General Info

1. If you have a process of operations (function) similar in nature create a copy of the chart in the OS Station
2. If issues with a new batch, try deleting and re adding the FB to your chart by dragging and dropping the input output pins
3. If that doesn’t help delete and re add the pins manually
4. RUP – Recipe Unit Procedure
5. RO – Recipe Operation
6. Basic setup of a Batch SFC Type or Batch Phase
7. QCS – is the control strategy can be changed depending on the amount or how the RPU was called default is 1
8. For each phase use the “Q” output for control not the “QP” the QP is a prepared value used in manual mode
9. Your selected control stagey and completing is ran each time you execute a batch unless stop or abort or hold is hit in which case it will interrupt and execute that section of code
10. If there is exclamation mark on batch it is not bringing the SP of batch of the phase. The setpoint of the IN is hardcoded and overwriting the value.

BATCH CONFIGURATION INSIDE THE SFC

1. S7\_Contact = Connect to a batch phase for custom Blocks
2. In the equipment phase you can call a function or sequence and then define the return position it doesn’t have to be where you left
3. There are two types of blocks a “Control Block” or a “Transition Block”
4. Control Block - can assign up to 50 values in one step 3 types of assignment (can be done using a function or a value)
   1. Initialize - One shot on beginning of step
   2. Process – while block is active
   3. Terminate – when the block has transitioned
   4. Technological Actions – can be used for calculation and linked with DBs
5. Transition Block – Can compare up to 16 items with 3 linked Boolean operators
   1. OS Comments are generated from the input
   2. Technological Conditions – can be used for calculations and linked to DBs
6. Different internal Parameters
7. Characteristic
   1. Control Strategy
      1. Used to call different strategy (tabs) within that SFC
   2. Setpoints
      1. Declared parameters to be used through the code (differs per instance)
   3. PV
      1. Any monitored value (differs per instance)
   4. CV
      1. Any value controlled by the SFC (differs per instance)
   5. Parameters
      1. Phase parameters to be set by operator (differs per instance)
   6. Bit Memory
      1. ?
   7. Timers
      1. Timers to be used in the SFC internally (differs per instance)
   8. Note Text
      1. Notes to be used to display messages to the HMI if desired
   9. Block Contacts
      1. ?
   10. Position Texts
       1. Messaged displayed on the pop up
8. Inputs – just the same as any other SFC will have input pins in the PCS7 logic
9. Outputs – just the same as any other SFC will have output pins in the PCS7 logic
10. Inputs/Outputs – just the same as any other SFC will have input/output pins in the PCS7 logic

Updating a batch

If you add a new Phase (SFC Batch) or modify and existing SFC base type, then you need to update the AS/OS/Batch in this order

1. Make Logic Changes to Recipe in AS Server
   1. Editing or adding logic to a chart
   2. Making a new hierarchal folder and defining the S88 type
      1. Green if under a Standard folder can only be a Unit and can declare if can be used for a batch or not
      2. Green under a Green is either EMOD, Standard, or Equipment Phase
         1. Standard – Yellow – This will be for base logic like a valve or motor control. Non batching operations
         2. EMOD – This is for batch control where the main Batch FB is located and executes
         3. Equipment Phase – not sure research
2. Compile and Download AS Server
3. Compile OS Server
4. Download OS Server (Can run this step later if in a hurry and skip to step 4)
5. Select Batch Types under batch root
   1. Generate
   2. Propagate
6. Select Batch instances
   1. Merge
7. Select Batch root
   1. Check Validity
   2. Download (This step does step a so can skip step an if desired)
8. Click OK if there are errors click display to see them
9. Open Simatic Batch Control (Windows App)
10. Program - > Update Process Cell
11. In Simatic Batch Control after updating or adding a new recipe check validation of all recipes that used that block by right clicking the recipe and selecting check validation
12. Revoke Recipe if there is a linked Formula it will revoke this too
13. Edit Recipe
14. Save Recipe
15. Release Recipe and associated Formulas if applicable (you can do a formula by itself if needed)
16. Note When the recipe is revoked from production operation can finish the recipe but can not create a new recipe until released back to production

SIMATIC BATCH CONTROL CENTER

1. Libraries – Seems Like base files to be used in master recipes
2. Master Recipes
   1. Recipes to be used with orders when a new order is created
   2. You can create a flat or Hierarchical recipe
      1. Flat – Single RUP
      2. Hierarchical – Multiple RUPs can be used
   3. RUP can only be located at the top row of a column
   4. Define all your Engineering Parameters at the RUP or the global one which is the cross hair made by RUP and OP intersecting lines
   5. You can call a RUP or OP from a different OP if you are in the same Batch
   6. Once you create a new recipe All of the RUPs will execute at the same time and will run through the sequence
      1. Synchronize Line
         1. This will stop all RUP when reached until all RUPs complete this transition
      2. Simultaneous Branch
         1. This will execute multiple OP at the same step in the RUP at the same time
   7. Jump labels will show with a line link when hovered
   8. Each OP will require a transition block and execution block. Each execution block can have parameters tied to them
   9. For transitions you can’t look at direct tags, so you do this logic in the PCS7
      1. You can list this either by no group or group them together in an enumeration (FB needs to be used to define this enumeration and be fed into the X Block the enumeration is declare in the shared definitions can be defined as a Batch control strategy or not one)
      2. You also declare recipe parameters in this section as well
      3. Tag Coll is what will be read only logic in the PCS7 for transition checks
      4. Unit Assignment used to perform assignment and creation of parameters
3. Formulas
   1. These are parameters to be linked to a master recipe to share parameters across recipes
4. Orders
   1. Execution of a master recipe each order can only be linked to a single master recipe. Be careful when you are selecting since you can select a formula as well which will run that master recipe.
   2. Once an order is created you then must right click it so you can release it
   3. Once a recipe is released then open the recipe and start/stop/hold/resume or you can right click and control this way
   4. If during and order you get a half moon looking like a rainbow that means the equipment is currently occupied
   5. A full half moon means executed but waiting to complete
   6. See manual for full diagnostics of icons
5. Materials
   1. Need to research more