



Lean Manufacturing III

Leverage Lean Manufacturing in Microsoft Dynamics AX

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LEAN MANUFACTURING III

Lean Manufacturing III provides additional functionality to leverage Lean Manufacturing in Microsoft Dynamics AX which provides the base level functionality any manufacturer committed to Lean requires. Functionality includes: Kanban, Subcontract Kanban, Kanban Call-off, Purchase Kanban, Transfer Kanban, Manufacture without PO's, Kanban Board, Kanban Inventory Overview, Takt Meter, Bar codes, Lean Order Schedules, Heijunka Board, Sales Schedules, Cost Substitution, and Value Stream Mapping.

eBECS offers additional functionality with its Lean Manufacturing II, Lean Manufacturing III and the Lean Manufacturing Vendor Enterprise Portal. eBECS has introduced this additional solution set to address the specific needs of High Tech, Medical Device and Equipment, Aerospace & Defense and the Automotive manufactures, a solution that takes Lean to the next level. No longer is Lean a manual process improvement program, but now an institutionalized, seamless solution to support your people and their Lean thinking.

Manufacturers must also integrate Lean thinking on the floor with accounting and finance. Working in a global market requires manufacturers to source globally, conduct transactions in multiple currencies and mitigate currency exchange risk. Vendor Managed inventories minimize raw materials on hand and allow for easier product changeover and better use of cash. Purchasing becomes more streamlined and timely allowing companies to react to the ever changing cost of traditionally very expensive raw materials. But not all products can be produced in a pure Lean environment, so the ability to flow Lean production requirements into a traditional MRP system is sometimes needed. Lean Manufacturing III addresses these needs.

Lean Manufacturing in Microsoft Dynamics AX and Lean Manufacturing II are pre-requisites for Lean Manufacturing III.

“At Brazeway, our partnership with eBECS has enabled us to reach our goal of the seamless integration of Lean and ERP with Microsoft Dynamics AX. Their guidance and experience helped us navigate the pitfalls of implementation and establish a robust manufacturing system.”

Steve Smolinski, CIO, Brazeway Inc.

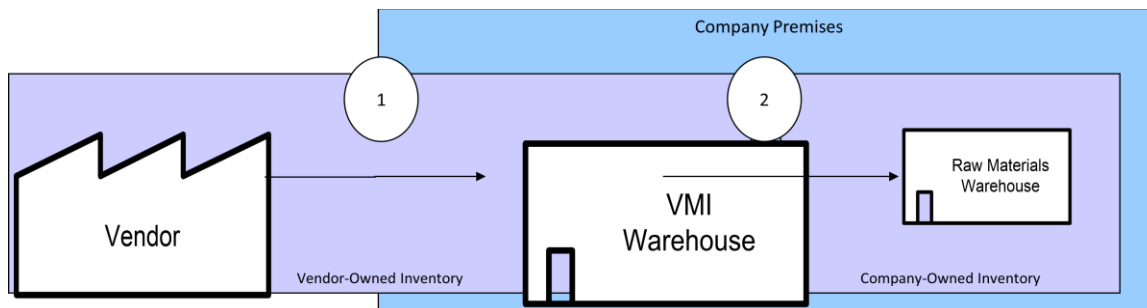
VENDOR MANAGED INVENTORY

Vendor Managed Inventory provides the ability for suppliers to manage customer inventory by providing complete visibility of current inventory levels through the 'VMI boundary' which defines the point at which customer takes ownership, with VMI inventory only being paid for upon either consumption, dispatch or invoice, depending on agreed purchasing rules.

VMI stock is held in a 'VMI controlled' Warehouse. This allows a record to be kept of VMI inventory without it being valued by Microsoft Dynamics AX or, where used, included in MRP inventory calculations, until pulled across the 'VMI boundary' shown below. Inventory levels are controlled using the VMI Stock form:

Vmi supplier profile	Warehouse	Quantity	Item number
100	VMI	100.00	VMI_TestItem
200	VMI	40.00	M&Mbarstock
300	VMI	745.00	VMI_testItem2
250	VMI	300.00	Barstock

Inventory is then pulled across the 'VMI boundary' at which point the VMI stock reduces and inventory is owned by the Company.



The VMI Supplier Profile is used to set the rules for payment to the vendor for the VMI inventory. Payment rules include creating a Purchase Order for every pull across the boundary or using the 'AutoPay' method in which the pull is recorded, accumulate, and are paid at a later time.

