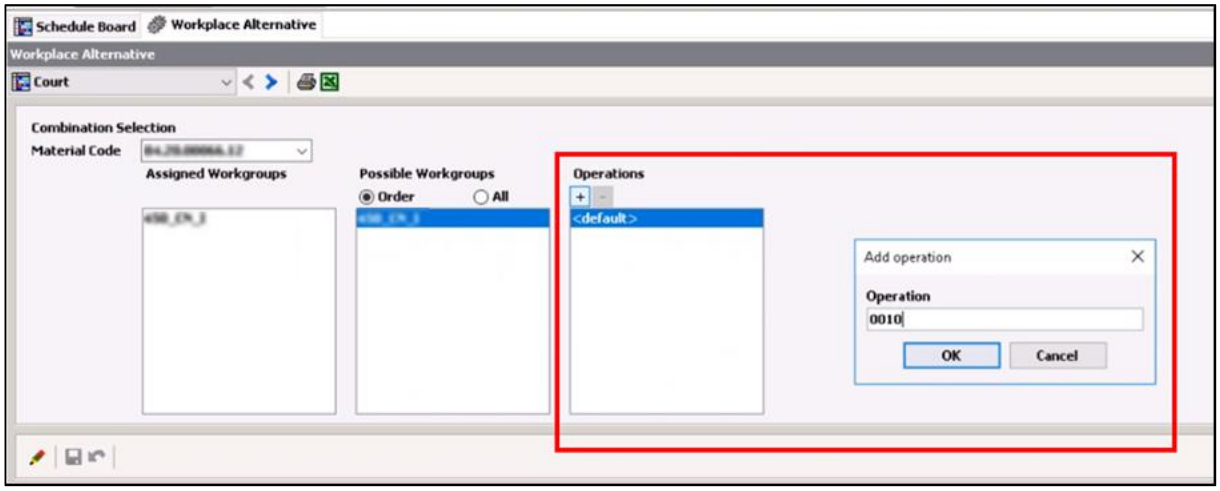

Figure 2: Alternative workplace per operation

To select an alternative workplace per operation:

2. Select the desired material in the upper left drop-down menu at **Material number**.
   The corresponding workplaces will only be displayed after the material number has been selected.
3. Select an alternative workplace on which the operation is to be carried out under **Possible SAP workplaces**.
4. Click on the add icon under **operations**.
5. In the subsequent dialog, enter the operation to be performed on the selected alternative workplace.
6. or, if necessary, add another operation.
7. Select one or more alternative workplaces from the **Existing Workplaces** list in the bottom part and move to **Alternative-Workplaces** by clicking the left icon.
8. or, if necessary, select another operation and add another alternative workplace to it.
9. Save.

3 Use configured piece time

The "piece time" or "time per unit" is dependent on operation and material number and is provided by the ERP for each individual AVO. Among other things, it is used to calculate the duration of an AVO during planning, i. e. target quantity * time per unit + setup time.

There can be various reasons why the ERP specification should not be used in planning or in the MES environment. For this reason, there is the option to record alternative times in the master data maintenance of FORCAM FORCE IIOT. Production time per unit can be defined here:

