Get Lean on Scrap

The Hidden Value of SyncKanban eKanban Software

Every year, manufacturers lose profits when they scrap materials and finished goods due to damage or obsolescence. In fact, the cost of scrap is far more than the cost of the material itself. Hiding behind every dollar of scrapped inventory are several more dollars lost in storage, productivity, customer satisfaction and potential revenues.

In this article, we're going to discuss how SyncKanban eKanban software can address a few of the most common causes of scrap in your efforts to apply Lean principles in your manufacturing facilities and throughout your supply chain.

Kanban:
Physical signals (often cards or labels) used to initiate replenishment of materials consumed.

What is eKanban?

Before we get into how SyncKanban software helps reduce scrap, let's quickly talk about the differences between Kanban processes and an eKanban system.

As a cornerstone of lean manufacturing since at least the 1950s, most manufacturers are undoubtedly aware of how the Kanban process works, even if they haven't implemented it in their facilities.

Manual Kanban systems have several disadvantages, not the least of which is the physical movement of the signals (cards) through the facility. It is easy for these cards to get damaged, lost or misplaced. The more SKUs you manage, the more likely this is to happen. eKanban software solves this by replacing the physical cards in the manual process with an electronic signal. At Synchrono®, we generally recommend replacing manual Kanban processes with an eKanban system when the manufacturer reaches approximately 200 SKUs.

Also, because there is less physical movement in an eKanban system, the number of steps required can be drastically reduced. One manufacturer reduced the number of steps in their replenishment process from 66 down to 6 by replacing their manual Kanban process with SyncKanban eKanban software. With fewer steps, learning to follow the process also takes less time and reduces the chance of human error.

For more on the basics of eKanban, download these resources:
White Paper: *Gaining Control - Exploring the Basics of Push v. Pull Manufacturing*
Article: *Going eKanban*

"The cost of scrap is far more than the cost of the material itself."

3 Ways SyncKanban Software Reduces Scrap

There are several reasons a manufacturer might need to scrap materials, WIP or finished goods. Defects can be introduced by damage that occurs during handling or storage. Materials may expire and no longer be fit for use. Or, they may simply become obsolete as demand for a particular part trends downward or new and improved materials become available. For the purposes of our

discussion, we'll categorize the major causes of scrap into the three groups: damage during storage, damage during handling, and material expiration. Let's look at each of these causes and how SyncKanban can help.

Lean Manufacturing components aided by SyncKanban eKanban software.

1. Reduce Damage by Reducing Storage

The longer materials sit around waiting for their turn to be processed or shipped, the greater the likelihood for damage. At the heart of eKanban (and Kanban) is the principle that nothing is produced until it is needed. You've probably heard this referred to as "take one, make one," although your eKanban container size doesn't have to be "one".

When production is based on demand, WIP levels naturally decrease because no work is started until it is needed to fulfill demand. This reduces the amount of time work spends in front of a work cell waiting for its turn to be processed (queue time). It's been estimated that as much as 80 – 90% of cycle time in a facility that hasn't applied pull-replenishment policies is queue time, so reducing time in queue has a dramatic effect on flow and replenishment time. When replenishment times decrease, less WIP is needed to cover variability in demand, making further decreases in WIP possible.

"Queue turns measure how often the queue in front of a resource turns over in a given period."

To support our customer's continuous improvement efforts, we introduced the metric *queue turns*. Queue turns measure how often the queue in front of a resource turns over in a given period. This is measured by the total run and setup time (in hours) associated with orders waiting in queue. Here's the formula:

Queue Turns = Produced Hours / Queue Hours

While queue turns is designed to measure velocity, the metric is also a leading indicator for scrap levels. Increasing queue turns also means inventory spends less time sitting in a queue, reducing the potential for damage. Our customers find that improving queue turns often correlates to a reduction in scrap.

