

INVENTORY MANAGEMENT SYSTEM (IMS)

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The first decade of the 21st century will present challenging issues in logistics and inventory control.

The Reasons

1. The source of many products and aftermarket parts is moving offshore. This results in:
 - Longer supply chains
 - Higher costs (some of the costs are embedded in the landed cost of the item)
 - Changes in the nature of companies. Due to extended lead-times from offshore supply chains, companies must become better skilled in the arena of forecasting demand
2. Continued acquisitions and consolidations in American industries result in fewer, larger companies with broader product lines and larger number of stock keeping units (SKU's). This phenomena results in:
 - A more significant role for companies in sales planning and forecasting
 - Increased difficulty in warehousing and inventory control associated with the increased number of SKU's
 - Increased use of technology (support software) to better manage this sophistication
3. Continued employment reductions in the US result in:
 - Lean companies. This doesn't allow companies sufficient time to research technologies in order to take advantage of new opportunities
 - Companies unable to implement new technology to solve problems
 - The outsourcing of logistics to 3rd party companies
4. Global sourcing results in:
 - Longer supply chains
 - Hard to control inventory
 - Hard to predict delivery times
 - Hard to report results
 - More expensive operations

Inventory for customer use is an expensive investment of company money. Instead of investing in people, technology, or other important assets that can potentially assist in growing a business faster, companies who invest in inventory have no return on net assets (RONA) until they sell the inventory. In many businesses, inventory is turning at the lowest levels in history and below industry averages.

Studies have shown that manufacturers and wholesalers have over 60 days of inventory and that retailers have over 90 days of inventory capital tied up. These times do not include inbound inventory in the supply chain. Real supply chain inventory is 25% higher. This is a very significant amount of capital tied up in inventory.¹

We live in a world and culture today where we want everything now. Information on alternative supply sources is easily available on the internet. Vendor loyalty is fleeting. The 21st century has been called the "instant gratification century."

¹ Thomas Craig, Cycle Time Reduction - Driver to Supply Chain Management Results

Stated another way, when a customer wants to buy something, they want it now. “Just-in-time” manufacturing and the internet has helped all of us access product information and alternative suppliers.

A supplier’s worst nightmare is not finding the product in stock that the customer wants to buy. The results are both a lost business opportunity associated with the sale of the inventory and the poor customer service associated with not meeting the customer’s immediate needs.

Consider the impact of the following:

- Periodic (quarterly or monthly) physical counts of the inventory to correct the accounting records
- A job or project that isn’t initiated because the WMS shows there is insufficient inventory on hand to complete the work
- A project or job that is halted because inventory that the system indicated as available in stock is not actually in stock or simply cannot be found
- Employee turnover in the inventory area

Each of the above result in a wasted opportunity.

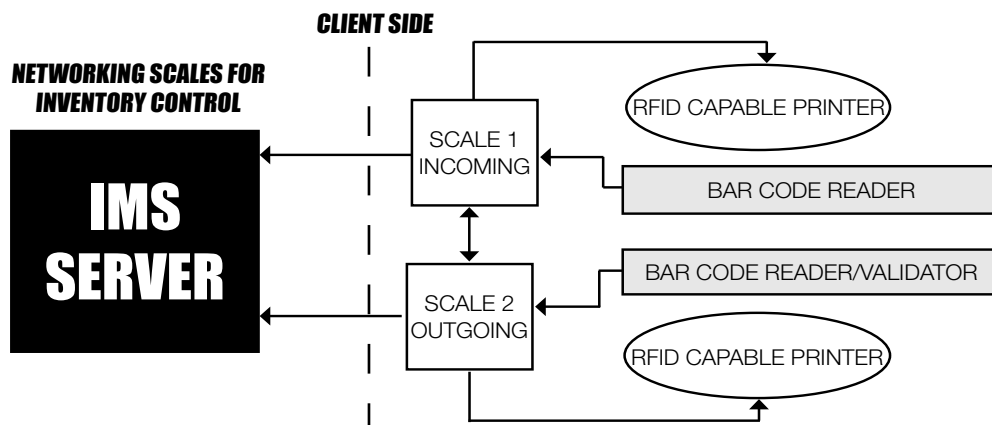
Where Do We Start?