Path: Master data > Production Data Acquisition > Production time per unit

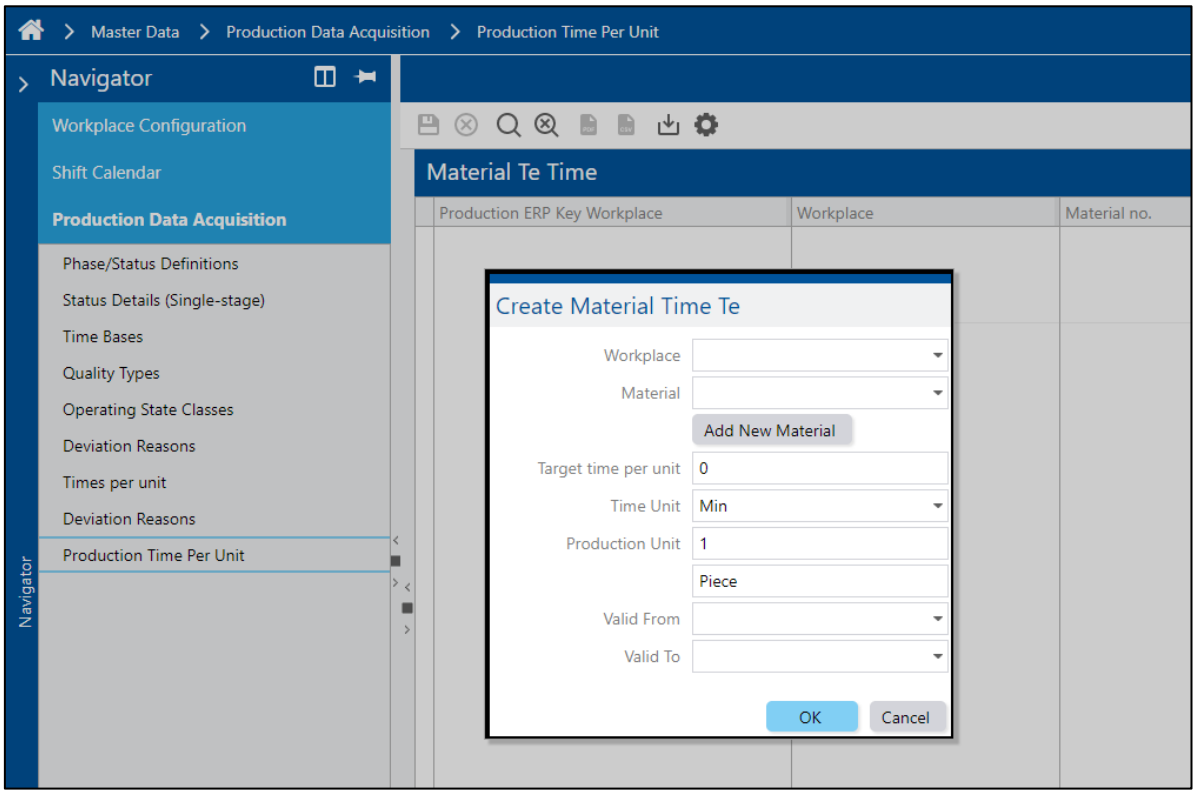

Figure 3: Production time per unit

The DOS uses the Time per unit/piece; piece time for its calculations of the AVO duration. The entry Use configured piece time is new.
If a check mark is set, the DOS checks whether Production times for the planned period are stored in the Workbench for the workplace-material number connection. If this is the case, the corresponding time is used. If no period is predefined in this way, the piece time stored in the order is used for the calculation as before.