A Closer Look at How SyncKanban Reduces WIP and Raw Materials Inventory

In SyncKanban, the K-Loop® (Kanban-Loop) refers to the closed loop of activities between all involved in the use and supply of materials. The K-Loop size is the number of eKanban signals in the K-Loop. Because the purpose of the inventory in the K-Loop is to cover demand and the variability of demand over the replenishment lead time, getting the number of eKanban signals in the K-Loop right is vital.

K-Loop - The closed loop of activity between all involved in the use and supply of materials.

K-Loop size – The number of eKanban Cards in the K-Loop.

SyncKanban includes a sizing algorithm that uses replenishment lead time to help planners determine the appropriate number of eKanban signals. The software also includes analysis tools such as the *Stock Buffer Trend Report* and the *Source Performance Report* than can help monitor K-Loop and supplier (both internal and external) performance to ensure inventory levels remain right-sized.

SyncKanban is the only eKanban system on the market that automatically resizes the number of Kanban in the K-Loop® based on current order demand, supply status and the realities of the shop floor. In its simplest form, when demand trends up, the number of eKanban in the K-Loop goes up so that the demand over replenishment lead time is covered. As importantly, when demand trends down, the number of eKanban goes down so the factory isn't over-protecting based on an out-of-date plan.

Because eKanban signals are electronic, it is much easier to extend pull-replenishment practices to your suppliers as well. Reducing raw materials inventory also decreases time spent in storage and the likelihood of damage or obsolescence.

For this, we have a special type of eKanban in SyncKanban called a Supplier eKanban. With a Supplier eKanban, external suppliers receive replenishment signals just like internal suppliers do. The external suppliers then fulfill these orders against a blanket purchase order or other long-term agreement, providing a more streamlined process that expedites fulfillment and greatly reduces the amount of paperwork involved.

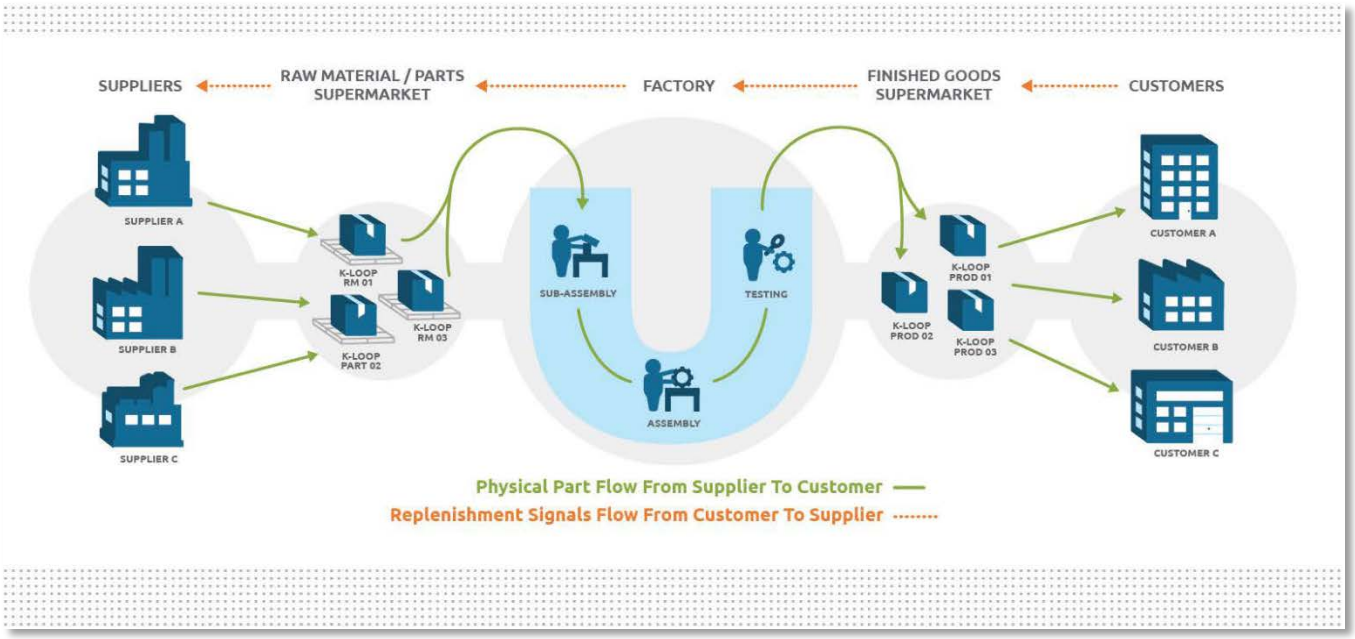
SyncKanban also has a Supplier Communication Portal that provides real-time visibility of order status and delivery dates to both the manufacturer and the supplier, making collaboration and supplier performance management easier. In fact, one of our current projects is with a manufacturer looking to use a Supplier Kanban to help them eliminate one of their warehouses altogether.

