BATCHMASTER® ERP 18.2

User Guide

BatchMaster ERP with SAP Business One
BatchMaster Solutions for
Process Manufacturers

Routing

Copyright and Legal Information

About the Manual

Symbols & Conventions

Symbol	Description
	Note
	Mandatory setting
	Tips

Convention	Description
Italicized (*Sales Order Entry*)	Module name, screen name & components
" " ("BatchMaster ERP with SAP Business One Hardware and Software Requirements Document")	Reference document

Abbreviation	Description
BOM	Bill of Materials
ERP	Enterprise Resource Planning
FG	Finished Goods
QC	Quality Control
QTY	Quantity
UOM	Unit of Measure
WHSE	Warehouse

Contents

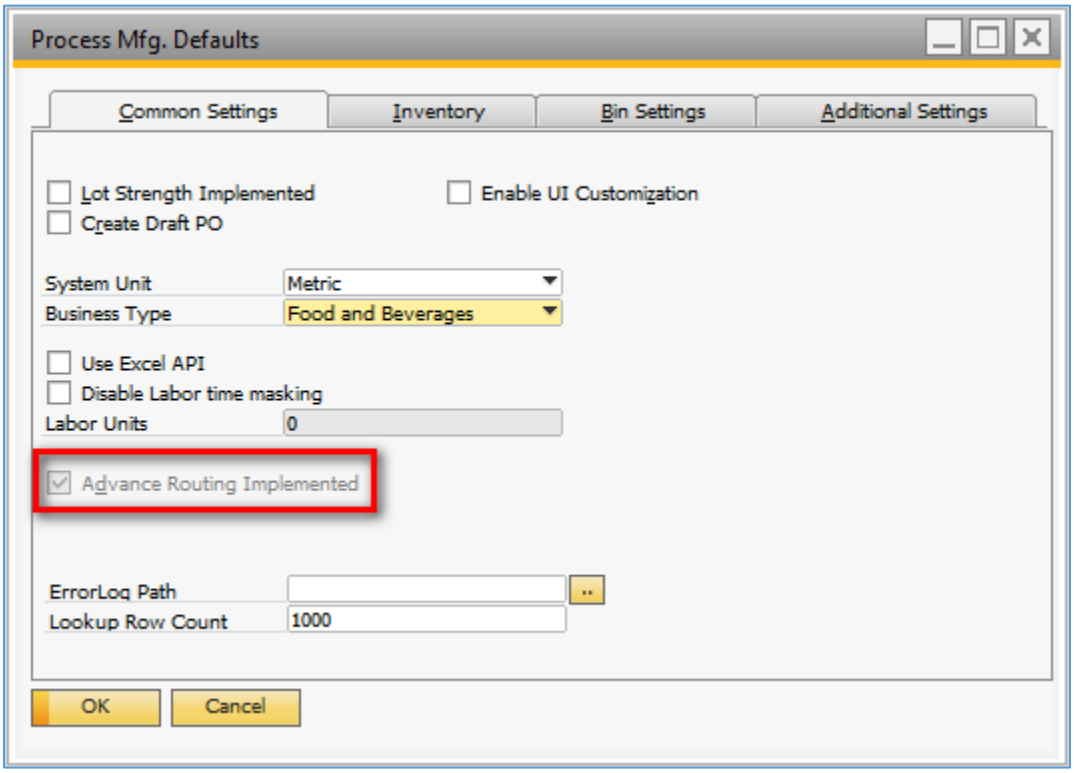
1 Routing

BME-B1, through Routings, lets you define a process detailing a sequence of operations to be followed to manufacture the product in a single batch production order.

Routing defines the movement path of raw materials through various machines and operations from the beginning point of the manufacturing process to the time of its completion in its finished form. Routing thus determines what work will be performed on the manufactured goods, where it will be performed, and who will do it. It establishes the operations, their path and sequence, and the proper class of machines and personnel required for each operation. Using it, you can easily optimize the supply chain to get the finished item at the earliest time at the minimum cost.

1.1 Activate the Routing

Enabling Routing is one time irreversible process in the company database. On the *Process Mfg Default* screen, on the Common Settings tab, the *Advance Routing Implemented* checkbox is provided. Selecting it activates Routing in the database and imposes on any batch to be processed the defined routing stages.

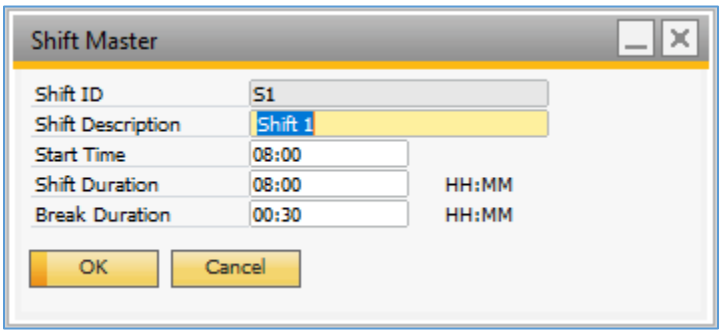


Implementing Routing overrides the Process Stages functionality.

Default Process ID field will be disabled on the *Production Default* screen.

1.2 Shift Master

Use the *Shift Master* screen to define the work shifts of your organization. On this screen you can set the *Start Time* of the shift, *Shift duration* and the *Break duration*. Accordingly, the system calculates the available working time per shift.



Shift ID: The unique identifier of the work shift.

Shift Description: The name or description of the working shift. This is a mandatory field.

Shift Time: Enter the time at which the work shift begins.

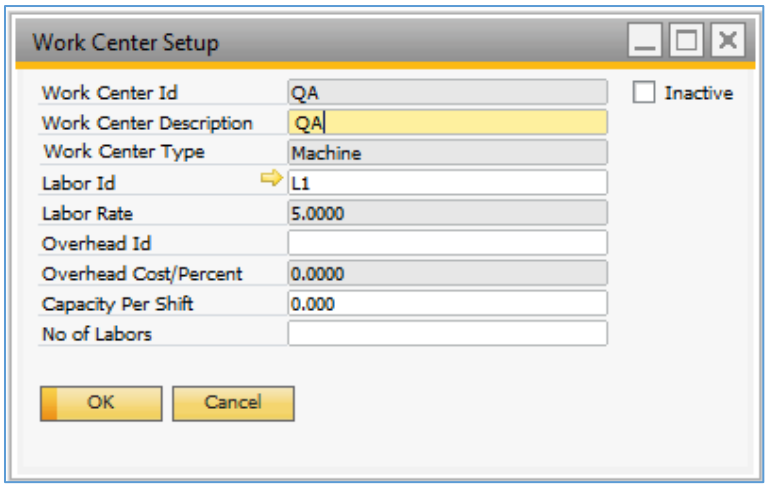
Shift Duration: Enter the total work duration of the shift.

