

A Business Case for Automated Supply Control Technology

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This business case examines the potential operating and economic benefits of implementing automated supply control technologies to streamline the distribution of supplies at industrial and manufacturing sites.

Issues and Opportunities

Traditionally, maintenance, repair and operating consumables (MRO), safety items, tools, components, kits and other assets have been retrieved by the staff who use them from tool rooms, stores and warehouses. Employees leave their place of work, travel to the location where the items are stored and then request an item at a counter or window. The items are then picked and the transaction recorded.

In many ways this is an inefficient and costly transaction. Each time an employee travels to and from the stores, it takes them away from their job – often for 15 minutes or more per trip waiting and ‘socialising’ time is factored in. In turn stores staff, many of who also have other duties to perform, spend a significant proportion of their day on routine tasks such as handing out supplies and recording the stores issue – which detracts from their core work.

In this scenario, whilst the flow of product is controlled, the usage data collected in these counter-type transactions is often incomplete, inaccurate and unreliable.

Finally, when storerooms are not staffed, creative “workarounds” frequently occur. These may include:

- Open access for unmanned times such as off-shift, weekends and holidays
- Supervisor management of storeroom keys
- Accompaniment of personnel retrieving tools by plant security

These “workarounds” provide a way for employees to get the products they need, but result in time away from production, unrecorded or inaccurately recorded transactions, which in turn lead to higher costs in the form of stock-outs, emergency orders and production delays.

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

Unattended Storerooms

Open access stores provide easy access to inventoried materials and assets. Whilst the cost of stores labour is eliminated, the uncontrolled consumption typically results in increased usage levels of up to 40%. Restocking also becomes problematic as record keeping for stock withdrawals and replenishment is often inconsistent at best. Unreliable inventory information leads to excess inventory, stock-outs and frequent expedited and emergency orders.

Free Issue at the Point of Use

For many commonly used items, free-issue cabinets and bins are placed at or near the point of work. Allowing workers to take supplies as needed, items commonly provided as free-issue include:

- Gloves and personal protection equipment
- Fittings
- Fasteners

- Welding supplies
- Production consumables
- Electrical components

Whilst this approach provides convenient access for staff, it creates other problems such as:

- Consumption increases
- Increase in inventory levels
- Vulnerable to stock-outs
- High costs to monitor and replenish

As is the case with unmanned storerooms, no record of inventory levels or transactions is made at these drop points. As a result inventory management and reordering is fraught with wasteful and unnecessary cost.

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 delivers supplies to a pre-designated area at or near 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 supervisor's desk, shelf or workstation. No record of the receipt by the intended user is kept and in many cases, the materials are picked up and used by someone else. This can result in wasted time, duplicated orders, production delays, waiting time and wasted effort.

Managers encounter even greater challenges when trying to understand true demand. Because orders are placed on an "I need it now" basis, deliveries are often not consolidated and delivery costs tend to be high.

Vendor Managed Inventory services (VMI) whereby an external supplier monitors and replenishes stock 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 down to employee, cost centre and asset level, making it difficult to identify the waste actually occurring and challenge those situations. In addition, these systems typically do not provide usage controls. Strategic suppliers do manage secure on-site storerooms but these are labour intensive, expensive to run and unfeasible for many companies.

The Case for Automated Supply Control Technology

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

- Industrial vending machines
- Automated locker systems
- Radio Frequency Identification (RFID) Engineering stores tracking systems

Through these technologies, users gain the benefits of controlling and automating transactions at the point of work, whether they are on the production floor or maintenance stores – without the need to employ additional stores labour.

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 activities
- Automated replenishment processes

Alternative to Capital Expenditure

As opposed to engaging in a time-consuming capital apportionment process, users can acquire automated control 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 programme expenses can be made, thus creating a very simple and straightforward view of the economic benefits realised.

Rapid Time-to-Benefit

Key ingredients for successful implementations include using simple, user friendly technology and selecting an experienced technology provider with qualified 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 include:

- 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 optimised, resulting in manual processes being retained
- Servicing and spares for chosen technology are not readily available in the event of malfunction (particularly prevalent when technology is imported from outside a territory, for example the USA and Far East)

To prevent these and other influencers that often drag down implementations, the selected partner must provide end-to-end programme support that includes data cleanse, machine

configuration, delivery, installation, product packaging/testing and service, along with a dedicated hardware and software call centre. Moreover, the software that runs the automated technology should be internet hosted, requiring minimal support from your IT personnel, further streamlining implementation and operation.