PURCHASE SCHEDULES

Purchase Schedules provide suppliers with time based schedule of requirements based on a Master Plan. The supplier may confirm, part-supply, or reject via the Lean Manufacturing Vendor Enterprise Portal. The material can then be received directly to the schedule with quarantine management integration for inspection.

The period sizes, confirmation abilities of supplier and capacity are defined per schedule, with these Period Types:

- Overdue: default to cater for late deliveries
- Fixed: Committed – supplier must deliver
- Firm: Committed – customer will not change
- Plan: Tentative commitment to supplier – “provision only”
- Forecast: ‘Crystal Ball’ long-term view

Purchase Schedule...	Period type	Days in Period	Number of Periods	Supplier can confirm	Check Capacity
STD	Overdue	-28	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>
STD	Fixed	7	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
STD	Firm	7	2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
STD	Plan	7	4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
STD	Forecast	7	8	<input type="checkbox"/>	<input type="checkbox"/>

Purchase Schedules go through a three step publishing flow. **Creation** generates the schedule and copies requirements from MRP. **Approval** ensures the schedule is correct with all needed edits. **Publishing** transmits the schedule to the supplier for confirmation either via the Lean Manufacturing Vendor Enterprise Portal or manually in Microsoft Dynamics AX.

Revision	Status	Purchase schedule	Vendor account	Item number	Purchase order	Capacity	Confirm
21	Published	000003	V000001	Kali	PPR-0000169		<input checked="" type="checkbox"/>

Period type	Start date	Days in period	Requirement	Schedule	Over capacity	Confirmed	Can confirm
Forecast	7/27/2009	7			0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Forecast	7/20/2009	7		150.00	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Forecast	7/13/2009	7		33.00	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Forecast	7/6/2009	7		100.00	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Forecast	6/29/2009	7		85.00	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Lean Portal

Delivery Parameters are also set to control the delivery of material from the supplier. Inspection of delivered material is further defined using rules based acceptance based with 'skip lot' approach. Skip Lot receiving allows predetermined inspection interval for qualifying receipts. Qualifying level is based on consecutive defect-free receipts.

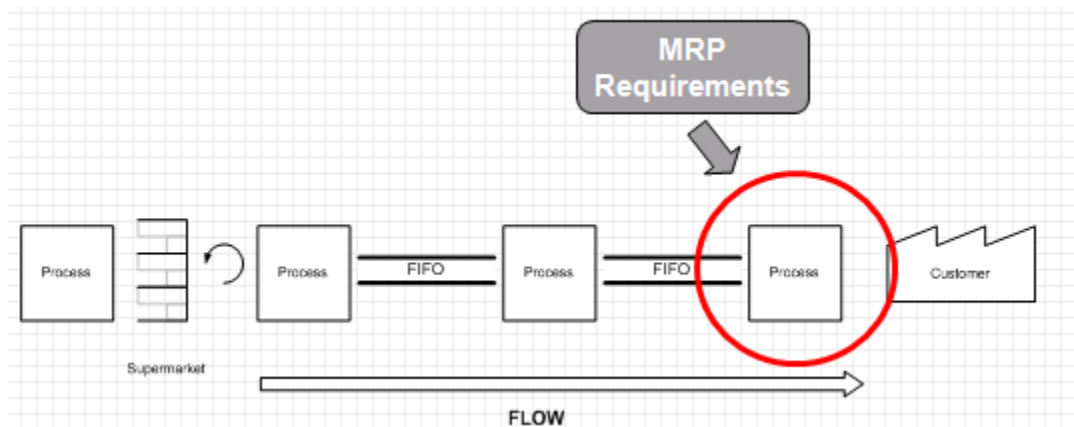


Receipts are created directly against the schedule, which generate purchase orders for each receipt. Quarantine Management then handles inspection if needed for the material.

FLOW SCHEDULES

Flow Schedules allow a cell supervisor to manage requirements from planned orders from Master Planning in one unified schedule that can be adjusted and leveled to provide an optimum load on the cell, while production completions can be reported within the same session.

Flow Schedules are well suited to organizations undergoing a Lean transformation, as the capability to manage requirements Master Planning permit a mixed mode of operation, combining Lean and traditional methods.



Within Microsoft Dynamics AX, Flow Schedules are designed to link a family of items to a schedule and therefore to a final assembly cell. The system will allow similar items to be scheduled on the basis of the Heijunka or drum beat rules – this can be termed the daily capacity of the Work Centre and the time available per day based upon the number of shifts and the hours per shift.

The schedule is linked to a Master Plan to provide the input (demand) into the schedule.

