

Implementing VMI to Reduce Direct and Indirect Cost

James M. Truog, Manager – Strategic Purchasing
Wacker Corp.

262-250-3518; james.truog@am.wackergroup.com

89th Annual International Supply Management Conference, April 2004

Abstract. Vendor-managed inventory (VMI) is a lean strategy in which the supplier is totally responsible for effective supply. A successful implementation requires planning and integration between the manufacturer and the supplier. This presentation will suggest opportunities for VMI and cover the business requirements by presenting two cases implemented by Wacker, for direct and indirect materials. The benefits are quantified through elimination of transactions and related processing costs.

Benefits of VMI. The Vendor Managed Inventory (VMI) Program was designed to eliminate non-value-added labor and repetitive waste for both Wacker Corp. and the supplier. VMI will also streamline the material flow to the point of use. This program is designed to handle any type of commodity. The benefits affect every function throughout the procure to pay process.

- Elimination of planning and scheduling functions for vendor managed material
- Elimination of receiving transactions for in-coming material
- Streamlining the Accounts Payable functions by eliminating the purchase order/receipts matching process and reducing the number of invoices to process.
- Expedited payment to supplier by consolidating invoices to one invoice per month
- Elimination of necessity to maintain delivery information. The supplier is responsible for maintaining all required proof of delivery information.
- Open communication between supplier and the manufacturer.
- Due to the visual management of material by the supplier, only material which has been consumed through production is replenished.
- All material has a fixed and visible location for the supplier to manage which reduces the amount of time the employees spend trying to locate material
- Rejected material gets replaced immediately
- Provides opportunity for the supplier to understand our business from the manufacturing process instead of just another voice over the phone or faxed report. The supplier actually can see the product when walking through the facility on a daily/weekly basis. This brings the “human” element to the overall products we manufacture instead of individual parts being shipped and consumed.
- Applies to any commodity
- Makes everyone’s job easier
- Gives people an opportunity to work together to make positive changes that will benefit internal as well as external customers

Successful Application to commodities. For direct materials, the issue of which commodities needs to be answered. The VMI process begins by identifying suppliers with the capability and willingness to execute the vendor managed inventory process. The next step in the VMI Program is identifying parts from a specific supplier that may be good candidates for

VMI. Review items with frequent deliveries and low value first. It is best to start with a few parts and to add to the program in phases. The process has been implemented for fasteners, cartons, sheet steel, labels, and other items. The benchmark for implementation has been with the supplier Wurth Adams, and includes a significant percentage of the items used in direct material consumption. Along with eliminating material flow costs, supply base reduction has also been accomplished.

For indirect Materials, automation has been integrated into the process. Automated Inventory Management (AIM) for indirect materials is an integrated combination of existing facility, purchased vending hardware, software, supplier and manufacturer process change which meets tool supply requirements on the shop floor at lower cost without non-value added steps. This new integrated process provides the ability to manage a non-traditional Tool Crib with an unlimited number of remote dispensing stations. The process was implemented with a local supplier, Waukesha Industrial Products. The supplier drove the implementation process with the hardware supplier, and the other indirect material suppliers.

Case study: Direct Material Implementation. The VMI process begins by identifying a supplier with the capability and willingness to do vendor managed inventory. The next step in the VMI Program is identifying parts from the supplier that may be good candidates for VMI. Items with frequent deliveries and low value were considered first. It is best to start with a few parts and to add to the program in phases. This allows everyone involved in the process to become acquainted with the new processes and responsibilities. The phasing can be done according to fixed work centers or focus factory. How quickly items are added to the VMI program is at the discretion of the organization and the supplier.

The program implementation timetable is negotiated at this point. Payment terms and consolidated invoicing for the VMI items are also discussed at this point.

Once part numbers were selected for the VMI program, the next step is to determine target inventory levels, along with standard kanban quantities and types of returnable containers, bales, bundles, or baskets. An important factor considered is the most efficient methods to store, ship, and move the material. The order and delivery frequency must be determined with the supplier before target inventories can be established. Each component is individually evaluated in the selection of a kanban container. Ergonomics, material presentation, and line design are all considerations when setting up a part for kanban. Containers that can be moved by machine operators or assemblers are preferable to containers that require a forklift to move them. Kanban container quantities were based on the rate of consumption and the time required to replenish an empty container. The kanban sizes can be calculated by different formulas. The formulas used are dependent the number of deliveries per week and the consistency of the consumption pattern. Irregular consumption patterns require higher inventories than consistent patterns of consumption. Deliveries are determined by the target inventory goals set forth by the company.