By now, most businesses have invested in a scale system to assist in counting small parts, kits, sub-assemblies, or finished goods. In principal, most scales operate in the following way:

- The scale operator places on the scale a small sample of the item that is to be counted (for example, 10 pieces are place on the scale)
- The operator then enters the number “10” or “sample” into the scale
- The scale will display a piece count of 10 pieces
- The operator puts the desired quantity of the parts on the scale for a total count

Due to differences in scale sensitivities and a wide array of part sizes, some companies have invested in several scales. The scales may have integrated printers. The printers may be capable of printing bar code information in addition to the human readable component. The scales may also be battery-operated. Battery operation is convenient because it allows a scale operator to take the scale to the job, rather than wasting productive time in bringing the parts back to the scale. Finally, the scales may include an integrated bar code reader.

Most companies do not have their scales networked together. In other words, the scales don’t share information or “talk” with each other. However, networking scale equipment is becoming increasingly important. Further, if it has been a long time since the scales were purchased, some of the good fundamentals that were shared at the time of the sale by the scale dealer may be forgotten.



Rapid advancements in technology and communication speed, wide use of the internet as a communicative medium, and factory automation embracing Ethernet and real-time data collection suggest that now might be the time to invest in an inventory management system, or IMS.

Small to medium sized businesses in America comprise over 90% of all businesses. Unfortunately, the small business owner can't purchase an inventory management software solution in their local office supply store.

Thus, off-the-shelf inventory management software solutions simply do not exist for the small to middle sized business owner wanting to get a better handle on inventory of finished goods and/or aftermarket parts.

Instead, small to middle size business owners can get information on inventory management software from numerous technical papers and articles written on the subject, and enlist the help of a local scale dealer for additional advice.

Regardless of equipment, the following table provides some insight on the basics of inventory control. The information was compiled by Timothy Van Mieghem of the [Proaction Group](#).

<i>Inventory Control and Management Function</i>	Description
<i>Mindset and education</i>	Understand the impact of accurate inventory, visual controls, and cycle counting have on operations
<i>Match accountability & responsibility</i>	Inventory clerks probably shouldn't record transactions or reconcile counts. This task should rest solely with those responsible for the inventory. For example, finished goods in the shipping department are the responsibility of the shipping clerk. WIP by the departmental supervisor.
<i>Role of technology</i>	Recognize that technology will only work as well as the business processes and disciplines that feed it the information. A receipt entered one day after the shipment arrives will cause the system to think it is out of an item when it actually could be on the shelf. An invoice entered 48 hours after an item has been shipped will prevent you from having an accurate inventory. The internet provides us the ability to share info at the speed of thought. Thus, real time data is the panacea.
<i>View inventory accuracy in absolute terms</i>	If you count ten (10) items and five (5) are written down and five (5) are written up in the same dollar amount, view that as 0% accuracy. For operational purposes, inventory must be accurate in item level quantity, not total dollar value. Often, companies try to operate with 60% accuracy in perpetual inventory. 60%! Consider the impact on customer service, production scheduling and material handling.
<i>Counting</i>	Setup a daily cycle count program. Do the following: <ul style="list-style-type: none"> • Stratify the inventory into A/B/C categories based on value and velocity. • Setup a program to randomly count enough items to address "A" items monthly; "B" items every quarter and "C" items once per year. • Have each department cycle count the items it handles or stores. • Document all exceptions on an absolute basis including: <ul style="list-style-type: none"> o Quantity (does the perpetual inventory match the absolute quantity in stock?) o Bin location (is the stock where the computer says it is?) o Different types of inventory require different levels of tolerance. High value discrete items (normally "A: items) should be 98% accurate or more at the quantity level, while lower dollar bulk items have an acceptable tolerance of +/- 3% to 7% o Research every exception and understand the root cause for the inaccuracy o Routinely address the root cause problems to eliminate the source of the inaccuracy