Once a schedule's parameters have been set, it is linked to the items for that line or cell and the schedule can be updated to read the planned orders for those items. Once the update has taken place, the Flow Schedule can be displayed.

The screenshot shows the Microsoft Dynamics AX Flow Scheduling interface. The window title is "(vel) Flow scheduling - Flow schedule: ZZS1, ZZ03, Flow schedule: ZZS1, Flow period: 29, Year: 2007". The interface includes filter options for Schedule (ZZS1), Year (2007), Period (29), and Work cell (ZZC1). A table displays production data for items ZZ02, ZZ03, and ZZ04.

Date	L...	Item	Ware...	Sort type	Proposed...	Released	Qty prod...	Qty outs...
16/07/2007		ZZ02	GW		100.00			
16/07/2007		ZZ03	GW		100.00			
16/07/2007		ZZ04	GW		75.00			
16/07/2007		ZZ05	GW		75.00			
17/07/2007		ZZ02	GW		100.00			
17/07/2007		ZZ03	GW		200.00			
17/07/2007		ZZ04	GW		100.00			

The schedule, as displayed, will show the quantities to be produced, per item, by the period determined in the parameters (set up tab). In the above example there is a daily schedule. It is possible to check on the origin of the production quantities by inquiring on the planned production orders.

Within the Schedule, it is possible to group items by associating them within a Sort Type. This can be used in the scheduling process.

There are two options provided for scheduling; Heijunka and Drumbeat. In addition it is also possible not to undertake any lean scheduling activity – the orders will simply be leveled to the stated daily capacity and any excess is left in the final bucket of the period.

- Heijunka scheduling will level the schedule using flow techniques. The process will seek to level demand across the schedule period with reference to the capacity.
- Drumbeat scheduling will use the field 'Capacity per Day' to level the schedule in accordance with the production cell's capacity.
- None should mean no leveling is required.

Once the schedule has been agreed, it is released. At this point, the schedule is published to the work centre and can be worked on. When a schedule has been released, it will be possible to receive completed items against the schedule.

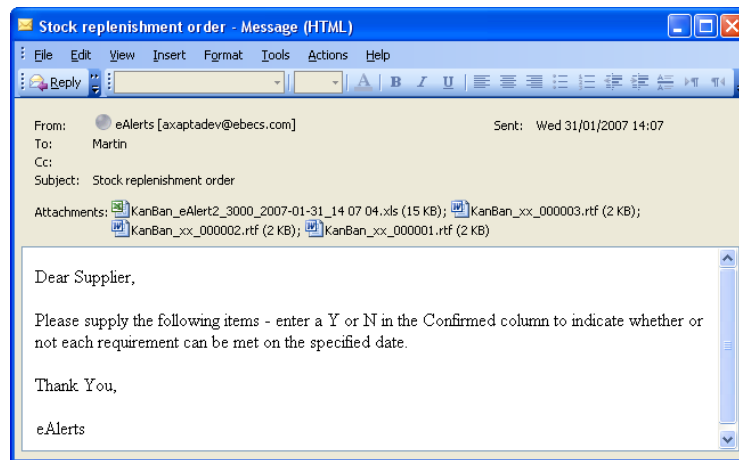
When items are received against the schedule, the user will identify which line of the schedule is to be received against and confirm the quantity.

Completion of the process will perform the appropriate actions to update the inventory within Microsoft Dynamics AX and manage production orders to the 'costing' status.

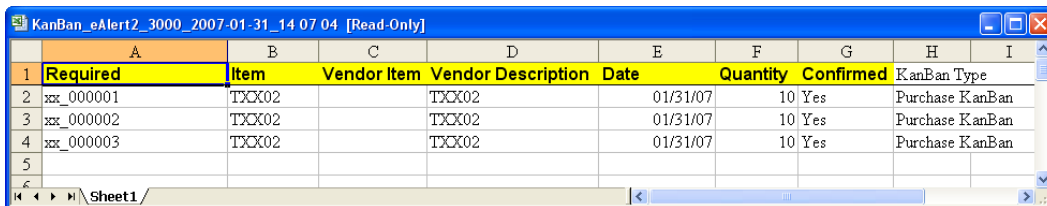
LEAN ALERTING

With Lean Alerting, you are able to create transaction triggers to automate other business processes within the supply chain and be able to generate and transmit electronic Kanbans and delivery confirmations. Lean Alerting also allows you to create an automatic two way pull system with suppliers based on agreed upon business rules.