Related Resource:

White paper: *How SyncKanban Addresses the 8 Types of Waste in Lean*

2. Reduce Damage by Reducing Handling

The less material is handled, the less likely it is to be damaged en route, and SyncKanban can help here as well. A fundamental principle of Kanban is to store materials needed as close as possible to the point of use. In Lean Manufacturing, this storage area is commonly called a "Supermarket."



eKanban Process with Raw Materials and Finished Goods Supermarkets

Supermarkets create a more controlled environment for handling inventory. When material in the supermarket is consumed by the user, an eKanban signal is sent to replenish the material. This signal is called a *tugger route or transfer eKanban*. Using tugger routes cuts down on the amount of traffic in the work cell area. With less traffic, there is less potential of damage from accidents such as a forklift running into WIP.

In addition, material that is pulled from the central warehouse can be stored in protective Kanban bin packaging, then broken up into smaller consumable Kanban container sizes in the Supermarket for consumption at the point of use.

The Three Types of eKanban in SyncKanban

1. **MANUFACTURING:** A replenishment signal sent upstream within the facility to a work center, Supermarket or warehouse.
2. **SUPPLIER:** A replenishment signal sent to an external supplier.
3. **TRANSFER / TUGGER ROUTE:** A replenishment signal sent from a Supermarket to a central warehouse.

3. Improved Expiration Management

Finally, one of the practices many manufacturers put in place when they implement SyncKanban is strict adherence to first-in, first out or FIFO. eKanban signals can direct personnel to the appropriate lots or locations so that those items received in inventory first are the first consumed.

This function alone can drastically reduce scrap in some facilities. For instance, we had a customer that was storing some fairly expensive materials in an environmentally controlled facility. To the casual observer, these items didn't look perishable, but they had to be used within a certain timeframe or be scrapped. Not given explicit instructions, forklift drivers responsible for transferring materials from the warehouse to the work cells naturally picked up those materials closest to the door. Now, forklift drivers can simply refer to the eKanban signal data provided by SyncKanban to quickly locate the "first-in" materials. Implementing strict adherence to FIFO when they implemented SyncKanban allowed this manufacturer to reduce scrap by 90%.

Orbital ATK Cuts Scrap by 90%; WIP by 30%

Orbital ATK manufacturers components made from carbon-fiber composites for the aerospace industry. Many of these components have a fixed life-span and must be maintained in a temperature-controlled environment. If not stored properly or used by a certain date, they must be scrapped.

Throughout their manufacturing environment, Orbital ATK was using sixteen different systems to manage replenishment. By reducing that to one, SyncKanban, they were able to reduce scrap by 90% and save millions of dollars. **Read the full case study.**

Add Scrap Reduction to Your List of Continuous Improvement Priorities

In Lean Manufacturing, scrap (defects) is one of the eight areas of waste, suggesting that it is an issue for many manufacturers and should be included in their overall continuous improvement efforts. We find that many manufacturers, however, are so busy focusing on lowering inventory levels and meeting delivery dates that they don't give scrap levels as much thought as they should. One of the great benefits of SyncKanban software is that it doesn't have to be either/or. You can address scrap levels with SyncKanban while you are addressing those continuous improvement goals that may be higher up on your list.

If you would like to learn more about the topics discussed in this paper, please visit www.synchrono.com/resources or reach out to us directly.