Maximising the Benefits Through VMI

Automated supply control technology can be supported by a Vendor Managed Inventory programme (VMI), 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 labour involved with monitoring and replenishing the hardware but also the costs associated with packaging vend-ready product and keeping inventory on-hand to stock the machines and/or RFID stores.

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 need products and do they have a presence that allows them to provide regular service in order to keep machines filled.

Opportunities for Cost Saving

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

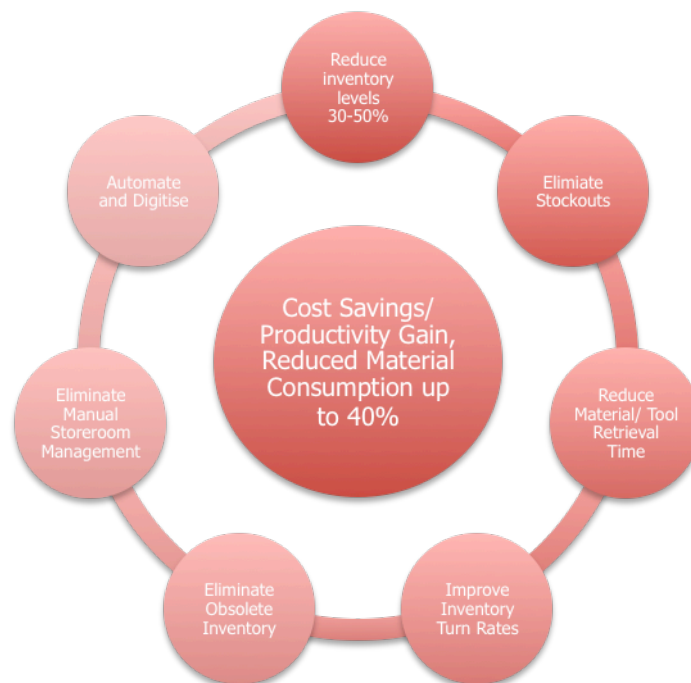


Figure 1: Areas of Cost Saving

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 control technology to manage point of use tools and supplies has historically produced a sustained reduction in material cost of 10-20%. However, the latest technology has provided savings of up to 40%. This is largely driven by greater accountability

for material usage, rationing and control over access and quantities issued. In other words, workers are given the materials required for their particular jobs in the quantities they need. Benefits of this increased accountability and control are:

- Waste reduction
- 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:

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

Savings ranges are typically 10-50%. Each item or category should be considered individually. Items with unique utility within the plant typically yield reductions towards the lower end while items of high value and utility outside the plant (batteries, gloves, hand tools, marker pens) 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 go down. Limits can be set for both access rights (authorisation for particular workers to access particular items) and quantity levels (ration 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-compliant 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 “virtualising” the inventory. If machine inventory is managed by an outside supplier (through a VMI programme), on-hand inventory can be reduced even further, to essentially zero in the case of a consignment agreement. This ability to minimise inventory will result in a one-time saving 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 include:

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

Direct Labour

In most historical models, production time is lost when workers travel to and from a 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 or her entire team. This leads to uncontrolled, excessive use, localised "squirrel" stores and a second handling of materials as they are redistributed to staff who use them.

Automated supply control technology eliminates stock-outs and improves worker confidence that the tools and supplies they need will be available when they are needed. The improved confidence levels result in 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 labour can be reclaimed for production each year. To calculate the potential amount of direct labour subject to reclamation, the following factors should be considered:

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

Indirect Labour

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

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

Reduced Paperwork and Manual Processes

Areas where improvements are typically realised through automation include:

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

Additional Opportunities for Financial Improvements

Additional benefits may be found in the following areas:

- Elimination of stock-out conditions:
 - Automatic reordering virtually eliminates outages, production delays and the need for expedited orders
- Improved management information:
 - It is difficult to put an absolute value on timely, accurate 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 activities
 - 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 highly pressurised and volatile 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 control 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 storeroom), reduced product consumption through flexible access controls and reporting, reduced inventory-on-hand and streamlined supply chain processes including automated ordering.

Additional value can be achieved by supporting the technology with Vendor Managed Inventory services, whereby the suppliers takes on the costs and labour 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.

About Propeller

Propeller GB Limited is a leading developer, manufacturer and supplier of World Class automated inventory management systems and Vendor Managed Inventory programmes for industry in the UK. Working with companies in the process, manufacturing and defence sectors, Propeller is viewed as a major strategic partner in cost saving and improvement activities for these organisations.

For more information about our Advanced Inventory Management Systems and Vendor Managed Inventory programmes, please contact us.

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