Upon sending a Supplier Kanban to the supplier, Lean Alerting sends an e-mail to the supplier. Depending on the setup, the vendor can confirm either a summary of Kanbans needed or each individual Kanban requirement.



The supplier will receive a schedule in the form of an Excel attachment. Optionally they may also be sent an attachment for each bar coded Kanban ticket.



	A	B	C	D	E	F	G	H	I
1	Required	Item	Vendor Item	Vendor Description	Date	Quantity	Confirmed	KanBan Type	
2	xxx_000001	TXK02		TXK02	01/31/07	10	Yes	Purchase KanBan	
3	xxx_000002	TXK02		TXK02	01/31/07	10	Yes	Purchase KanBan	
4	xxx_000003	TXK02		TXK02	01/31/07	10	Yes	Purchase KanBan	
5									

The supplier confirms or amends the date, quantity and confirmed columns and in the spreadsheet and returns it as an e-mail attachment. When an email is received from the Vendor, as well as arriving in the conventional email system, it will be picked up by the eAlerts Automation Service, registered and stored by Microsoft Dynamics AX.

The status of the Kanban initially changes to 'Sent to Supplier' and then to 'Supplier Confirmed' once the returned e-mail is received.

Kanban	Vendor account	Item number	To w...	Confirmed qua...	Quantity supplied	Quantity or...	Required date	Confirmation date	Replenishment order status	Sales order	Lot ID
KKK_000001	1001	112716G	01			25.00	10/07/2009		Sent to supplier		
KKK_000002	1001	112716G	01			25.00	10/07/2009		Sent to supplier		
KKK_000003	1001	112716G	01			25.00	10/07/2009		Sent to supplier		
KKK_000004	1001	112716G	01			25.00	10/07/2009		Sent to supplier		

If the Vendor amends quantities or delivery dates in the Excel spreadsheet, these changes will be visible in this form. However, if the option to use summary lines has been selected for the Vendor, during configuration, then Microsoft Dynamics AX will not amend individual lines, but aggregate totals and place any deficits against the last order line.

Kanbans are then received and processed using normal Lean Manufacturing in Microsoft Dynamics AX procedures.

Lean Alerting streamlines communication with suppliers reducing the waste associated with excessive communication and unneeded data entry steps.

ABOUT eBECS

eBECS, the original authors of the Lean functionality that was sold to Microsoft, are specialists in the design and delivery of world class lean and agile business solutions. Working with customers across manufacturing, distribution and the extended supply chain, eBECS utilise Microsoft Dynamics AX and related technologies to build practical and effective solutions that streamline and integrate processes, minimise waste, optimise the supply chain, and manage demand driven operations. eBECS have a number of offices located around the world.

ABOUT THE LEAN CENTRE OF EXCELLENCE

Microsoft and eBECS established the Lean Centre of Excellence to serve as a collaborative facility for organisations looking to utilise Lean capabilities within Microsoft Dynamics AX. Microsoft recognises that a successful Lean implementation is not simply about providing the right software tools; just as important are the skills of the team that architect and deliver the solution.

If you are an organisation considering the implementation of Lean ERP; investigating discrete areas of the functionality to enhance your traditional approach or already a customer using Microsoft Dynamics AX and perhaps looking to adopt the lean functionality; a Microsoft Dynamics Partner interested in achieving the certification required to sell, support and implement the Lean solutions; a Lean Professional interested in helping others by sharing practical experiences or just simply interested in learning what Lean has to offer, then we would encourage you to become a member of this lean community by visiting www.leancentreofexcellence.com to sign up for free membership.

Becoming a member of this community will provide you with a place to ask questions, share your experiences, access the latest materials and ultimately expand your knowledge. Joining The Lean Centre of Excellence will ensure you are kept up to date with news, events and training opportunities through the Centre. You will also be able to learn about the additional capability that eBECS provides in Lean Manufacturing II, III and the Vendor Portal, which addresses some of the more advanced Lean requirements of a Lean Enterprise including the key Lean requirements for the Automotive, Aerospace & Defence, High Tech and the Medical Devices & Equipment Manufacture sectors.

Microsoft recently acquired the Lean functionality from eBECS and we are now pleased to announce that Lean Manufacturing in Microsoft Dynamics AX became available as a fully integrated Microsoft product on 1st August 2009 for the UK, US and Canada.

For more information about Lean Manufacturing in Microsoft Dynamics AX, please email customer@ebecs.com visit www.ebecs.com and www.leancentreofexcellence.com call UK and Worldwide + 44 1246 888 555 call U.S. and Canada (1) 678 318 3529.

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