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Count On It

The road to true inventory accuracy

A maintenance, repair, and operating supplies (MRO) warehouse reported high cycle count accuracy; yet parts—including valves, pumps, hardware, and supplies—continued to be unavailable. Subsequent independent audits of parts also differed significantly with the reported cycle count. The company's internal auditors were especially interested in the accuracy of MRO inventory because it should reflect the accuracy of the inventory investment on the balance sheet, and it was an important performance objective that drove bonuses for warehouse managers.

If quantity errors continue to occur with seemingly acceptable count results (90 percent to 95 percent), yet inventory accuracy does not improve, there are typically two issues to address: Is the count really accurate? Is the cycle count process being used to identify and correct process errors?

In inventory management in general, and in cycle counting specifically, all users must be confident in the cycle count. The count is not the end in itself, and the count will not make the inventory levels more accurate for any product. As the saying goes, "you can't count in accuracy." Cycle counting can be improved by counting a small control group of products to identify and correct errors—cycle counting as it was intended.

Accurate counts are blind counts

For the cycle counting process to work, the initial product counts must be accurate. Knowledgeable personnel who understand and use the parts and material must be the counters. In addition, the count must be a "blind count," meaning the cycle counter is unaware of the computer balances and has no access to this data prior to the count. This prevents the common temptation to simply show the

computer balance as the count and not properly conduct and complete an actual physical count. Without blind counts it may be tempting to meet the numbers in the system, particularly if there is an emphasis on performance metrics and payouts tied to these metrics.

To ensure blind counts, the counter is given a list of items to be counted for the day with only the bin locations indicated. The counts are noted on the list or the radio frequency identification (RFID) totals are entered as the count. Recounts are generated if the blind count data does not match the on-hand computer balances. Any variances should be approved by the foreman or supervisor and not by the counter.

At the previously mentioned MRO warehouse, all blind count variances had to be approved by someone other than the original counter. While original counters could be involved in the reconciliation process, warehouse managers had to approve all variances.

In implementing any blind count, be sure to train counters and reconcilers to count only within the exact location specified and not to count all the items in all locations throughout the warehouse or storeroom. Also ensure that when material is relocated, the new location is promptly recorded, or consider adopting RFID to instantly update location changes.

If employees have access to parts or MRO after hours, they often forget to follow up with storeroom personnel to record the transaction. The part may not be replenished, and this will not be evident until the part is needed. Inaccurate counts also result when a part is temporarily removed from the storeroom and is later returned to the wrong location. Reminder sessions with plant personnel may be needed to stress the importance of inventory accuracy along with specialized training in the use of the system and in recording after-hours parts retrievals.

It is often helpful if the auditors, in addition to the cycle counters, are familiar with the parts being counted. In some cases, auditors accompany knowledgeable personnel when conducting recounts. A plant tour or similar orientation can be conducted to familiarize cycle counters and auditors with parts used in manufacturing and stored in the warehouse.

Risk assessment

It typically takes six weeks of blind counts to ensure confidence in the counts and reported accuracy. Once inventory accuracy is in place, opportunities for risk assessment and improvement can begin.

The risk assessment component of cycle counting at the MRO warehouse was a result of Sarbanes-Oxley legislation. Cycle count accuracy was necessary to certify that financial statements accurately reflected the company's inventory investment. It's not only Sarbanes Oxley that demands this assessment; company officers also require such accuracy because they must sign off on all financial statements. With the emphasis on responsibility and accountability for accuracy in financial statements, the process should be standardized to offer quality results and be acceptable to auditors. In addition to providing information for accounting records, organizations require an accurate inventory count to manage their business. Inventory on hand determines the amount of additional products to make or purchase. Accurate cycle counting can detect or prevent inventory shrinkage or theft.

At the MRO warehouse, employees at multiple levels of the supply chain were assigned the task of spot checking counts and auditing results for their risk assessment process. These spot checks by the foreman and warehouse supervisor further ensured accurate blind counts were being conducted according to their newly created standard procedures. This spot checking became a job requirement for management, and everyone involved received in-house training on cycle counting. The spot counts were not time consuming, but were necessary to detect any problems with the counts. There were no ill feelings at the warehouse because of this new procedure. It was presented and viewed as a tool for continuous improvement. As the managers responsible for this process, the foreman and warehouse supervisor were confident the counts were accurate and they could better respond to auditor inquiries about their MRO inventory levels.