Break Duration: Enter the duration of the break, if any, in the *Break Duration* field. The *Break Duration* should be less than the *Shift duration*.

1.3 Work Center Setup

On the *Work Center Setup* screen you can create and maintain process areas involved in the manufacturing process. The work centers can be a type of machine/group of machines or labor used in processing raw materials into finished items.

A Work Center can be involved in multiple routing operations.



Work Center ID: It is a unique identifier of the Work Center.

Inactive: Mark this checkbox to set the record as inactive.

Work Center Description: Enter the name or description of the Work Center.

Work Center Type: Select the Work Center type as man-based or machine based. This field is mandatory and helps to define whether the kind of work being performed at the Work Center will be manual labor-intensive or machine intensive. A man work center could be a packaging area comprising of labor while machine work center will comprises of machine and associated labor.

This field is editable only in *Add* mode.

Labor Id: Enter the unique id of the labor to capture the Standard labor cost.

Labor Rate: Displays the labor rate you set for the selected labor on the *Labor/Additional Cost* screen.

Overhead Id: Enter the unique overhead key to capture the Standard Overhead cost.

Overhead Cost/Percent: Displays the overhead cost you set for the selected overhead key on the *Overhead cost* screen.

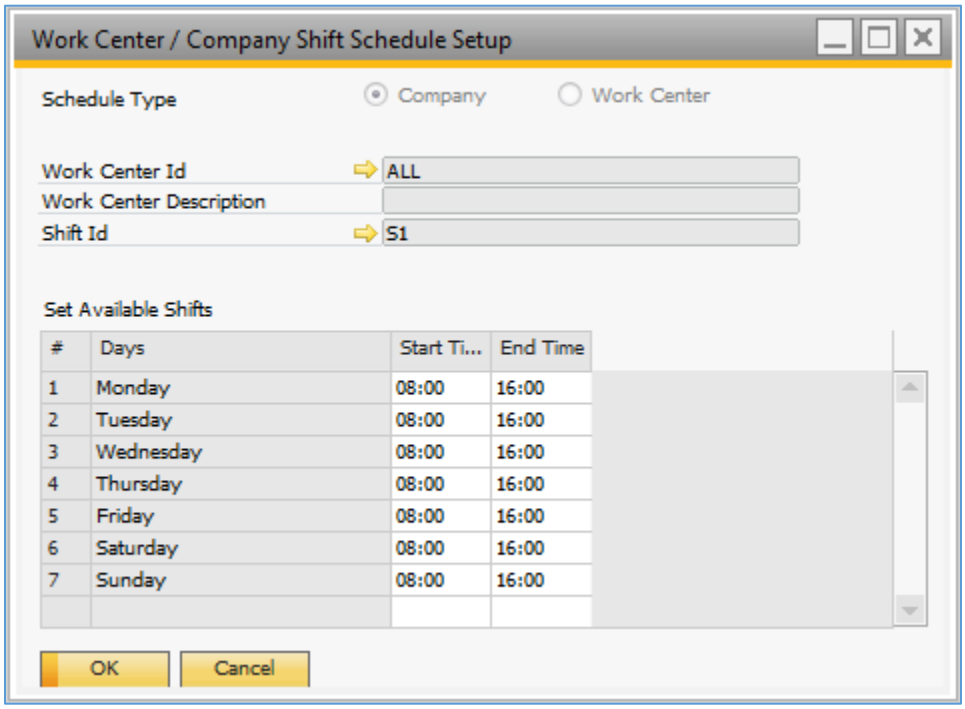
Capacity per shift: Enter the standard capacity of the work center, per shift. Based upon this capacity Work Center overload can be validated.

No of Labors: Enter the number of labor units required to work on the work center.

1.4 Work Center / Company Week offs Setup

From the screen you can define the default weekly schedule at a Company/Work Center level and shift level.

The system will always prefer the shift schedule defined for a Work Center and will override the company level shift schedule.



Schedule Type: In this field you can select the option as Company or Work Center for which you are defining the shift schedule.

Work Center Id: Select the work center for which scheduling is defined.

Work Center Description: Displays the name or description of the Work Center.

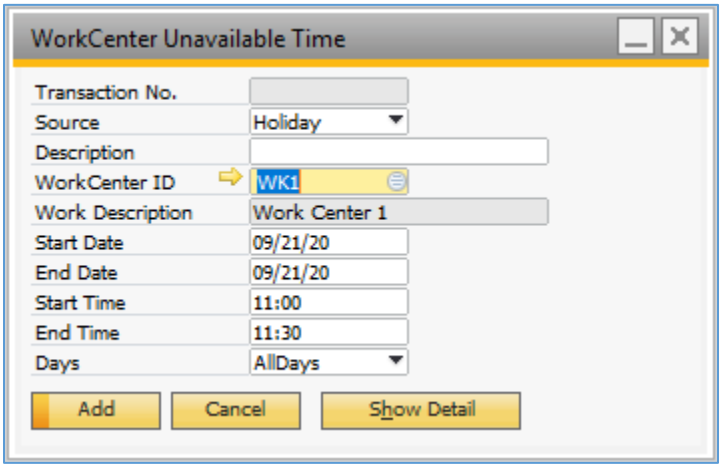
Shift Id: Select the shift of the Work Center for defining schedule.

Set Available shifts: In the grid, with respect to week days you can determine the start and end time of the work center shift.

1.5 Work Center Unavailable Time

Use this screen to maintain the down time of the Work Center. On the screen you can specify the date and time when the work center is not available to use.

The unavailability of the Work Center you are defining here should not overlap.



Transaction No: This field is auto generated for every new record.

