DS0676

Quick MO Automation

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Problem Definition

Problem Definition	CCDA
ACME Co. currently utilizes Dynamics GP to manage and support Inventory Control. In conjunction with the Inventory Control module they also use Manufacturing. The manufacturing process handles make to stock counter tops (a.k.a. Slabs) and sinks which have a standard bill of material as well and are valued at standard cost. In addition, ACME fabricates custom tops and sinks from the made to stock items. They do this by cutting to size the slabs/counters and applying custom edges based on customer specifications. A custom in house application called 'Status' is used to enter and track customer orders and fabrication jobs. These jobs are released to a cut planner (cutting optimization software) which identifies how to best utilize the standard make to order counters (a.k.a. Slabs). The material consumption for Slabs is stored in 'Status' per job and each custom top receives a unique job number in Status. For example, a custom job will consume .42 units of a standard slab where 1.00 is a whole slab. In addition this custom job requires 192.72422 linear inches of fabrication work/edge work. The custom fabricated counters have an item number within Dynamics GP that is unique to the thickness and color of the slab. This custom fabricated item in Dynamics GP is a serialized item and uses actual costing. The manufacturing and fabrication (custom) business at ACME runs 24 hours a day 7 days a week. The process using existing applications is highly customized and automated. ACME would like to feed Dynamics GP the necessary information to automate the manufacturing process for both standard slab/sink assembly as well as the fabricated/custom business line. Based on the volume of transactions being processed and the cost involved, ACME would like to utilize the Quick MO process to handle their manufacturing needs.	

Solution Overview

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A Quick MO Processor utility will be created within Dynamics GP. The Quick MO Processor utility will auto-create Quick MO's from 3 Staging Tables and immediately close the MO's as well. The Staging Tables will be populated by ACME. Details of the Quick MO Processor Utility can be found in the Design Features section below.	

Design Features

Quick MO Staging Tables	CCDA

ACME will populate the following Staging Tables with required information for the Quick MO Process. All fields are required unless otherwise noted by * or **.

* denotes only required for Lot/Serial Tracked Item Numbers
** denotes not required

Manufacturing Order Staging Table

WxxxxMOHeader	Function
MANUFACTUREORDER_I	This column is the Key for the table. A unique Manufacturing Order number will be provided. Manufacturing Order numbers may NOT be duplicated.
FGITEMNMBR	The Item Number produced will be entered. The Item Number must be an existing Dynamics GP Item Number, which has at minimum, a MFG BOM Header and Primary Routing. The Item Number must be Active.
QTY	The quantity of the Item Number produced will be entered. This will be the End Quantity for the Quick MO. (As is standard functionality within Dynamics GP the Base UOM will be used when processing Quick MO's).
LOTSERIAL *	The Lot Number or the Serial Number of the Item Number produced will be entered. Only one (1) Lot Number or Serial Number per Manufacturing Order is allowed.
LBS *	The weight of the Item Produced is pounds will be entered. The pounds entered will populate the Item Category Lot Attribute #1 field.
SQFT *	The square feet of the Item Produced will be entered. The square feet will populate the Item Category Lot Attribute #2 field.
DATE	The date the Item Number was produced will be entered.

TIME	The time the Item Number was produced will be entered.
POSTTO	The Site to post the Item Number produced to will be entered.
STDCOMP	A value of 0 or 1 will be entered: • 0 – The standard components and quantities from the Bill of Materials should be used to generate the Manufacturing Order's Pick List. • 1 – The staging table for the MO Pick List should be used to generate the Manufacturing Order's Pick List. If the WxxxxMOPick table does not have any corresponding records for the Manufacturing Order Number, the Quick MO Processor will ignore the record until the WxxxxMOPick staging table is populated.
STDROUT	A value of 0 or 1 will be entered: • 0 – The Primary Routing, its sequences and Setup Time, Labor Time and Machine Time should be used. • 1 – The Primary Routing and its Routing sequences (including Setup Labor Code, Labor Code and Machine ID's) should be used, however, the Routing's Setup Time, Labor Time and Machine Time should populate from the staging table for the MO Routing. If the WxxxxMOROUTING does not have any corresponding record for the Manufacturing Order Number, the Quick MO Processor will ignore the record until the WxxxxMORouting staging table is populated.
PROCESSED	A value of 0 will be entered. A value of 0 means that the Quick MO record has NOT been processed. The Quick MO Processor utility will only process records with a value of 0. The Quick MO Processor utility will update the value to 1 if the Quick MO record was processed successfully.

