



THE BUSINESS CASE FOR AUTOMATED SUPPLY TECHNOLOGY

This business case examines the potential economic and operating benefits of implementing automated supply technology (i.e., point-of-work vending) to streamline and control the distribution of supplies at manufacturing and other industrial sites.

Current State Norms: Issues and Opportunities

Traditionally, safety items, MRO supplies, tools, parts, components, kits and other assets have been retrieved by the workers who use them from tool cribs, storerooms and warehouses. Workers leave their work place, travel to the location where the needed items are stored, and then request an item at a counter or window. The requested item is picked, and the transaction is recorded.

In many ways, this is a costly, inefficient transaction. Each time an employee travels to and from the crib, it takes them away from their job – often for 15 minutes or more per trip, factoring in waiting and socializing time. In turn, crib attendants, many of whom also have maintenance or other duties to perform, spend a significant part of their day on the routine task of handing out supplies, taking them away from more strategic activities. Although the flow of product is controlled, the usage data collected in these counter-type transactions is often incomplete and/or inaccurate and thus unreliable. And finally, when attendants are not available in the storeroom, creative “workarounds” frequently emerge. These may include open access to storerooms for off-shifts, weekends and holidays; supervisor management of storeroom keys; and accompaniment of personnel retrieving tools by plant security services. These “workarounds” provide a way for workers to get needed products, but they result in time away from production and/or unrecorded or inaccurately recorded transactions which, in turn, lead to higher costs in the form of stock-outs, emergency and expedited orders, and production delays.

Some industrial sites have developed alternatives to the traditional tool crib model. These include:

Unattended, Uncontrolled Storerooms

Open storerooms provide easy access to inventoried materials and assets, and the cost of attendant labor is eliminated, but the uncontrolled consumption typically results in increased usage levels of 15-30%. Restocking also becomes problematic, as recordkeeping for stock removals and replenishment is often inconsistent at best. Unreliable inventory information leads to excess inventory (safety stocks), out-of-stock conditions and frequent emergency or expedited orders.

Free-issue at the Point of Work

For many commonly used items, free-issue bins or cabinets are placed at or near the point of use, allowing workers to take items as needed from the free-issue point. Items commonly provided as free-issue may include:

- Gloves and safety supplies
- Tools
- Electrical components and parts
- Welding supplies
- Fasteners
- Fittings
- Shop supplies

Although this approach provides convenient access for workers, it creates other problems such as:

- Consumption increases
- High cost to monitor and replenish
- Increase in inventory levels
- Vulnerability to stock-outs

As is the case with uncontrolled storerooms, no record of inventory levels or transactions is maintained at these free-issue drop points, so inventory management and reordering are fraught with wasteful and unnecessary costs. To compensate for the lack of reliable inventory and demand data, buffer inventories frequently build up. This excess inventory ties up cash and facility space that could otherwise be used for productive purposes.

Delivery systems

In some cases delivery systems are implemented whereby an internal resource (“tool chaser,” “runner” or “expediter”) delivers materials, tools, kits or needed supplies to a pre-designated area near or at the point of work. In these cases, there is often little security for the chain of custody. The delivery is usually made to an unsecured area such as a workbench, shelf or a supervisor’s desk. No record of the receipt by the intended user is kept. In many cases, the materials are picked up and used by someone other than the intended recipient. This can result in duplicate orders, wasted time, production delays, waiting time and wasted effort. Managers encounter even greater challenges when trying to understand true demand. Because orders are typically placed on an “I need it now” basis, deliveries often are not consolidated and delivery costs tend to be high.

Vendor-managed inventory (VMI) services, whereby inventory is monitored and replenished by an outside supplier or distributor, offer better forecasting, product flow and usage reporting, including, in some cases, consumption by individual stocking locations. But aside from workstation-specific systems (typically used for fasteners), even the most sophisticated VMI systems do not track usage down to the individual employee level, making it difficult to identify where the waste is actually occurring and challenge those situations. In addition, these systems typically do not provide usage controls. Strategic suppliers (such as Fastenal) do manage secure on-site tool cribs for high-volume customers, but this isn’t a feasible option for many companies.

The Case for Automated Supply Technology

A rapidly-growing trend is to deploy secure, automated supply technology at the point of work. Such technologies include:

- Industrial vending machines
- Automated locker systems
- Compact systems for tooling/small parts

Through these technologies, users gain the benefits of controlling and automating transactions at the point of work, without employing additional crib labor. The elevated control and demand visibility drives direct cost savings such as:

- ✓ Reduced consumption
- ✓ Reduced reordering costs
- ✓ Reduced inventory levels
- ✓ Reduced material/part/tool retrieval time and cost
- ✓ Elimination of stock-outs, downtime and delays

Users also receive many indirect benefits including:

- ✓ Automated collection of accurate, actionable data for process improvements
- ✓ Improved compliance with procurement, process, quality and safety standards
- ✓ Increased inventory turnover rates

Additional operating benefits include:

- ✓ Elimination of waste and inefficient manual processes
- ✓ Collection of process data for Six Sigma and Lean initiatives
- ✓ Automated replenishment processes

Alternative to Capital Expenditures

Rather than engaging in a time-consuming capital appropriation process, users can acquire automated supply technology through an operating lease or service agreement. This can have the further benefit of conserving capital while providing an immediate net economic benefit. Although each case must be considered individually, **this approach often eliminates the need for capital appropriations and complex payback or ROI calculations.** When the implementation is structured as an operating lease/service agreement, a “netting” of cost savings and program expenses can be made, thus creating a very simple and straightforward view of the economic benefits realized.