Source: Using the dropdown available here you can specify that the source of Work Center downtime is either *Holiday* or because of some *Task*.

Description: Enter an appropriate reason of unavailability of the Work Center.

WorkCenter ID: Search and select a unique code of the Work Center for which you are maintaining the downtime.

Work Description: Enter the description specifying the unavailability/downtime of the Work Center.

Start Date: Enter the start date from when the Work Center is not available to use.

End Date: Specify the end date of the unavailability of the Work Center.

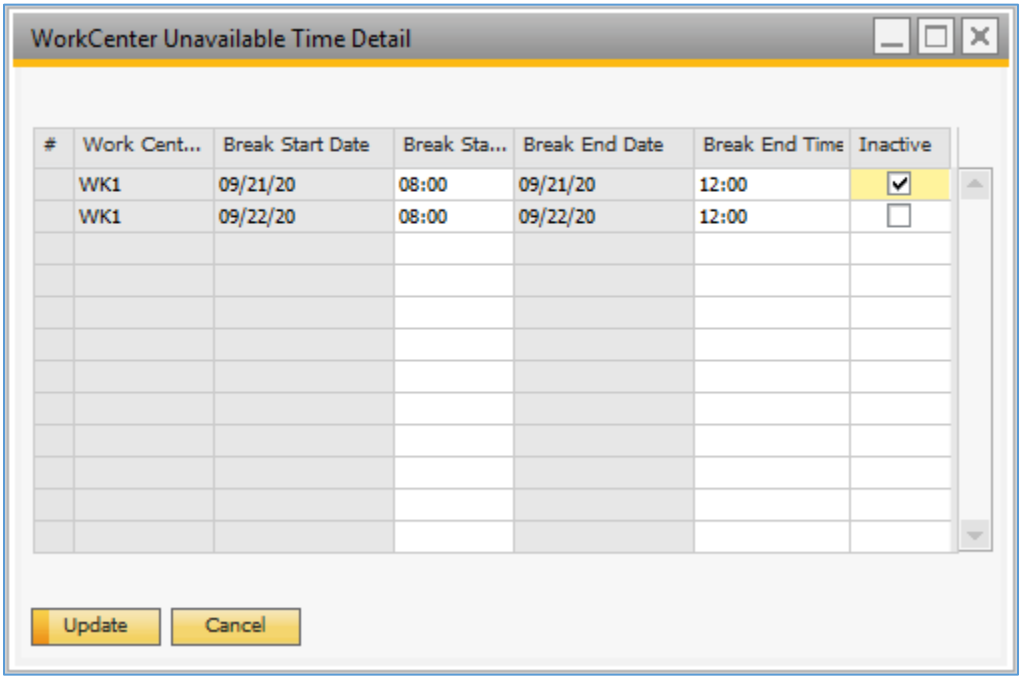
Start Time: Enter the start time from when Work Center is not available to use

End Time: Enter the end time of the unavailability of the Work Center.

Days: Select the day for which the Work Center will not be available to use. You can select a specific day here or select *All* to specify that for the selected day the Work Center will not be available for the specified schedule.

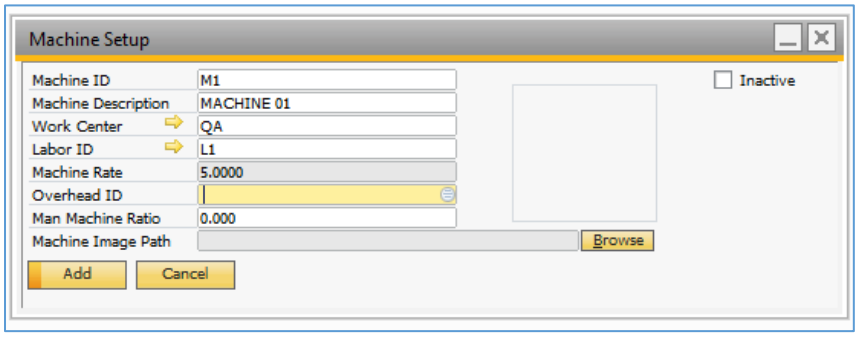
Add: Click this button to add the record.

Show Detail: Click this button to view the unavailability of a work center as already maintained. From this screen you can modify the Break start and end times.



1.6 Machine Setup

On the *Machine Setup* screen you can create and maintain information about machines you use in the manufacturing process. The Machine will be a part of any defined Work Center.



Machine ID: Enter the unique identification code of the machine in the *Machine* field.

Inactive: Mark this checkbox to set the record as inactive.

Machine Description: Specify the name or description of the machine.

Work Center: Search and select the Work Center that the machine needs to be attached to.

Labor ID: Select the labor you need to attach with the machine.

Machine Rate: Enter the rate per hour of the machine. The cost you enter here will be used to calculate the standard and actual manufacturing and operational cost of items.

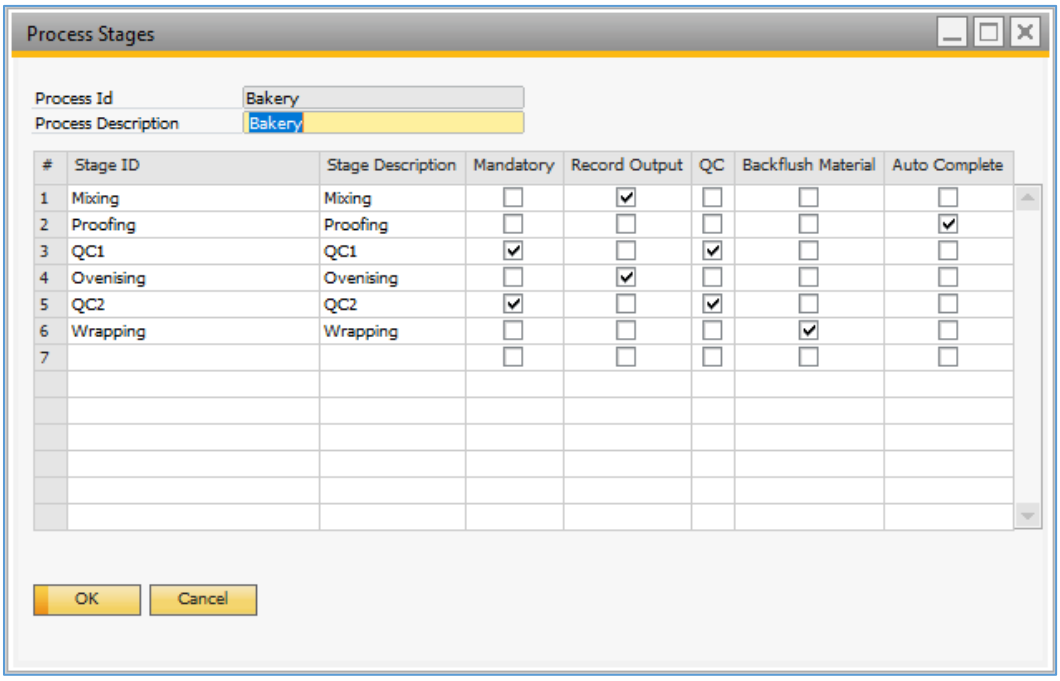
Overhead ID: Enter the overhead key you need to associate with the machine.

