COBI.ppc

COBI.ppc is a Production Process Control solution aka Manufacturing Execution System (MES) for SAP Business One, offered mainly in the form of an Android App. It is similar to and based on COBI.wms, but specialized for complex production workflows.

Setup

The following UDTs and UDFs are used by COBI.ppc.

IMPORTANT: All tables should be of type `No object with auto-increment`.

Attributes

In COBI.ppc we use the term “attributes” to refer to information about production orders that will be shown to the user. These attributes can come from a number of sources (see `Origin`) and can be shown in the production overview screen, the production order details/execution screen, and in some step types. (See below for explanation of “steps.”)

PPC_ATTRIBUTES		
Column	**Type**	**Size**
Department	Alphanumeric	20
RouteStage	Alphanumeric	50
Title	Alphanumeric	20
Origin	Alphanumeric	20
FieldName	Alphanumeric	254
PositionInOverview	Numeric	2
PositionInDetails	Numeric	2
PositionInSteps	Numeric	2

The `Origin` can have the following values:

Value	Meaning
RDR	Sales order on which production order is based
RDR_LINE	Sales order line containing the item being produced
WOR	The production order itself
ITM	Item master data of item being produced
CUSTOM	Special

The `FieldName` must contain the name of an SAP Business One object field **with the name given to it in DI-API / Service Layer, not the name of the database column**.

For example, if the origin is RDR, then it's fine to use `DocNum` because that's the name of the field both in the database and in DI-API / Service Layer.

However, if the origin is WOR, then you must use DocumentNumber instead, because even though in the database it's still DocNum, in DI-API / Service Layer it's DocumentNumber instead.

If the origin is CUSTOM, the following values are supported for the FieldName:

Value	Meaning
__QUANTITY	Completed & planned quantity displayed as X / Y
__QUANTITY_WTR_PROD	Transferred & planned quantities displayed as X / Y

The __QUANTITY_WTR_PROD is useful if you don't want to consider a quantity to be truly completed yet before it's transferred to the target warehouse. See the “step” of action type ProdWTR below.

Buttons

When the user selects a production order from the overview, the details/execution screen will be opened for that order. In this screen, there can be up to five buttons with various actions attached to them.

In the beginning all buttons are in the “Start” state. If a button has a TimeType value other than None, then pressing it will switch the button into the “Stop” state and a timer will be started. The timer ends when the button is pressed again, or when a button of type Fault is pressed.

PPC_BUTTONS		
Column	**Type**	**Size**
Id	Alphanumeric	20
Department	Alphanumeric	20
RouteStage	Alphanumeric	50
Position	Numeric	1
StartTitle	Alphanumeric	20
StopTitle	Alphanumeric	20
TimeType	Alphanumeric	20

The TimeType can have the following values:

Value	Meaning
Normal	Regular production time
Preparation	Production preparation time
Fault	Duration of a fault situation
None	Button doesn't measure time

If None is used, the button is always in the “Start” state.

Steps

We use the term “steps” to refer to one or more actions that can be tied to the clicking of a button in a certain state. This is how you can tie in actions like Goods Issue, Goods Receipt, and so on into the production workflow.

For example, you might have a simple “Begin Production / End Production” button, which triggers a Goods Issue step when it's clicked in the “Start” state, and triggers a Goods Receipt when in the “Stop” state.

PPC_STEPS		
Column	**Type**	**Size**
Department	Alphanumeric	20
RouteStage	Alphanumeric	50
FirstStageOnly	Alphanumeric	1
LastStageOnly	Alphanumeric	1
ButtonId	Alphanumeric	20
ButtonState	Alphanumeric	20
Position	Numeric	2
Title	Alphanumeric	50
ShowAttrs	Alphanumeric	1
ActionType	Alphanumeric	20
ActionParam	Alphanumeric	254

The `Department` and `RouteStage` fields, if filled, limit this step to the corresponding department (resource group) and/or route stage.

The `FirstStageOnly` and `LastStageOnly` fields can be `Y` or `N` and only make sense if the `RouteStage` field was left empty. They limit the step automatically to the first or last route stage in a production order, without having to explicitly name that stage.

The combination of `ButtonId` and `ButtonState` determines when the step will be triggered. The `ButtonState` must be `Start` or `Stop`. (A button with `TimeType = None` is always in the `Start` state.)

The `Position` determines the order in which the steps will be executed if they would both be executed after a button event.

The `ShowAttrs` field can be `Y` or `N` and determines whether the display attributes of the production order should be shown in the step's screen.

The `ActionType` determines what type of step this is, and can have the following values:

Value	**Meaning**
AllItems	List all item components of the production order
MatsWTR	Relocation of component items to be issued
IGE	Goods issue of the component items
CompletedQty	Enter completed quantity for current routing stage
SimpleIGN	Goods receipt of finished goods
IGN	Goods receipt with optional discarded/return items
ProdWTR	Relocation of received goods that were produced
FillParams	Parameter input screen (see below)
Text	Show the user a static text (e.g. instructions)
Close	Offer to close routing stage or production order

The `ActionParam` can have different meanings depending on the `ActionType`. The following table

describes the meanings it can have. When there are multiple possibilities, they can be added together and separated with a comma.