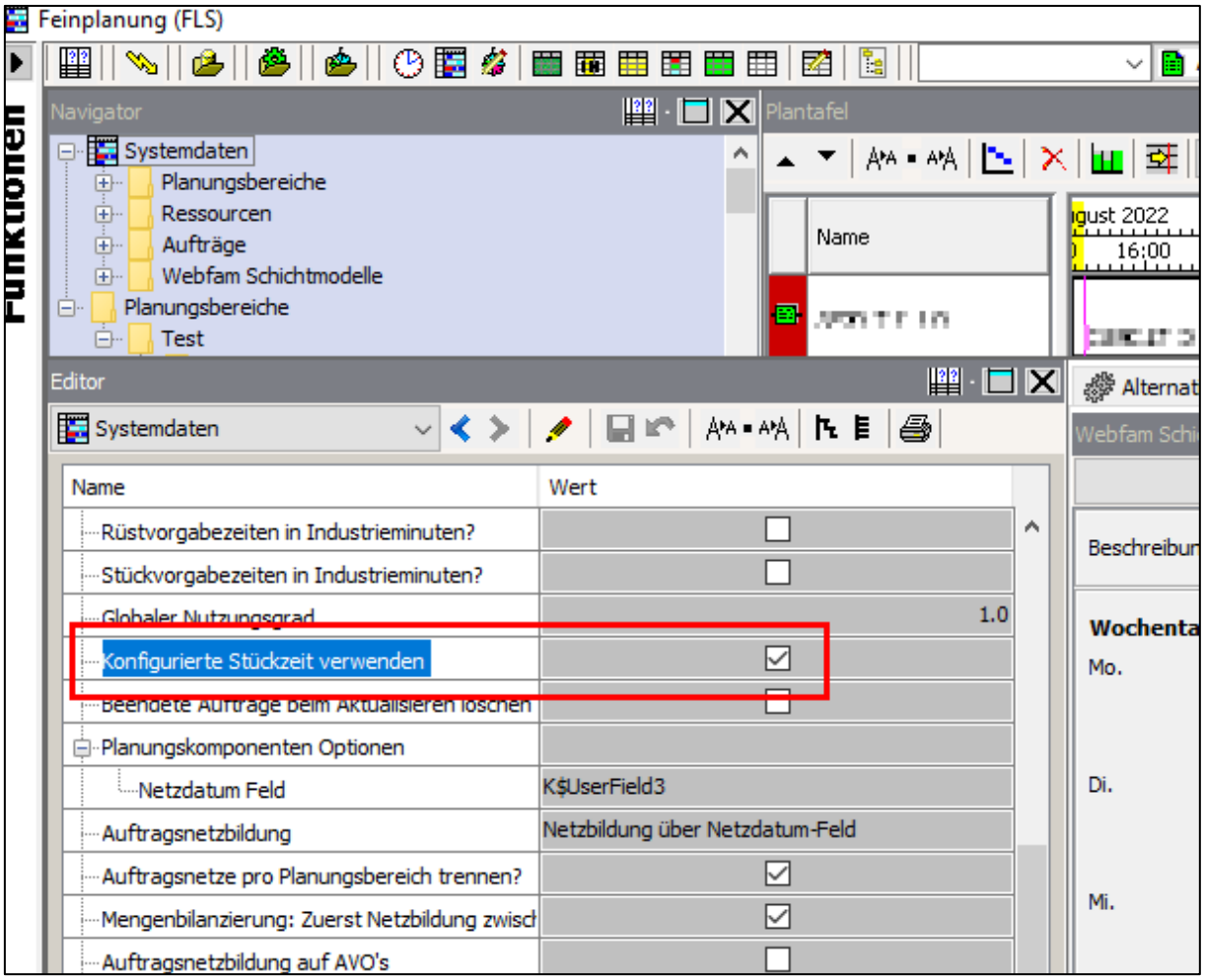

Figure 4: Use configured piece time

4 Grouping of orders by characteristic

Orders can be grouped by characteristics in the DOS. This facilitates production scheduling when orders with the same characteristics are to be processed one by one.
Example:
The characteristic that is grouped by is a color code. As a result, all red parts are summarized in one group, all green parts, and all blue parts. This means that after the first order with a red component, the next order is processed, which also contains a red component.