Rapid Time-To-Benefit

Key ingredients for successful implementations include using simple, straightforward technology and selecting an experienced technology provider with qualified local support resources. Study of many historical implementations indicates that a number of pitfalls can delay or impair achievement of the desired outcomes. Factors frequently cited as disappointing or sub-optimal results are:

- Management time and attention is diverted from core business activities
- Execution plans are incomplete or inappropriate
- Implementation is poorly executed
- Systems integration and data distribution are not optimized, resulting in manual processes being retained

To prevent these and other influencers that often drag down implementations, Fastenal provides end-to-end program support that includes machine delivery, installation, product packaging/testing, and service, along with a dedicated hardware and software call center. Moreover, the software that runs Fastenal's "FAST" machines (developed by Fastenal's automated supply technology partner, Apex Industrial Technologies) is Internet-hosted, requiring minimal support from customers' IT personnel, further streamlining implementation and operation.

Maximizing the Benefits Through VMI

Automated supply technology can be supported by a vendor-managed inventory (VMI) program, whereby an outside supplier takes responsibility for keeping the machines filled. This approach can significantly augment the time and cost savings for the user, who is freed not only from the labor involved with monitoring and filling the machine(s) but also the costs associated with packaging vend-ready product and keeping inventory on-hand to stock the machine(s). The key considerations when selecting this kind of full-service solution include the supplier's product mix and service capabilities – i.e., can they supply all of the needed products, and do they have a local presence that allows them to provide regular service in order to keep the machines filled.

Opportunities for Cost Savings

Figure 1. below illustrates areas of cost savings typically achieved through broad-scale implementation of automated supply technology.

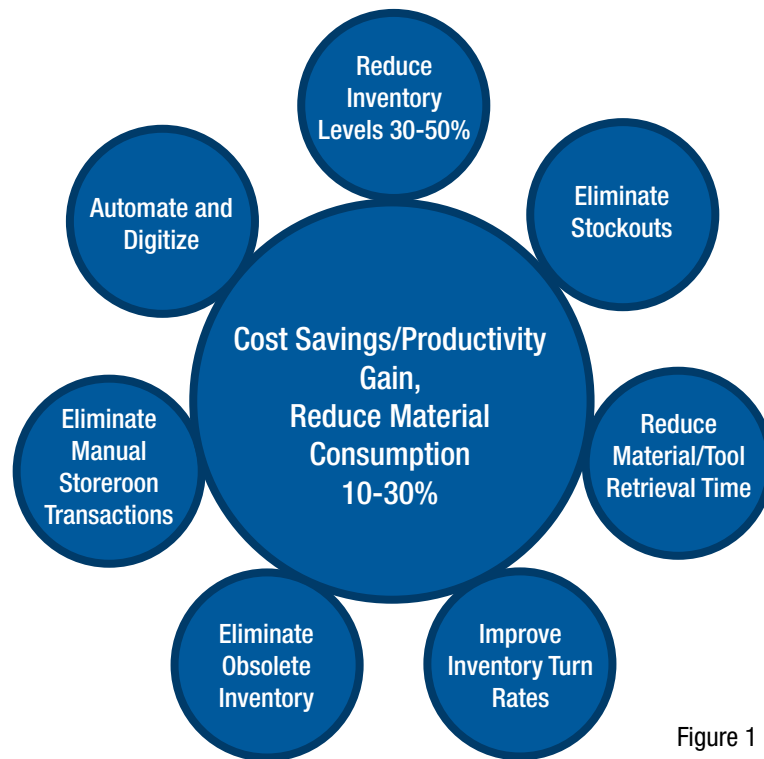


Figure 1

Calculating the Economic Benefit

A thorough examination of potential economic benefits should be conducted. Individual cases will present opportunities for savings and improvements in varying degrees for each of the possible savings areas. Areas to be included in the analysis should include, at a minimum:

Reduced Material Costs Due to Decreased Consumption

The use of automated supply technology to manage point-of-work tools and supplies has historically produced a sustained reduction in material cost of between 10% and 30%. This is driven by greater accountability for material used and control over access and quantities issued. In other words, workers are given the materials required for their particular jobs in the quantities specified. Benefits of this increased accountability and control include:

- Waste reduced
- Shrinkage reduced
- Maverick and non-compliant consumption monitored and controlled

Consumption reduction levels frequently vary for particular items. Calculation of savings should factor in the following:

- 1) The characteristics of the item
 - Unique use within plant
 - Utility and desirability outside plant
 - Access and portability of item
- 2) Value of item
- 3) The levels of control both in the current state and in the future state