	The Quick MO Processor utility will continue to try to integrate the MO record until it is successful (meaning that the error has been corrected such as a non-existing Item Number, BOM and Routing is added to Dynamics GP)
MESSAGE **	A short error message will be entered by the Quick MO Processor utility if the Quick MO was unable to be processed. Examples of the error message include: • MO Number already exists • Item Number does not exist • A Bill of Material does not exist • A Primary Routing does not exist • The Post To Site does not exist • The Item Number is not assigned to the Post To Site

MO Pick List Staging Table

The MO Pick List Staging Table must be populated if the WxxxxMOHeader table has column STDCOMP set to 1.

WxxxxMOPick	Function
MANUFACTUREORDER_I	This column is a Key for the table. The Manufacturing Order Number is entered. A corresponding record in the WxxxxMOHeader must exist. The STDCOMP column in the WxxxxMOHeader table must be set to 1.
SEQ_I	This column is a Key for the table. A unique Sequence number will be entered for each record associated with a Manufacturing Order.
POSITION	The Component Item Number's Sequence Number – otherwise known as Pick List Position – will be entered. The Sequence Number must not be duplicated for the Manufacturing Order

	Number.
ITEMNMBR	The Component Item Number will be entered. The Item Number must be an existing Dynamics GP Item Number which is Active.
QTY	The quantity of the Component Item Number consumed will be entered. If the Item is Serialized, the QTY must be set to 1.
LOTSERIAL *	If the Component Item Number is Lot Controlled, the Lot Number will be entered. Only one (1) Lot Number is allowed per record. If the Component Item Number is serialized, the Serial Number will be entered. Only one (1) Serial Number is allowed per record.
UOFM	The Unit of Measure will be entered. The Unit of Measure entered must be on the U of M Schedule ID assigned to the Component Item Number.
SITE	The Site ID to consume parts from must be entered. The Site ID must be an existing Site ID within GP and must be assigned to the Item Number.

MO Routing Staging Table

The MO Routing Staging Table must be populated if the WxxxxMOHeader table has column STDROUT set to 1.

WxxxxMORout	**Function**
MANUFACTUREORDER_I	This column is a Key for the table. The Manufacturing Order Number is entered. A corresponding record in the WxxxxMOHeader must exist. The STDROUT column in the WxxxxMOHeader table must be set to 1.
RTSEQNUM_I	This column is a Key for the table. The Routing's Sequence Number will be entered.
SETUPTIME_I	The Routing Sequence's Setup Time will be entered.
LABORTIME_I	The Routing Sequence's Labor Time will be entered.

MACHINETIME_I	The Routing Sequence's Machine Time will be entered.

PLEASE NOTE:

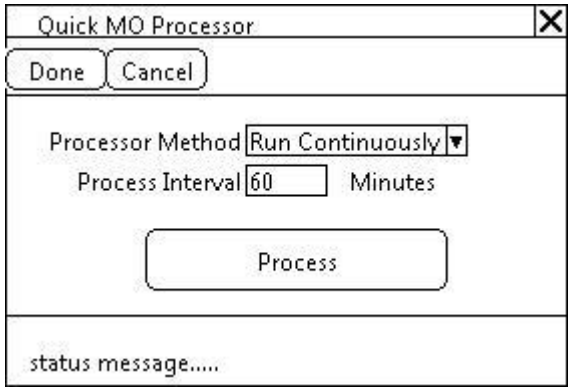
- When populating the Staging Tables with data, the sub-tables (WxxxxMOPick and WxxxxMORout) should be populated with Manufacturing Order data first prior to populating the WxxxxMOHeader table.
- The actual SQL Table names will be provided with the enhancement's instructions. The xxxx currently listed in the table name will be replaced with the enhancement's product number.
- The enhancement will NOT delete any records from the Staging Table. Periodically, ACME may wish to delete processed records from the Staging Table so the tables do not grow excessively large.

Quick MO Processor	CCDA

Navigation: Manufacturing→Utilities→Quick MO Integration Processor

This window is used to set the Processor Method for the Quick MO Integration Processor.

The integration utility processes records from the staging table(s), auto-creating the Quick MO and if necessary the MO Routing and MO Picklist as well as auto-closing the Quick MO. The staging table(s) will be populated by the ACME team with the information required to create and close the Quick MO's. The integration table descriptions can be found in the next document section entitled **Quick MO Staging Tables**.