<p><i>Don't sample on a counting scale. Bar code the bin with the part number, bin location, unit weight and quantity.</i></p>	<p>It is relatively inexpensive to bar code scan a part and its associated unit weight instead of sampling. Sampling can introduce unwanted clerical errors associated with the wrong numerical entry of the sample size, etc. Bar coding results in more predictable counts and consistency. Update according to the stratification identified above (A/B/C)</p>
<p><i>Location</i></p>	<p>Bin locate your inventory being careful to control the granularity. In other words, avoid one (1) gigantic bin location for 10,000 parts or avoid creating a unique bin location for each part. "A" items should be in the most accessible locations progressing through "C" items in the back.</p>
<p><i>Process rules</i></p>	<p>Remember these basics:</p> <ul style="list-style-type: none"> • No finished product leaves a location without an invoice or inventory transaction • Receive inbound shipments into the system before using the products and optimally at the same time they are put away • Do not substitute components or products without updating the bill-of-material to reflect the actual units used. For long-term changes, be sure to initiate an ECO • Setup your warehouse with simple guides to make it easy to find product; for example, use row and column labels, symbols or label your bins per the bar coding section above.
<p><i>The computerized system in place "shows" sufficient inventory, but upon actual physical inspection, it's simply not there.</i></p>	<p>In some instances it is impractical or inefficient to move the product to the scale or the scale to the product (in the case of portable scales with optional wireless connections to the network). If a large shipment of a bulky item is received (for example, crates of dozens of parts, where each part weighs over 100 lbs.), these parts may be entered manually, but this method reverts to the use of pencil and paper. This can result in the product being entered incorrectly or not entered at all. No inventory control system can overcome this unless there is a check-and-balance system in place that uses cycle and spot-check inventory methods, or if the data can be entered remotely from the scales. The spot-check method is unreliable since the data entry problem has not been solved. The solution is a portable data collector.</p> <p>A portable data collector may be required to fulfill the requirements of a Management Execution System (MES). The ability to track Work In Process as it travels on the shop floor is a requirement, not only for MES but also for any thorough Inventory Management System application.</p> <p>Portable data collectors are available in many different styles, capabilities and costs. They fall into two basic categories:</p> <ol style="list-style-type: none"> 1. RF wireless collectors that communicate on a real-time basis with the network 2. Batch collectors that are periodically uploaded to the network by placing them in a "cradle" or "docking station" which allows a periodic communication with the rest of the network <p>The suitability and applicability of each rests on their own merits. To determine which category of portable data collector best suits a specific application, it is important to know where in the system and which parts require their use. Determine if the information is vital on a real-time basis and if the information requires instantaneous input to the operator from the system at the time of entry. If either is true, RF is probably required. If not, then the "batch processing" method will fill the need.</p> <p>The ability of the scanner to scan barcodes is important, and even portable bar-code printing may be required to establish your system's numbering at receipt of the part. This printing can also be done using RF if the system and printers are compatible with RF data transmission.</p>

<p><i>The computerized system in place “shows” sufficient inventory, but upon actual physical inspection, it’s simply not there. (CONT.)</i></p>	<p>One very important issue is compatibility with the existing system. The vendor should be aware of the capabilities of both types and be well-versed in their integration into the inventory management system as well as integration into your application. This will include application stratagems in terms of use and training, custom programming if necessary, and performing the site audit (especially in the case of and RF application) to determine the placement for antennas, repeaters, and docking stations for batch units. In some instances, both types of units may be required. Once again, the capabilities of the vendor to assimilate and correlate all of the information required from your application and match it to an efficient and suitable solution for your needs is paramount to a successful project implementation.</p>
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What would it be worth to you and your business to have an accurate inventory? Below are two tangible or quantitative measures that support this discussion.

1. Inventory Turnover

Probably the single strongest performance ratio that contributes directly to potential Return on Investment (ROI) is an increase in inventory velocity or inventory turns. If inventory counts are correct, resulting in more overall inventory integrity, then inventory velocity should increase year over year. The following is a definition of importance developed by American Express Company:

Inventory turnover ratio tells how often a business’ inventory turns over during the course of the year. Because inventories are the least liquid form of asset, a high inventory turnover ratio is generally positive. On the other hand, an unusually high ratio compared to the average for your industry could mean a business is losing sales because of inadequate stock on hand.

When to use it:

If your business has significant assets tied up in inventory, tracking your turnover is critical to successful financial planning. If inventory is turning too slowly, it could indicate that it may be hampering your cash flow. Because this ratio judges annual inventory turns, it is usually conducted once a year.

The formula:

Cost of goods sold (COGS) divided by the average value of inventory.

Calculate your turnover ratio. For example, if your company COGS is \$25,000 and your average value of inventory* is \$5,000, the turnover ratio is \$25,000/\$5,000 or 5X (otherwise known as velocity).

NOTE: Compare this statistic over time in your own business. As importantly, compare and contrast this statistic with that of other companies that are in the same or similar business. These comparative tables are published annually by Robert Morris & Associates in their annual statement studies. These statement studies can be found at www.riskworld.com

** End of year inventory less beginning of year inventory and divide by 2*

2. Straight Inventory Accuracy

- Simply confirmed by internal or independent audit
- Previous accuracy of inventory (as independently verified or audited)

- Post accuracy of inventory (as independently verified or audited)
- Value in \$ of increased inventory accuracy

Intangibles

- Accountability
- Visibility
- Peace of mind
- Improved customer service
- More efficient use of assets

If you are considering implementing a Warehouse Management System or are interested in tools to help enhance your current system, please contact Ann Crowley, inventory management specialist, at Rice Lake Weighing Systems. Ann can be reached at 715-234-9171.

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