Correcting process errors

The next and most difficult issue in cycle counting is using the process as it is intended. A common belief seems to be that cycle counts are conducted to correct the records to match on-hand balances. This is a total misunderstanding of the cycle count process. If the processes itself is causing the errors, merely counting items will not correct and eliminate the problem. The record will be accurate only at one point in time (at the end of the cycle count or the yearly physical inventory); as more parts are issued, received, returned, or relocated, problems in the process will immediately produce

errors. And, unless the record-keeping process is capable of maintaining accurate inventory records, physical inventories and cycle counts will not provide consistent accuracy.

Cycle counting should be a tool for monitoring the process, leading to problem identification and correction. As in statistical process control, where quality is charted and outlying products are corrected, cycle counting inventory balances that do not match the on-hand stock date require further attention and investigation to maintain inventory record accuracy. Process problems are identified during the reconciliation process when counts are not in agreement and problems are traced to their root cause. Additional training or coaching may be needed to train employees to identify and correct the process problem. In the MRO warehouse example, counts were made and reconciled to correct the computer records, but the process problems initiating the errors were never identified, so they could not be corrected. Until there is an emphasis on identifying and making process corrections, companies will repeat again and again the behavior that caused the errors.

Control groups

The goal of cycle counting is to have what is indicated in the area specified so parts can be quickly located and used as needed. When managers are confident of the cycle counts and are consistently seeing a very low percentage of errors, the control group technique is a good next step to further improve the process.

In the control group, tracking a smaller number of parts and transactions makes it easier to research and identify problems. The benefit is to quickly identify any process prob-

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lems and correct them to prevent future errors. The control group is a small set of parts or part numbers that are counted at regular intervals, usually once a week. The control group count is conducted following an accurate cycle count. It is done to pinpoint immediate errors so an investigation can commence. This control count can provide information for two critical problems. First, it will indicate the level of processing accuracy currently maintained. Secondly, it will aid in identifying problems contributing to inaccuracies.


Rather than functioning as a measure of inventory record accuracy, control group counting is a measure of the process, particularly the record keeping that supports distribution. The control group should represent all inventory classifications (spaces, consumables, bulk commodities) and all warehousing locations (main storeroom racks, high-density cabinets, yard areas). The number should be manageable to

count each week, but large enough to be representative. The advantage of the control group is that each transaction can be exhaustively researched to identify the cause of the error. The short time period from one count to the next makes this possible, along with the smaller number of transactions than in the normal cycle count population.

With only a small time period occurring between counts of the chosen control group items, managers can obtain a potential level of inventory accuracy over time and adjust their efforts for additional training, cycle counting, and correction measures. The use of a control group also can create both an environment and a culture of continuous improvement. By plotting longitudinal data from the control group counts, managers can track their progress. The control group count should be performed by personnel other than the usual counters, perhaps the foreman or warehouse supervisor. In fact, the spot checking previously discussed could be considered a version of the control count with the same intent. The differences being that the same items are not counted over and over, and there is no control group to benchmark in a spot count.

Over time a consistent established error percent would indicate acceptance of the cycle count accuracy and provide confidence in the process. In the case of the MRO warehouse, assessments revealed the counters were simply not performing the counts correctly because of

misunderstandings. With the MRO inventory, many items are essential for production. Not having a needed part often will result in a loss of production. Product output would be lost, triggering higher costs, lower quality, and lower customer service. In some warehouse locations, the auditors' counts called into question the reported accuracies. Before changes were made, there were no checks and balances in place to enable managers to confidently respond to auditor's queries about the accuracy of the cycle counting process.

In order to establish and maintain inventory record accuracy, company leaders must establish an efficient and accurate counting process; realize accuracy can't be "counted in," and the count is not the end; consistently and continuously identify the causes for the errors; revise processes; and effectively train and coach personnel. 

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