Once the kanban sizes are determined, fixed locations are established and labeled. The location must be fixed in order for the planner or supplier representative to visually determine when more material is required. The fixed location was important for the computer system to backflush material for completed work orders. The material handlers also benefit from having the locations clearly labeled with the part information. The material can be put away correctly

as soon as it is delivered from the supplier. The fixed location should be located near the point of consumption so that the operator can conveniently take the parts as needed. This eliminates the non-value-added activities of picking and handling material. Space that was used as a central warehouse was freed up for building new products because of the reduced inventory.

The space required to store the material at the point of use must be considered in the layouts of new focused factories. If it is necessary to modify a workstation to accommodate the kanban containers or bundles, this should be done concurrently with the other steps required to get parts converted to the VMI program. In existing areas, the lack of available space at the point of use may require smaller quantities on-hand which are replenished more frequently. The use of color bins can assist in the coordination of similar parts. Color coordinating bins will help suppliers to identify their parts and reduce errors in reordering. The color coordinating of bins also helps to ensure the usage of correct parts all the time.

Containers and packaging are the next elements for design consideration to configure the parts in the kanban container. Line design, available area, weight of the part, usage, and ergonomics all are issues which must be considered when sizing material to containers or bundle sizes. It is very important the material handlers and operators can efficiently move the containers/bundles. The operators will want the material at the workstation to flow in an efficient manner as the parts are being consumed. The kanban containers need to be ordered from the supplier once the containers are configured. All parts for the first phase should be configured simultaneously.

The trigger is a communication tool used by a planner or supplier representative to send the message that more material is needed at a fixed location. The triggering mechanism may be the empty kanban container, empty rack, empty location, or even the cutting of a band on a bundle of material. The information can be transmitted in a variety of ways. It can be as sophisticated as scanning the bar code and quantity required to refill the bin or as simple as sending the empty container back to the supplier to be refilled. We have also developed forms with check-off boxes that can be faxed to the supplier's order department as notification of what is needed to refill the fixed locations.

The basic body structure of the form will contain part number, description, kanban quantity, and number of containers or bundles. The part number gets listed under the part number heading. The description of the part may be shortened in order to fit in the space available. The purchase order will read VMI to indicate the part is under the VMI kanban program. The form can be plain and simple, or extremely detailed even down to the specific color coded triggers for each focus factory. The trigger is a flexible tool that can be changed to meet the suppliers' needs. After all, it is a tool to give the supplier the information that they need to process your replenishment shipment. The color-coded trigger can be matched up to the different areas of the facility. The color-coded form would help guide the supplier through the facility while filling in the form. The color-coded form also can act as a check and balance system to ensure each area was covered by the supplier.

Ensure system requirements met to support VMI processing. Several adjunct programs were written and processes defined to support VMI within the ERP system used – Baan.

Several issues to consider for the supplier and business unit integration:

- a. The supplier established a separate customer number for the VMI purchases. This allows separate invoicing and payment terms.
- b. For those items that may pass through the receiving dock, the supplier needs to clearly print "VMI" on the packing list so that the receiving department knows they do not need to create a receipt for these items.
- c. The supplier clearly marks invoices as "VMI" so that the Accounts Payable department knows how to process them.
- d. The supplier representative needs to be trained. Training included orientation as to the fixed locations of items, where forms are stored, where to find faxes and phones, and who to contact if they have questions or need help.
- e. Confirmed supplier receipt of the designated containers for the VMI parts.

VMI ordering process. Once the details of kanban quantities, bin sizes, kanban tags, triggers, locations fixed and identified, and bins identified, the program was ready to begin. The supplier is responsible for the physical management of parts. The supplier visually checks the stock levels of each part on the vendor managed inventory program. The supplier checks off the material required to replenish the fixed location on the trigger form. The supplier may reference the trigger from the prior day to know what material is being delivered that day. The material handlers also use the prior day's trigger when they need to move material from the receiving area to the point of use. For items that do not require material handling equipment (example: hardware) the supplier stocks them at the point of use. The supplier's representative will transmit the information to the company for shipment the next delivery date. The supplier schedule with rolling 12 month demand projections, is e-mailed to the supplier once a week for long range viewing of procurement needs for the supplier. This will prevent any surprises in manufacturing requirements. The supplier schedule provides the supplier the opportunity to view our requirements which enables the supplier to order material and plan production capacity.