Man Machine Ratio: Specify the number of people required to operate the machine.

Machine Image Path: Search and select the image you need to use to recognize the machine.

1.7 Process Stages

Use this screen to define a process template, containing all the stages for a specific process. The template can be further associated with *Formula* and *BOM* masters.



Process Id: Enter a unique key to identify the process.

Process Description: Give a name or description of the process.

Stage ID: Enter an identification key of the stage involved in the process

Stage Description: Give the name or description of the stage.

Mandatory: Check this checkbox if you want the stage to be performed mandatorily.

Record Output: Check it to specify that the output will be recorded for the stage. Selecting it, when you perform the respective stage, the system will let you record the output details on the *Record Labor Transaction screen.*

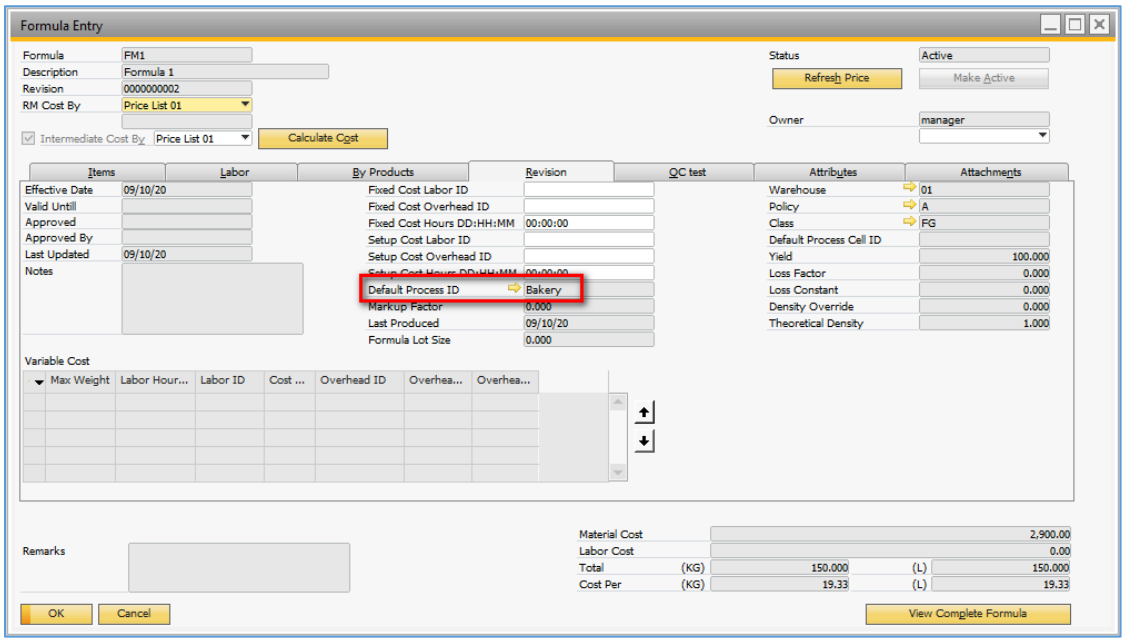
QC: With this checkbox selected you can specify that QC completion is mandatory for this stage.

Backflush Material: Check this checkbox to specify that the system will automatically issue raw material assigned at the stage.

Auto Complete: With this option selected, the system will auto close the stage if the previous stage is closed. Also, the stage will be skipped from *Active Next stage* operation.

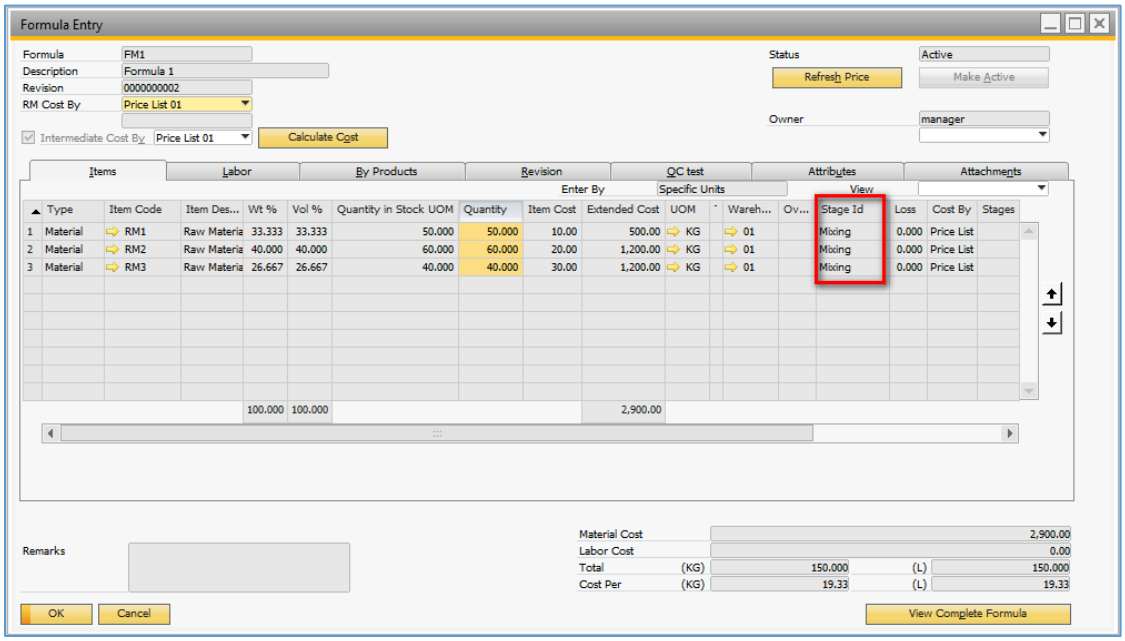
1.8 Modifications on Formula Entry screen

With *Routing* implemented, the *Default Process ID* lookup retrieves the Process ID defined on the *Process Stages Master* screen. Here you can associate the *Process Stage* with the formula.