Saving ranges are typically 10 to 50 percent. Each item or category should be considered individually. Items with unique utility within the plant typically yield reductions toward the lower end of the range while items of high value and utility outside the plant (leather gloves, batteries, hand tools) can yield savings at the higher end of the range. As workers become aware that their individual usage can be tracked and monitored, abuse and waste are reduced and usage levels tend to go down. Limits can be set for both access rights (authorization for particular workers to access particular items) and quantity levels (set quantity limits for the number of items workers can access over time—per hour, shift, day, etc.). Improved visibility into usage patterns helps management to quickly identify abuse, waste and other opportunities for improvement. Because granular information is readily available across the supply chain, management can implement corrective actions quickly and effectively.

Finally, the ability to control access to particular items and to link those items to particular jobs or processes (machines, cells, jobs, etc.) dramatically reduces non-complaint or “maverick” usage. Materials, tools, parts and the like are used for the intended purpose, in the specified quantities.

Inventory Reduction

By introducing accountability and visibility into usage patterns, inventory levels can typically be reduced to less than one month on hand, thus “virtualizing” the inventory. If machine inventory is managed by an outside supplier (through a VMI program), on-hand inventory can be reduced even further, to essentially zero in the case of a consignment program. This ability to minimize inventory will result in a one-time savings as the excess inventory is burned off. The amount of the burn-off savings can be calculated by comparing the current- and future-state inventory levels. Additional benefits of reduced inventory levels include:

- Lower inventory carrying costs
- Reduced storage space (valuable space can be reclaimed for production)
- Reduced damage
- Reduced obsolescence

Direct Labor

In most historical models, production time is lost when workers travel to and from the tool crib or storeroom to retrieve the materials, supplies and tools they need to do their jobs. This process is also disruptive. In some cases, a lead person or supervisor retrieves materials on a “batch” basis for his entire team. This leads to uncontrolled, excessive use, localized stockpiles, or hoards, and a second handling of materials as they are redistributed to workers who actually use them. The control and automated replenishment provided by automated supply technology eliminates stock-outs and improves worker confidence that tools and supplies they need will be available when they are needed. The improved confidence levels result in a reduction of tool and supply hoarding. This, in turn, has a positive impact on waste, spoilage and obsolescence.

In most cases, hundreds of hours of direct labor can be reclaimed for production each year. To calculate the potential amount of direct labor subject to reclamation, the following factors should be considered:

- Travel time for tool and supply retrieval
- Distraction, socialization and disruption occurring during tool and supply retrieval
- Waiting time
- Put-away, picking, transaction processing and data processing

Indirect Labor

Workflow processes for reordering replenishment stock will be digitized, automated and streamlined. This will result in:

- Greater accuracy
- Elimination of stock-outs
- Improved efficiency

Reduced Paperwork and Manual Approval Processes

Areas where improvements are typically realized through automation include:

- Reduction in number of requisitions
- Reduction in number of purchase orders
- Streamlined reconciliation and payment processes
- Eliminates need for management involvement in routine processes, expediting and tool and supply searches

Additional Opportunities for Financial Improvements

Additional benefits may be found in the following areas:

- *Elimination of stock-out conditions:*
Automatic re-ordering virtually eliminates outages, production delays and the need for expedited orders.
- *Improved management information:*
It is difficult to put an absolute value on timely, actionable information, but the ability to get highly reliable, timely information greatly improves management decision-making. This will enhance other management initiatives such as:
 - Six Sigma and other continuous improvement initiatives
 - Lean manufacturing
 - Constant improvement of the machine's stocking model (understanding what's moving, and what's not)
- *More efficient integrated supply:*
Automating material, tool and supply distribution with automated supply technology enables the supplier to provide more efficient services. This results in cost savings and improved performance for both the supplier and the client.

Conclusion

In today's high-pressure economy, management must develop cost-effective strategies that eliminate waste from the supply chain while driving productivity gains. For an increasing number of companies, deployments of automated supply technology will be an essential part of achieving this mandate. The benefits of automated point-of-use distribution are numerous, including improved productivity (fewer trips to the crib), reduced product consumption through flexible access controls and reporting, reduced on-hand inventory, and streamlined supply chain processes including automated ordering. Additional value can be achieved by supporting the technology with vendor-managed inventory (VMI) services, whereby the supplier takes on the costs and labor associated with packaging product and keeping the machines filled. The cost structure also impacts the return on investment. Operational leases or service agreements, as opposed to capital investments in the equipment, allow the costs to be immediately offset by cost savings, providing rapid, clearly measurable net benefits.

Fastenal is the leading provider of turnkey automated supply solutions, leveraging its broad product offering, regional tech centers, and 2,500+ local stores to provide world-class technology backed by unmatched local service. For more information about automated supply technology solutions available from Fastenal, click on the FAST 5000 ad on fastenal.com or contact your local Fastenal store. To arrange an on-site technology demonstration via one of Fastenal's mobile display vehicles, call 1.877.265.8247.