Field	Function
Done Button	The user will click on the DONE button to exit the window. Exiting the window will stop the Quick MO Integration Process.
Cancel Button	The user will click on the CANCEL button to exit the window without updating the Processor Method or clicking the PROCESS button. Clicking CANCEL or exiting the window will stop the Quick MO Integration Process.
Processor Method	The user will set the Processor Method using the dropdown. The

	dropdown will contain 2 options: 1. **Run Continuously:** The utility processes the un-processed records then will continue to check the tables at regular intervals. The intervals are set in the Process Interval field. Please see the description of the Process Interval field below. A GP Client must be dedicated to running the Quick MO Processor which will consume a log-in (license). The dedicated GP Client will essentially watch for new records in the staging table and then process them at the set interval. If CANCEL is clicked or the window is closed, it will stop the Quick MO Integration Process. 2. **Run Once:** The Quick MO Processor is initiated by a user. The user will enter the Quick MO Processor window and click the PROCESS button each time the Quick MO Processor should be run.
Process Interval	The user will set the Process Interval in whole Minutes. This field will only be editable if **Run Continuously** is selected from the Processor Method dropdown. As the mock-up indicates, entering a value of “60” would set the Quick MO Processor to run every 60 minutes.
Process Button	If utilizing the **Run Once** Method, the user will click the PROCESS button to initiate the Quick MO Process. Details on how the Quick MO Processor Utility will function can be found below in the section entitled **Quick MO Integration Process.**
Status Message	While the Quick MO Processor is running, a status message will display alerting the user to the processing step.

Quick MO Integration Process

When the Quick MO Integration Process is initiated, the enhancement will do the following:

Go to the WxxxxMOHeader table and find the first unprocessed record. The first unprocessed record is the record with the lowest Dex_Row_ID. The Dex_Row_ID is being used to ensure the MOs are processed in the order in which they were added, even if that does not coincide with the MO Number.

- The following validations will occur prior to a Manufacturing Order being created:
    - Both the Inventory and Financial Fiscal Periods are open for the current period.
    - The Manufacturing Order Number does not already exist in Dynamics GP
    - The FG Item Number exists in Dynamics GP
    - A MFG BOM Header record exists in Dynamics GP for the FG Item Number
    - A Primary Routing record exists in Dynamics GP for the FG Item Number
    - If the FG Item Number is Serialized, the Quantity entered in WxxxxMOHeader table must be set to 1.
    - If the STDCOMP is set to 1 in the wMOHeader table, there are corresponding records in the WxxxxMOPick table.
    - If the STDROUT is set to 1 in the wMOHeader table, there are corresponding records in the WxxxxMOROUT table and each Routing Sequence entered exists on the FG Item Number's Primary Routing.
    - Each Component Item Number entered in WxxxxMOPick associated with the Manufacturing Order exists in Dynamics GP.
    - If the Component Item Number is Serialized, the quantity entered is set to 1.
    - The UOM listed in the WxxxxMOPick table appears on the Item Number's

U of M Schedule ID.

- The Component Item Number is assigned to the Site ID to consume parts from.
- The FG Item Number's BOM is not locked by another user.

If any of the above conditions are NOT true, the MO Creation process will stop for that record. The processed flag on the WxxxxMOHeader table will remain at 0; a status message detailing the first error found will populate the WxxxxMOHeader tables MESSAGE column. Each time the Quick MO Processor Utility runs, the enhancement will try to process all records with the processed flag set to 0, including those records with error messages.

It is recommended that a report be created for users to review any unprocessed records with data populated in the MESSAGE column to assist in the error correction process. Reporting is NOT included in the scope of this document.

If the record is validated successfully, the Manufacturing Order will be generated based on the following:

- **MO Number** = MANUFACTUREORDER_I from WxxxxMOHeader
- **MO Description** = Quick MO Integration
- **MO Status** = Released
- **Item Number** = FGITEMNMBR from WxxxxMOHeader
- **Routing Name** = Item Number's Primary Routing
- **End Quantity** = QTY from WxxxxMOHeader
- **Start Quantity** = QTY from WxxxxMOHeader
- **End Date** = DATE from WxxxxMOHeader
- **Draw Inventory From Site** = The Default Scheduling Preferences "Default Site to Draw Inventory From" in the MO Sched Prefs setup window; if not set, this will appear blank
- **Post To Site** = POSTTO from WxxxxMOHeader
- **Scheduling Method** = The Default Scheduling Preferences in the MO Sched Prefs setup window

If the FG Item Number is Serialized or Lot Controlled, the Serial Number or Lot Number entered will be pre-assigned to the Manufacturing Order.