Payment process. When inventory is delivered, it is taken directly to the point of use and no receiving transactions occur. When the consolidated invoice arrives from a VMI supplier, it is processed as a miscellaneous invoice. This transaction offsets the daily inventory adjustments to replenish stock. The VMI Adjustment account provides macro control of the VMI process. Consumption (total of the daily inventory adjustments) will equal the amount invoiced to refill the bin or fixed location. By not matching the receipts to the invoices large amounts of time are saved in Accounts Payable. The fastener supplier invoice used to take 3 days to process. It now takes only a couple of minutes, with 2 to 3 times the volume of items.

Cost reductions accomplished. With more than 20% of the item numbers consumed, managed by this process, transaction processing has been eliminated in the areas of: planning & scheduling, receiving, material handling, and accounts payable. This has translated into equivalent percentage processing cost reductions throughout the process. Outages and corresponding hassle costs are gone.

Indirect Material Implementation - Making the case. Automated Inventory Management (AIM) is an integrated combination of existing facility, purchased vending hardware, software, supplier and manufacturer process change which meets tool supply requirements on the shop floor at lower cost without non-value added steps. Many of the concepts and process parameters are similar to VMI. This new integrated process gives Wacker the ability to manage

a non-traditional Tool Crib with an unlimited number of remote dispensing stations. This process was jointly developed with a supplier of tools and a supplier of vending hardware; this process is optimized to reduce non-value added activities. The hardware links provide management of vending machines, tool cabinets, and lockers from a single computer. The system tracks inventory, usage, and purchasing transaction history. This information can be used by Manufacturing Engineers, Supervisors, and Suppliers. The information can be real-time or reports of past history. It is designed to provide a flexible, easy point-of-use system that provides maximum control over our inventory.

Solicit proposals. Reports were obtained of all non-production items received over a 1 year period. From these reports, spreadsheets were developed showing part number, description, supplier, supplier part number, quantities received, and pricing.

Spreadsheets without pricing were sent to top 3 suppliers for quotes as an RFQ. They were also required to develop a proposal to support our operations that included inventory controls and management. They also told vending machines and their personnel stocking were required components. The pricing information was to be returned in our original spreadsheet format.

Proposals were reviewed with Cost calculations were made from the spreadsheets. Total cost of the proposals were reviewed.

From the proposals and quotes one supplier was selected. A meeting was held with all of the main suppliers. Details were worked out with these suppliers to support the program and future needs of the organization. These suppliers would all benefit through increased sales from items that had been purchase from smaller suppliers of low volume support

Hardware Installation. A hardware installation plan was prepared. Critical point is to pay attention to details.

Data requirements and Final preparation. Again, attention to detail is critical. Some of the elements to attend to:

Prepare Excel worksheet, with information from original quote spreadsheet and all employee and inventory information, via email at least 1-week prior to the installation dates. Giving careful consideration to consistent description standards.

Determine what inventory items will be assigned to the bins (60 bins per machine), giving consideration to package quantities and helix size limitations. Ensure that the tools and packaging are available for repackaging.

Purchase boxes of labels for labeling bins and items.

Start pulling and packaging the desired inventory from the customer's tool crib and distributor's stock, verifying item code, quantities, and package quantities.

Cost reductions accomplished. Major elements of realized cost reductions are:

1. Reduction in tooling expenses – Consumption reduced by 20% due to specific package sizes for each point of use.
2. Reduction in tool crib staffing – converted indirect to direct labor.

3. Elimination of operator “walk and talk” time for the trip to/from tool crib - this factor is a contributor to productivity improvement.
4. Eliminated purchase orders, receiving dock, accounts payable transactions for all items involved in this process.
5. Freight costs reduced through consolidation
6. Inventory value reduced
7. Eliminated supply outages and the associated disruptive cost

Conclusion. Process change to leverage supplier capability to include VMI responsibility will add value to a manufacturing process. Elimination of the non value added transactions and process steps at the manufacturer through VMI implementation is a valuable lean strategy.