Get Lean on Scrap

The Hidden Value of SyncKanban eKanban Software

Every year, manufacturers lose profits when they scrap materials and finished goods because of 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 organization.

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*

How SyncKanban Software Reduces Scrap

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

Much of what we (and others) have written about eKanban is focused on reducing inventory and lowering cycle times. Many of our customers, however, are also using SyncKanban™ software to help them reduce scrap as part of their continuous improvement efforts.

Related Resource:

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

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 subsides or new and improved materials become available. Let's look at each of these causes and how SyncKanban can help.

Damage during storage – Overproduction is the main cause of excess material, WIP and finished goods sitting around for extended periods of time. 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". Following this basic principle of pull manufacturing goes a long way toward reducing excess finished goods and work in process inventory.

The other factor that isn't always considered but should be, is the reduction of the time spent in queue. 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. That is, material and WIP waiting for its turn to be processed. We often talk about queue time when we talk about the ability for SyncKanban to increase flow through your facility, but less time in queue also means materials and WIP spend less time piled up in front of a work cell where they can be damaged.

"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

That covers WIP and finished goods inventory, but what about supplier inventory? 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.

Finally, before we leave the concept of reducing damage during storage or obsolescence as a result of overproduction, we need to talk about variability. Business these days can be unpredictable, so to keep inventory levels at their absolute lowest without sacrificing service levels, you need a way to adjust production to what is actually happening versus what you thought was going to happen.

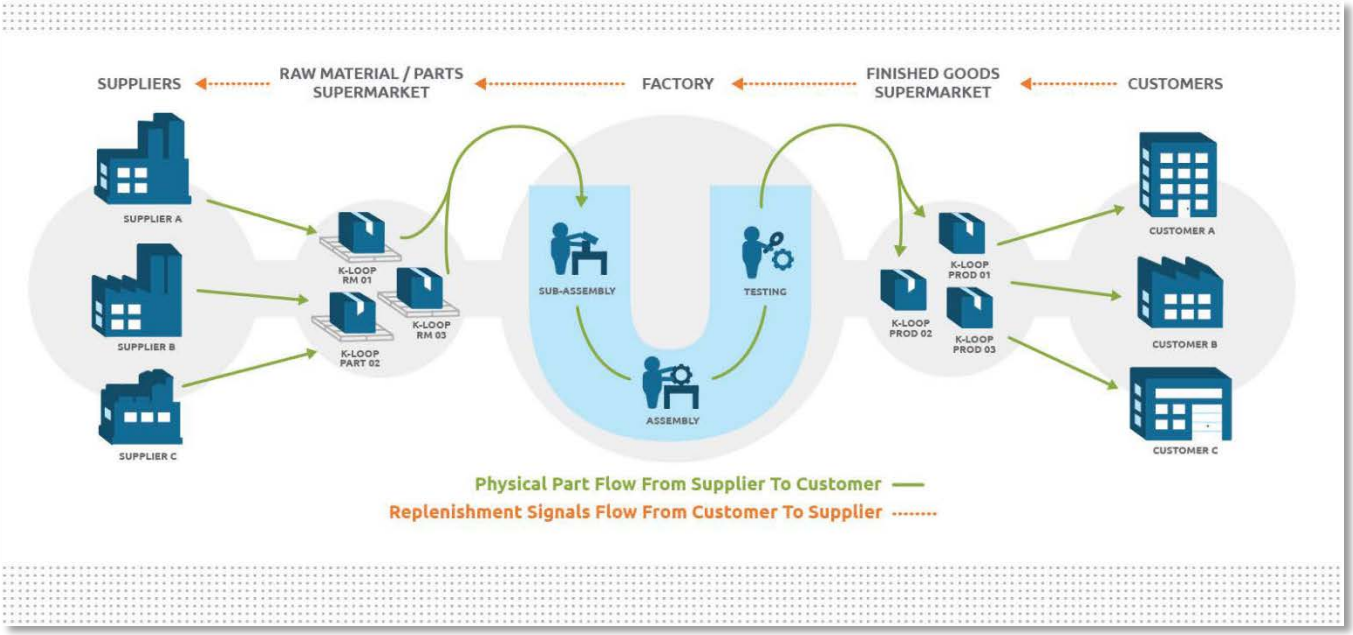
Lean Manufacturing components aided by SyncKanban eKanban software.

K-Loop®:
A K-Loop (Kanban-Loop) is the number of eKanban cards in the replenishment and usage cycle of an item. The K-Loop is created as a closed loop of activity between all involved in the use and supply of materials.

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 goes up, the number of eKanban in the K-Loop goes up so that production automatically responds to the increase in orders. As importantly, when demand goes down, the number of eKanban goes down so the factory isn't over-producing based on an out-of-date plan.

This resizing of the number of eKanban in the K-Loop® applies to an external, or Supplier eKanban as well and takes into account variables such as supplier performance when calculating the ideal number of eKanban and the quantity per eKanban. No longer will you find yourself with piles of excess raw materials just because someone forgot to adjust order quantities with your suppliers!

Damage during 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 point of use. In Lean Manufacturing, this storage area is commonly called a "Supermarket."



eKanban Process with Raw Materials and Finished Goods Supermarkets

When a Supermarket is used, the manufacturing eKanban signal is sent to the Supermarket, which supplies the materials. Because an eKanban unit within the Supermarket has been consumed, a signal is also sent to the central warehouse for replenishment to the Supermarket. This signal is called a Tugger Route or a Transfer eKanban.

While the actual distance material has to travel may be roughly equal whether or not a Supermarket is used, by splitting up those distances (between Supermarket and warehouse; between Supermarket and work center) additional care can be given to how material is transported. For example, more agile hand trucks might be used closer to the work center for improved safety; whereas forklifts are used between work center and Supermarket.

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:** A replenishment signal sent from a Supermarket to a central warehouse.

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 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%.

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.