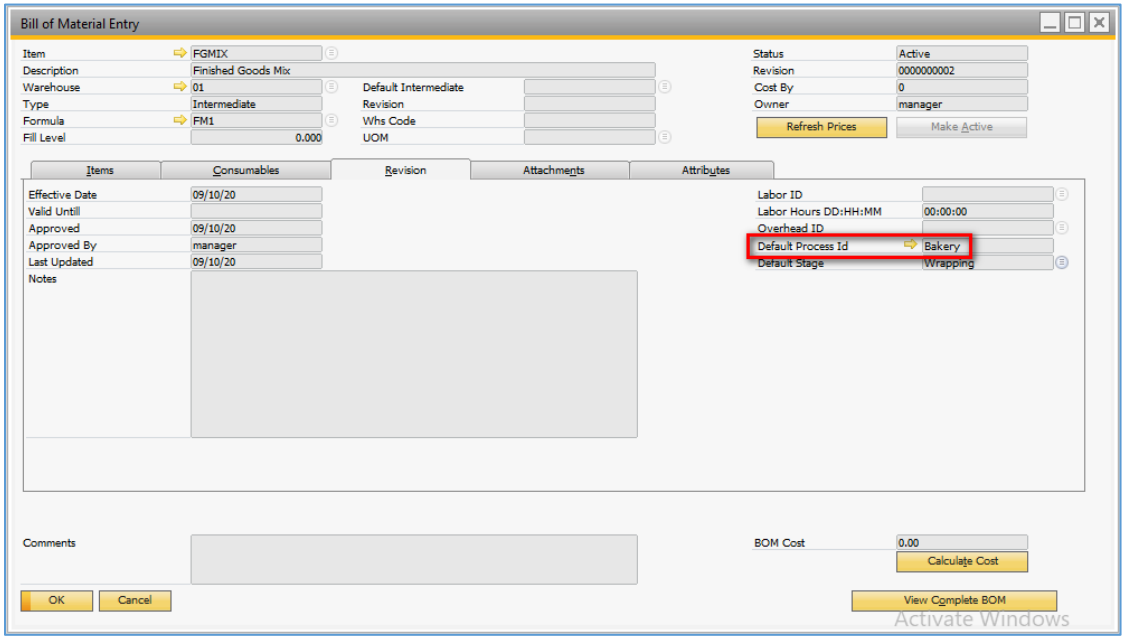
On the screen, the *Stage Id* field is available to use on the *Items, Labor, By Products, Consumable, Revision, QC test* tabs for the line.

The *Stage Id* for which the QC and Auto Complete checkboxes are selected on the Process Stages screen will not be available for selection on the *Items, Labor, By Products, Consumable, Revision* tabs. On the *QC test* tab you can only retrieve those stages for which QC is selected on the *Process Stage Master* screen.

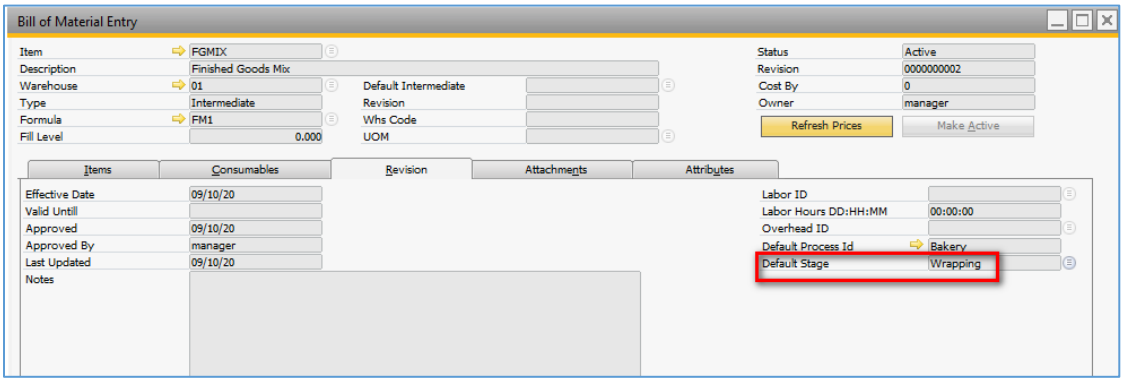


1.9 Modifications on the BOM Entry Screen

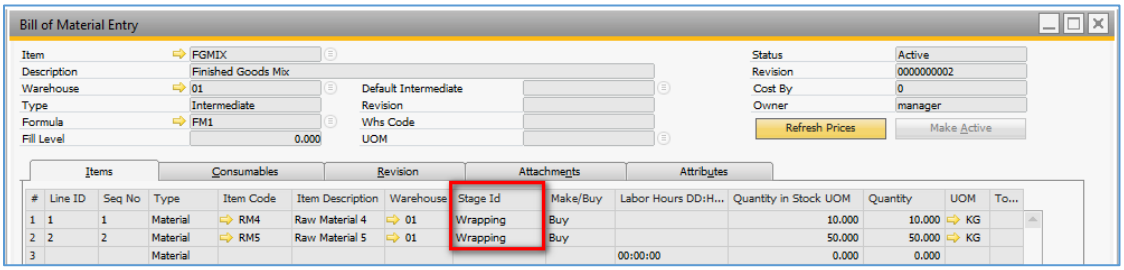
On the *BOM Entry* screen, for *Finished Goods* and *Intermediate BOMs*, the *Process ID* attached at the Formula Level will be defaulted in the *Default Process ID* field. If required, you can override the defaulted value with the desired *Process ID*.