The Quick MO Process Integration will then move to the next step which is to create the MO Routing record. If the WxxxxMOHeader column STDROUT is set to 0, the enhancement will create the MO's Routing record as normal.

If the STDROUT is set to 1, the enhancement will create the MO's Routing record as normal. It will then set the data held in all the MO's Routing Sequences for Labor Time, Setup Time and Machine Time to zero. The MO's Routing record will then be updated for each Manufacturing Order/Routing Sequence Combination based on the data populated in the WxxxxMORout table. It should be noted that the Cycle Time will NOT be populated. This is at the request of ACME:

- **Done Checkbox** = Set to 1 (Set as Done)
- **Setup Time =** SETUPTIME_I from WxxxxMOROUT
- **Labor Time** = LABORTIME_I from WxxxxMOROUT
- **Machine Time** = MACHINETIME_I from WxxxxMOROUT

If any Routing Sequences exist on the Primary Routing, but are NOT entered in the WxxxxMORout table, they will remain at 0 and NOT be populated with any Setup Time, Labor Time or Machine Time. The enhancement will set the **Done Checkbox** to "DONE" and continue to process the Quick MO.

The Quick MO Process Integration will then move to the next step which is to create the MO Pick List. If the WxxxxMOHeader column STDCOMP is set to 0, the enhancement will populate the Manufacturing Order's Pick List as normal. If the STDCOMP is set to 1, the enhancement will populate the Manufacturing Order's Pick List based on the data entered in the WxxxxMOPick table:

- **MO Number** = MANUFACTUREORDER_I from WxxxxMOPick
- **Sequence =** SEQ_I from WxxxxMOPick
- **MO Status =** Released
- **FG Item Number** = ITEMNMBR from WxxxxMOHeader
- **Component Item Number =** ITEMNMBR from WxxxxMOPick
- **Position =** SEQ_I from WxxxxMOPick
- **Routing Name** = FG Item Number's Primary Routing Name
- **Routing Sequence** = FG Item Number's Primary Routings 1st Sequence

• **Quantity** = QTY from WxxxxMOPick • **Backflush =** Set to 1 (Set to Backflush) • **Site ID** = SITE from WxxxxMOPick The Quick MO Process Integration will then move to the next step which is to close the Manufacturing Order. This process will be identical to clicking on the CLOSE MO button on the Quick MO Entry window. PLEASE NOTE: The first step in the Close process is to backflush all components: o If the STDCOMP in wMOHeader is set to 1, then the enhancement will review the wMOPick table for the Lot Number of each Lot Controlled Item or the Serial Number for each Serial Controlled Item. If a Lot Number or Serial Number is provided for a non-tracked Item, the system will backflush the Item, ignoring the Lot/Serial Number. o If the STDCOMP in wMOHeader is set to 0, all Items on the Bill of Material must NOT be tracked as Lot or Serial Number information has not been provided. If the Finished Good is Lot Tracked and has a Lot Category assigned, the enhancement will populate the Lot Attributes in the following manner during the Close MO process: o Manufactured Date = DATE from wMOHeader o Attribute 1 = LBS from wMOHeader o Attribute 2 = SQFT from wMOHeader o Date 1 = DATE from wMOHeader The standard Dynamics GP Manufacturing Close Reports will NOT print.	

Assumptions/Requirements	
1. The Inventory Control Setup "Allow Adjustment Overrides" is checked. **2. The Inventory Control Setup "Enable Multiple Bins is NOT checked.** **3. The Component Item Number is not the same as the Manufacturing Order Number. (The Item is not a component of itself.)** **4. Phantom BOM's are NOT used on Pick Lists which are created by the enhancement using the WxxxxMOPick table.** **5. A Default Scheduling Preference must be set in the MO Sched Prefs setup window.** **6. Standard Cost Component Items are used in the manufacturing process for Actual Cost Finished Goods.** **7. Actual Cost Component Items are NEVER used in the manufacturing process for a Standard Cost Finished Good.** **8. Cycle Times on MO Routing Sequences will be left blank.** **9. No Outside Processing steps exist on Routings.** **10. There are NO partial receipts of Manufacturing Orders.** **11. Quantities entered into the Staging Tables for decimal places greater than what is assigned to the Item Number will be rounded.** **12. All MFG BOM sub-assemblies and components are set to backflush.** **13. Serial/Lot Linking is not required.**	