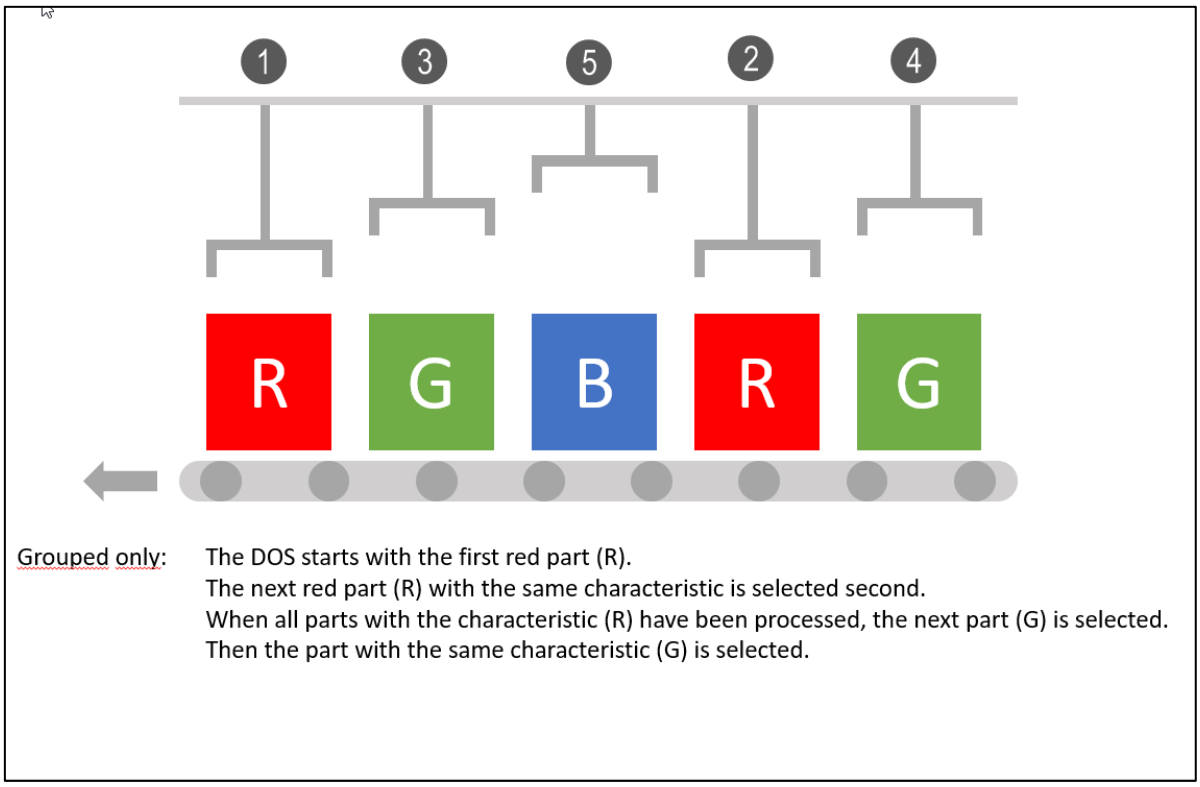

Figure 5: Orders grouped only

In addition to grouping, it is also possible to sort the orders. These are then sorted according to the characteristic value. For example, if the value is a string, the sorting is alphabetical, for numbers it is ascending.