For a Finished Good item, you can set the *Default Stage* at which you will be receiving the FG. If it is a *Finished Good* BOM, then an intermediate item for a *Fill* type of batch will also be associated with the *Default stage.*

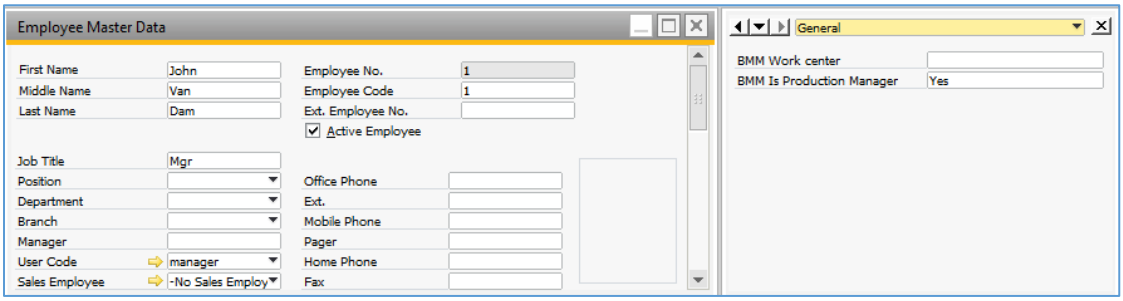


For a packaging item, the Process stage can be attached in the Items grid.



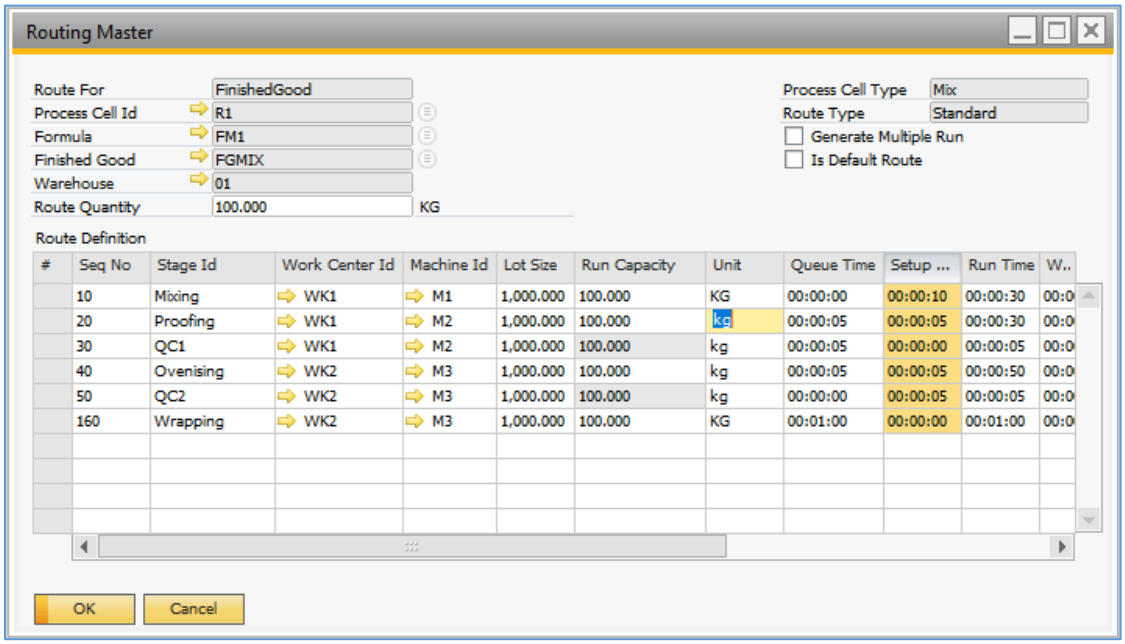
1.10 Modifications on the SAP Employee Master Screen

The SAP *Employee Master* screen is enhanced to associate a Work Center and specify that the respective employee is a *Production Manager* or not.



1.11 Routing Master

Use the *Routing Master* screen to define a sequence in which the process stages will be performed on the manufacturing item. On the screen you can specify the route quantity for the finished good process cell, along with the Work Center an item will be routed during the course of production, how much time an item would consume to produce at the work center, unit of measurement, machine time, queue time, set-up time, run time, wait time, move time etc. Depending upon the route quantity system splits the batch into number of runs.



Route For: Use this field to specify that you are maintaining the routing for *Finished Good* or *Formula*.

Process Cell ID: In the field search and select the Route Id you defined on the *Cell Master* screen.

Formula: For a *Mix/Fill* type of process cell, the field displays all active formulas you can select from.

Finished Good: In the field, for a *Mix/Fill* type of process cell, you can specify the active finished good BOM associated with the selected Formula. For an *Assembly* type of process cell you can select the active Assembly BOM attached to the formula.

Warehouse: Shows the warehouse associated with the BOM on the *BOM Entry* screen.

Route Quantity: It is Sizing Quantity of Finished Good for Batch Runs. Say for example, if you have defined route quantity as 100 and create batch for 200 quantities then the system divides batch in 2 runs. Based on the defined quantity the system will auto calculate the number of runs and will adjust the route definition accordingly.

Generate Multiple Runs: With this option selected, Batch Stage lines will split on the basis of the stage *Run quantity*. If you leave it unchecked, only one run will be generated per stage and the stage schedule will be generated based on the run quantity.

Is Default Route: Select it to set this route as the default Route to be considered in the planning engine for this finished good item.

Route Stage Definition

Seq No: Enter the execution sequence number for the stage. On the basis of the sequence number the stage execution will be performed. For the stages you need to execute in parallel their sequence number must be the same. This field value is auto generated with an increment of 10 places. For Formula Routing the sequence begins from 10 while for Finished Good routing the first sequence number will be 100.

Stage Id: Displays all *Stages Id* contained in *Formula* and *BOM* Masters.

Work Center Id: Displays Work Center involved in the execution of the stage.

Machine Id: Displays the machine involved in the Work Center for this execution stage.

Lot Size: Enter the average lot size you are planning to manufacture at the respective process stage. It will be on the basis of setup time inclusion in the stage schedule.

Run Capacity: Shows the capacity of work center.

Unit: Specify the unit of the *Run Capacity*.