Action type	**Meaning of `ActionParam`**
IGE	Comma-separated list of item groups to include
	Start with `!` to exclude instead
MatsWTR	Comma-separated list of exactly two warehouse codes
	Determines the from and to warehouse
CompletedQty	`IGNIfLast` to call `SimpleIGN` during last stage
	`PreFillQty` to pre-fill the quantity field
	`OverwriteQty` to make the entered quantity overwrite the old
ProdWTR	Same as for MatsWTR
FillParams	Comma-separated list of parameter IDs
Text	The text that will be shown on the screen
Close	`CloseDocIfLast` to close production order during last stage

(Note that the `ActionParam` has nothing to do with the “parameters” mechanism described below, except that for the `FillParams` action type it contains a list of parameter IDs.)

Parameters

We use the term “parameters” (not to be confused with “attributes”) to refer to completely specialized values that users can input via a `FillParams` step, to document various information that doesn't fit into any standard SAP Business One logic.

For example, you might have a “Tool State” parameter, and add a `FillParam` step to an “End Production” button where the user has to specify in what shape the tool is (fine, damaged, broken).

PPC_PARAMS		
Column	**Type**	**Size**
Id	Alphanumeric	20
Name	Alphanumeric	50
DataType	Alphanumeric	20
ValidValues	Alphanumeric	254
DefaultValue	Alphanumeric	254
Mandatory	Alphanumeric	1
MultiValue	Alphanumeric	1

The `DataType` can be `Text` or `Number`.

The `ValidValues` is a list of comma-separated values.

The `Mandatory` and `MultiValue` fields can be `Y` or `N`.

When a `FillParams` step is executed, the values given by the user are saved in the following UDT.

PPC_PARAM_INPUTS		
Column	**Type**	**Size**
Timestamp	Alphanumeric	12
Resource	Alphanumeric	50
EmployeeId	Numeric	11
UserInfo	Alphanumeric	20
WORDocEntry	Numeric	11
RDRDocEntry	Numeric	11
ParamId	Alphanumeric	20
ParamValue	Alphanumeric	254

Fault and rejection reasons

The fault reasons will be shown in a drop-down when a user clicks on a button with a `TimeType` value of `Fault`. The user has to select one of the reasons before the fault state can be ended.

The fault reason will be saved in the `Comment` field of the `PPC_WORSTATUS` table (see below).

PPC_FAULT_REASONS		
Column	**Type**	**Size**
Reason	Alphanumeric	254

The reject reasons are shown in a drop-down when a user wants to add rejected quantities in a Goods Receipt, i.e. goods that were produced but are being discarded again for some reason, like being damaged.

PPC_REJECT_REASONS		
Column	**Type**	**Size**
Reason	Alphanumeric	254

Production status / timeline

The following table records all button start/stop events so the price state in which a production order is, and for how long it's been running, can be seen.

PPC_WORSTATUS		
Column	**Type**	**Size**
Timestamp	Alphanumeric	12
Resource	Alphanumeric	50
EmployeeId	Numeric	11
UserInfo	Alphanumeric	20
WORDocEntry	Numeric	11
WORDocLine	Numeric	11
RDRDocEntry	Numeric	11
PrevStatus	Alphanumeric	20
Status	Alphanumeric	20
ResourceGroup	Alphanumeric	20

PPC_WORSTATUS		
Column	**Type**	**Size**
RouteStage	Alphanumeric	50
ButtonId	Alphanumeric	20
Comment	Alphanumeric	254

In addition to the fields, it's recommended to add the following **keys** to this table for better performance:

PPC_WORSTATUS keys	
Key	**Columns**
IX_0	WORDocEntry
	WORDocLine
IX_1	ResourceGroup
IX_2	UserInfo

(To add keys to a user-defined table in SAP Business One, open the **User-Defined Fields - Management** window, find the table under **User Tables**, click on the PPC_WORSTATUS table, and then click on the **Keys** button at the bottom right.)

User-defined fields

Resources can be tied to a specific route stage (aka sub-department) via this UDF:

Resource Master Data		
Column	**Type**	**Size**
PPC_RouteStage	Alphanumeric	20

Items can be declared to be of various types: `Tool`, `RawMaterial`, `IntermediateProduct`, `FinalProduct`, `ByProduct`. However, currently only the `Tool` type is used. Items of type `Tool` will be automatically added to a Goods Receipt document as returned good.

Item Master Data		
Column	**Type**	**Size**
PPC_ItemType	Alphanumeric	20

Since Relocation documents can't be based on a Production Order, the following UDF is used to specify for which Production Order they were executed:

Documents		
Column	**Type**	**Size**
PPC_WORDocId	Numeric	11
PPC_User	Alphanumeric	20

Times measured by COBI.ppc are booked as a Goods Issue with a Resource line; the following UDF describes what time of type this was (Normal, Preparation, Fault).

Document Lines		
Column	**Type**	**Size**
PPC_TimeType	Alphanumeric	20

In the following UDFs, COBI.ppc stores information about the status of a routing stage within a production order.

The UDF `PPC_CompletedQty` represents the quantity of items whose processing *within this routing stage* has been completed, although they may still have to go through other routing stages before they can be booked in as a Receipt from Production.

The UDF `PPC_Closed` can be set to **Y** to indicate that no further processing will take place within the routing stage.

Production Order - Route Stage Rows				
Column	**Type / Structure**	**Size**	**Valid values**	**Default**
PPC_CompletedQty	Units and Totals / Quantity			
PPC_DiscardedQty	Units and Totals / Quantity			
PPC_User	Alphanumeric	254		
PPC_Closed	Alphanumeric	1	Y / N	N