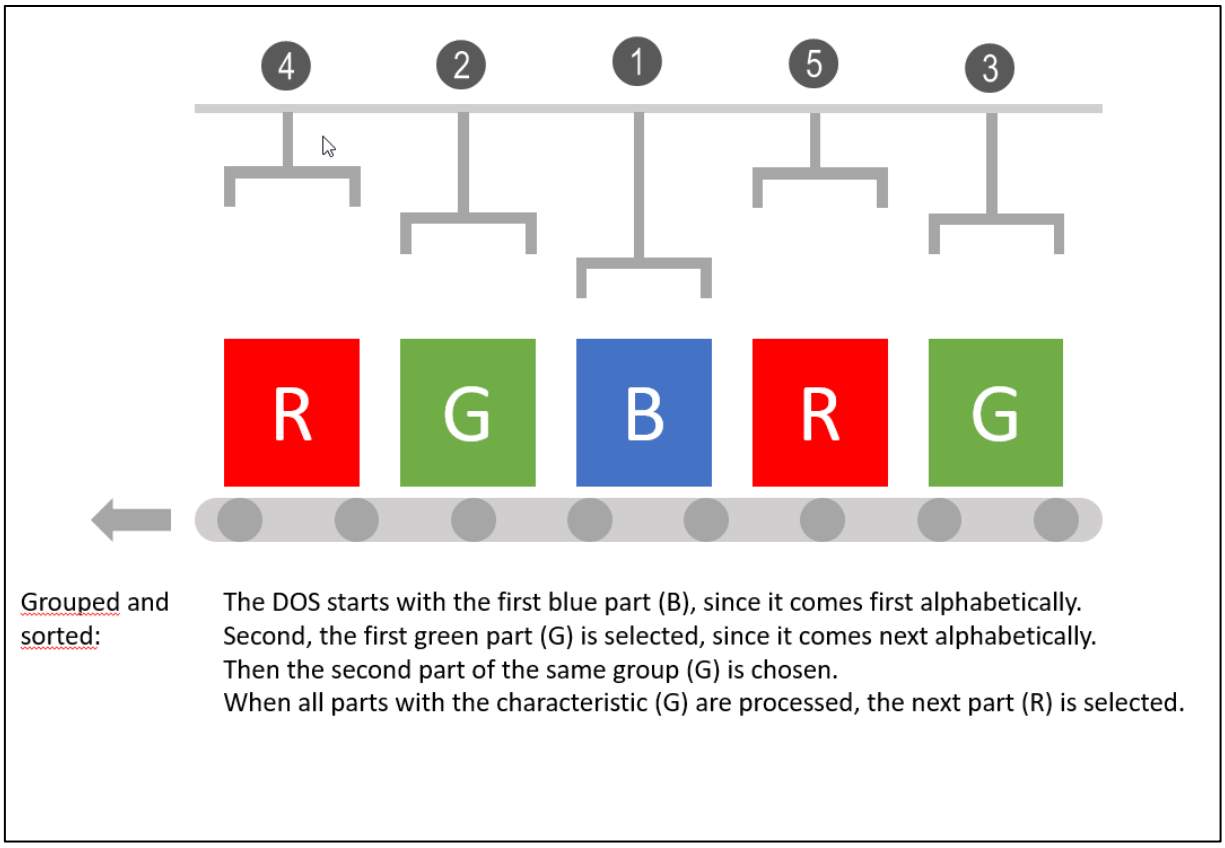

Figure 6: Orders grouped and sorted

Sorting was previously active by default in DOS. New in the DOS is the option **sorted** in the **backsplash editor** to switch sorting on or off manually.
Only if a check mark is set, the orders are also sorted in addition to the grouping

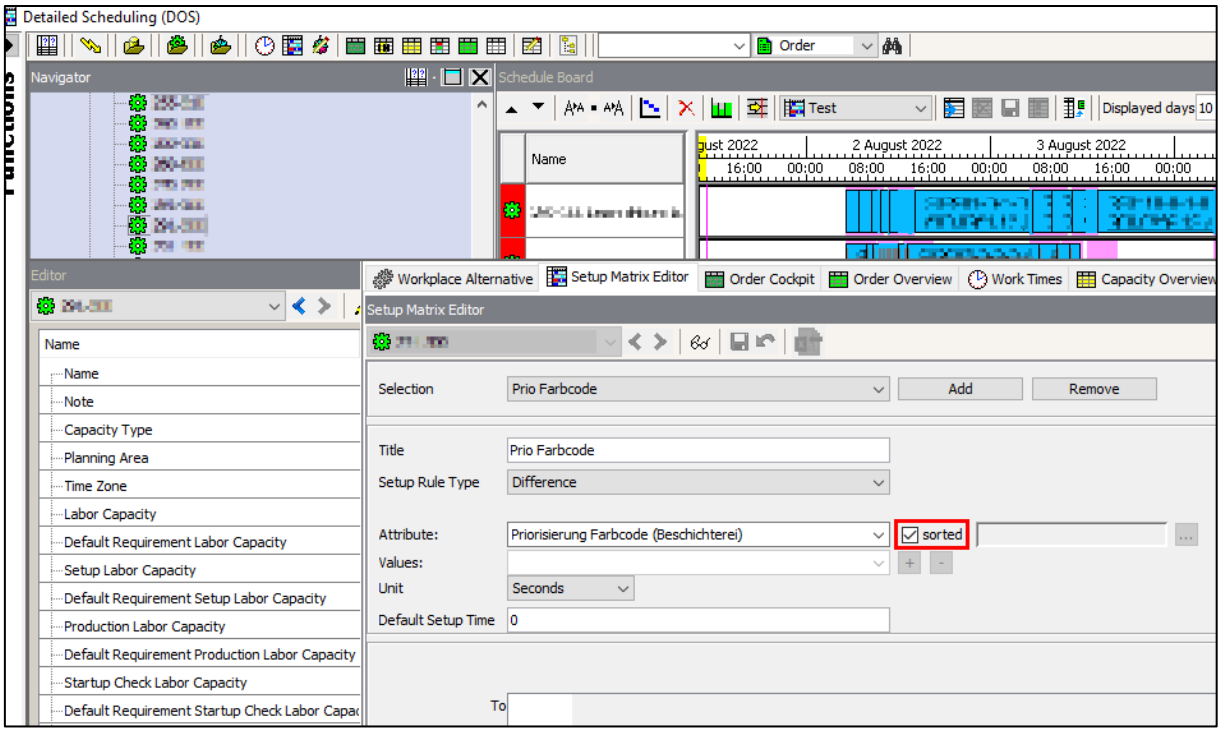

Figure 7: Backsplash editor

5 Annex

5.1 Table of changes

Date	Doc.-Version	Change	Chapter
30.10.2020	1	First creation	
30.10.2020	1	Chapter added	2
16.08.2022	2	Chapter added	3, 4
16.08.2022	2	Annex added	5

5.2 Abbreviations and terms

Abbreviations	Description
AVO	Operation
ERP	Enterprise Resource Planning
DOS	Detailed Order Scheduling
Te	piece time

5.3 Table of Figures