Queue time: It is the buffer time for the run.

Setup Time: Time required to prepare for stage execution. It is based upon the specified lot size.

Run Time: Enter the run time required to execute the process stage, based upon the routing run quantity.

Wait Time: Wait time of Work Center before moving to next operation.

Move Time: Time required to move the material to the next Work Center.

Other Time: Enter any additional time constraint if required.

Labor Id: Attach the labor for stage execution.

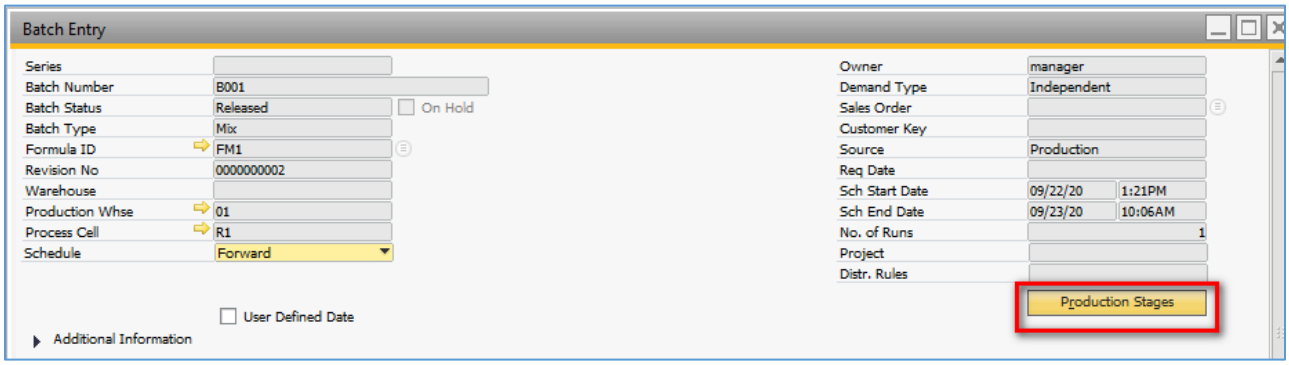
Overhead Id: Attach the overhead id for stage execution.

No of Labor: Enter the number of labor units required to perform the stage operation.

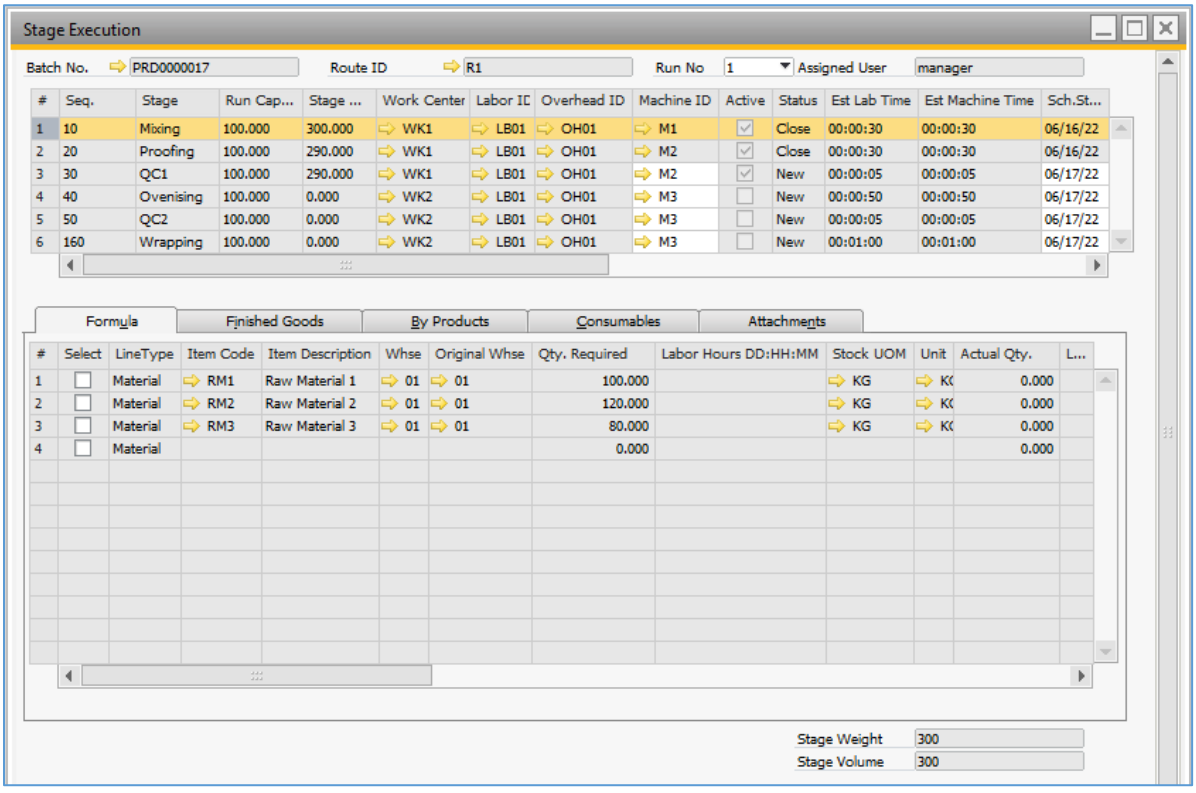
Size Time By Run: Select this checkbox to size the timing on the basis of the run capacity.

1.12 Stage Execution

From the *Stage Execution* screen, for the *Assigned* user, you can work on defined routing stages. For a *Released* batch, you can access the *Stage Execution* screen by clicking on the *Production Stages* button.

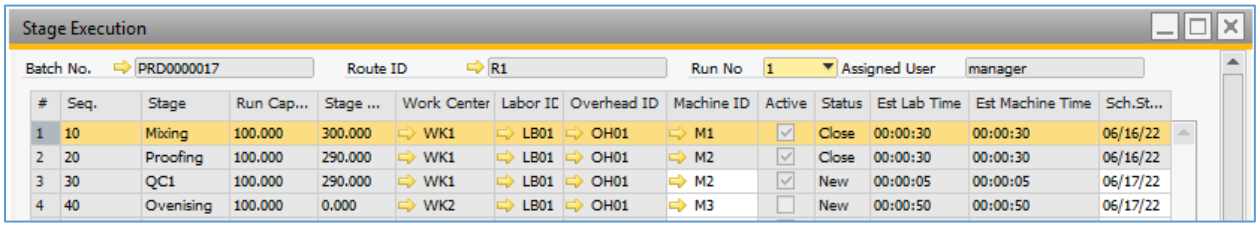


On the *Stage Execution* screen, with respect to the batch, you can view the route stages carried from the *Routing Master*, based upon the *Route ID (Process Cell ID*) attached to the batch. Based upon the route quantity, the system will calculate the number of runs and accordingly add the process stage lines. Also, on the basis of size by route quantity, for the selected *Route* stage, the system will show *Formula/Finished Goods/Byproduct/Consumable* in the lower grid, associated with the stage. Further, on the *Active* stage, you can perform distinct batch operations, such as *Material Issue, Material Return, Receipt FG, Record Labor transactions,* and perform *Stage QC*.

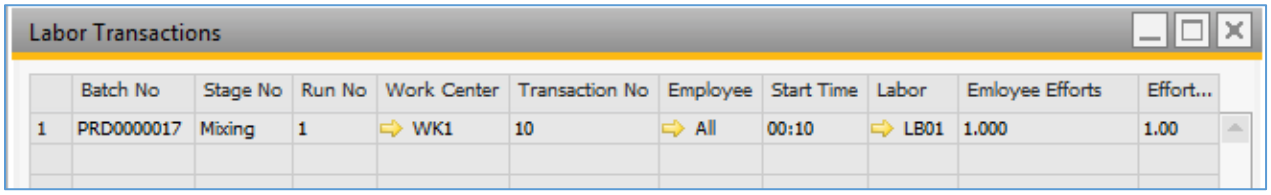


From the *Stage Execution* context menu, the following operations can be performed.

Activate Next Stage: By default, the system activates the process stages sequentially and once the stage is closed the next stage is activated. You can manually activate the next stage run by clicking on the *Active Next Stage* option. You can perform the operation on an *Active* stage only.



Show Labor Transaction: Shows the labor transaction for this stage.



Initiate Next Run: Use this option to initiate the next run of the batch.

Go to Batch Close: Use this option to close the production batch.

Issue Stage: From the *Stage Execution* screen, selecting the *Issue Stage* option from the context menu opens the *Stage Run wise Material Issue* screen, displaying the materials to be issued for the stage.

Return Material: Using this screen you can return the material issued in the particular stage.

Assign Lots: Use this option to assign a lot number for item(s) being produced.

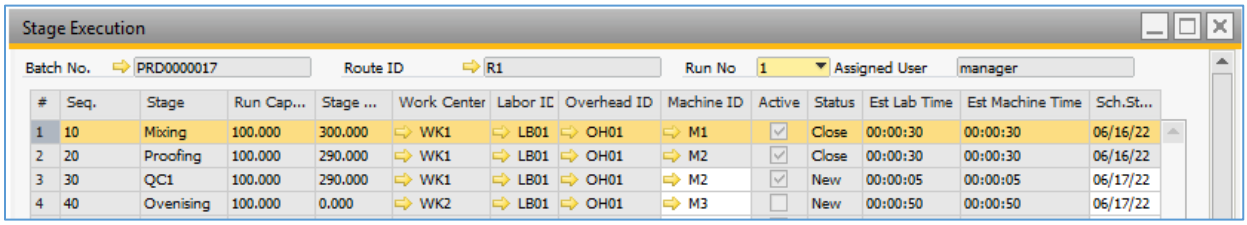
Stage QC: If the upcoming stage is a QC stage and you activate the next stage, then the QC orders are generated. The QC order will be generated on the basis of the number of runs manufactured in the respective stage.

A Stage defined as a QC Stage is by default a mandatory stage and can't be closed until you complete the QC Test for the stage.

In order to generate a QC Order it is mandatory to associate a test with the formula and stage with the QC Test.

Record Labor Transaction: The labor/overhead associated with the stage on the *Routing Master* screen is displayed here to record the Routing stage labor. From this screen you can record output (if you enabled the option on the *Process Stages* screen) for the stage given by the employee attached to the Work Center or for all employees.

Close Stage: After performing stage operations, close an active stage using the *Close Stage* option.



Batch No: Displays a unique key for the batch for which the transaction is made.

Route ID: Shows the process stage of the batch for which the transaction is posted.

Run No: This field shows the run number for the batch.

Assigned User: Shows the logged in user assigned to the stage sequence run to perform the stage execution.

Seq.: Shows the operational sequence of the Stage.

Stage: Shows the Stage Id on the given sequence.

Run Capacity (Unit): Shows the capacity of Machine/Work Center defined on the *Routing Master* screen.

Stage Qty (Unit): Shows the sum of stage weight and previous stage output.

- Stage Weight – Sum of Weight of all Raw Materials of the stage. Calculated as *Actual Qty + Issues Receipt Qty.*
- Previous stage Output – Accepted Quantity from *Record Labor Transaction* screen (Recorded output) or Accepted Quantity from QC Stage or Stage Quantity or Previous Stage Weight.

Work Center: Shows the Work Center for which the labor transaction is posted.

Labor ID: Shows a unique key of the Labor attached to the *Routing Master* process stage.

Overhead ID: Displays the attached *Overhead* Key.

Machine ID: This field displays the unique id of the Machine ID within the Work Center for which the Labor is posted.

Active: Shows whether the stage is operational or not.

Status: Shows the current status of the stage as *New / In Process / Closed.*

Est Lab Time: Shows the estimated labor time as per the *Route Master*.

Est Machine Time: Shows the estimated machine time as per the *Route Master*.

Sch. Start Date: Shows scheduled start date calculated through scheduling logic for the stage.

Sch. End Date: Shows scheduled end date calculated through scheduling logic for the stage.

Sch. Start Time: Shows scheduled start time calculated through scheduling logic for the stage.

Sch. End Time: Shows scheduled end time calculated through scheduling logic for the stage.

Actual Start Date: Shows the date when the stage activates.

Actual End Date: Shows the date of stage closing.

Actual Start Time: Shows the time when the stage activates.

Actual End Time: Shows the time of stage closing.

User: Shows the assigned user.