

# Implement 5s Techniques in Order to Reduce Wastes in Store

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## ABSTRACT

In competitive markets of 21st-century demands are for increasing high variety of products at reducing cost with best quality. In store, there are wide scopes of applying lean tool and get a huge benefit from it. 5s is the base of lean tools and by applying it we get maximum output. Carton free delivery or elimination of carton is first step of implementing 5s. By implementing carton free delivery we will directly archive 1st face of 5s which is short. Short simple mining is that remove unwanted material. Carton free delivery also target over processing which is one of the waste from seven wastes.

**Keywords:** 5s methodology, seven wastes, kaizen

## I. INTRODUCTION

There are 150 component are fast moving component from those 150 components 45 components are received from local vendor(15 km far from source to destination). So, from those 45 components we have targeted 12 components which are frequently used on daily basis.

Process of carton free delivery: Before implementing carton free delivery vendor supply those entire 12 components in carton boxes. Now we have prepared design different bins for those selected components and compony will receive those components in bin behalf of carton. After using those components compony will return those empty bins at vendor location

Purpose of carton free: It is observe that stores operator taking more time on material physical counting, binning at line & also unwrapped packing garbage accumulate at line it deteriorate 5S level

- ✓ To reduce physical verification time (make process count free).

- ✓ To reduce customer complain & Improve Service
- ✓ To Improve 5S level at line
- ✓ To improve visual control
- ✓ Reduce delivery time

## II. PROBLEM

- ✓ Huge wastage of carton
- ✓ Time waste to pack each and every component at vendor side as well as at stores to remove it (over processing)
- ✓ Poor 5s level
- ✓ Large space required for store material



**Figure 1.** Carton wastes

### III. METHODOLOGY

Before implemented carton free project we have calculated those entire component carton cost per year and compare with bin cost as well as rotation cost. Then we have found that after 2 year implementation of this project we will recover this bins cost. Payback period for this project is something 2.5 years.

There are total 5 local vendors which are related to fulfil this project but due to complication we have selected one vendor which is 15 km away from the company. From this vendor 12 component are arrive daily basis or fast moving material.

#### 1. Material consumption list of last three month and its packing details

Green composite vendor deliver total 20 cat number material and those are listed in table. In this table component are arrange in decreasing order consumption of material.

Table 1. Monthly consumption data

Sr. no	Cat no	Material description	Material received quantity per month	No. of carton box pic.
1	CM98927	Hosing DN0	2100	107
2	CM56002	Release box dn4	2568	60
3	CM98452	Cover 4p dn3	506	59
4	ST34850	Cover dn2	627	58
5	SL94176	Dt360housing	4072	56
6	CM 52031	DN2 housing	151	31
7	CM56003	Release cover	190	26
8	CM58411	Driveshaft 4P	476	25
9	SL57508	Release box	267	17
10	CM52111	DN2 housing	238	10
11	DT630	Cover support	1190	9
12	CM93567	Release box	513	7

In this above table mention last three month (September, October and November) data of consuming of material.

In above table 2nd column indicate component cat number and next column indicate its description. There was in last two column indicates average consumption of components three months.

This vendor is approx. 16 K.M away from company so we can easily communicate with is vendor.

#### 2. Pareto chart for component comes from vendor

Is a type of chart that contains both bars and a line graph where individual values are represented in descending order by bars, and the cumulative total is represented by the line bar chart

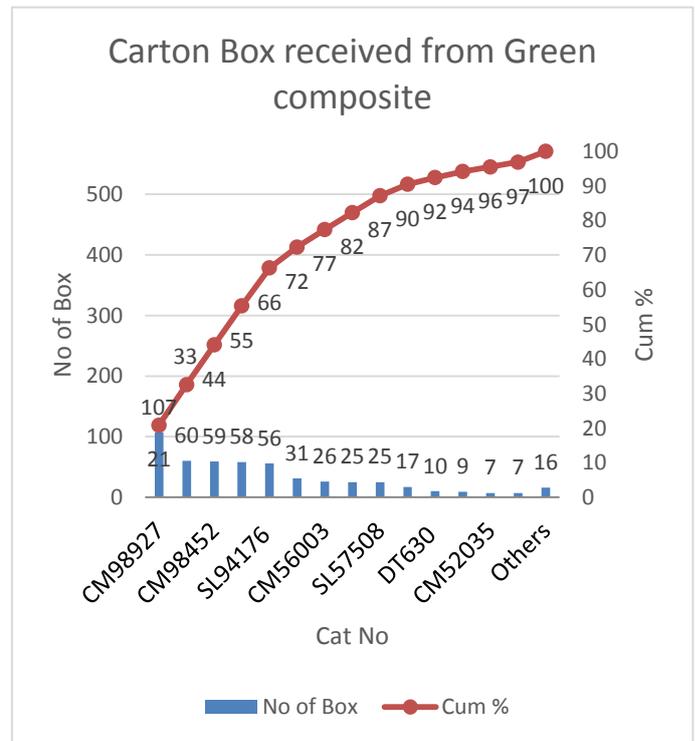
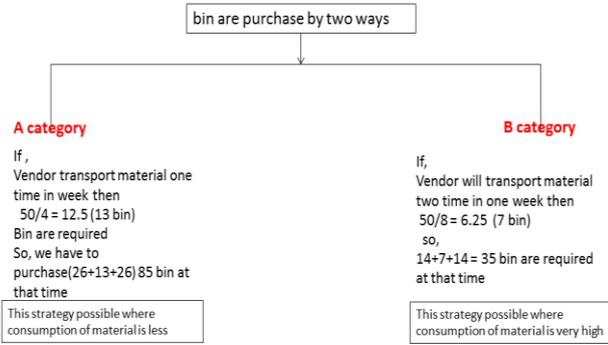


Figure 2. Pareto chart of component according to consumption

The left vertical axis is the frequency of occurrence that means number of boxes, and it can alternatively represent cost or another important unit of measure also. The right vertical axis is the cumulative percentage of the total number of occurrences, total cost, or total of the particular unit of measure.

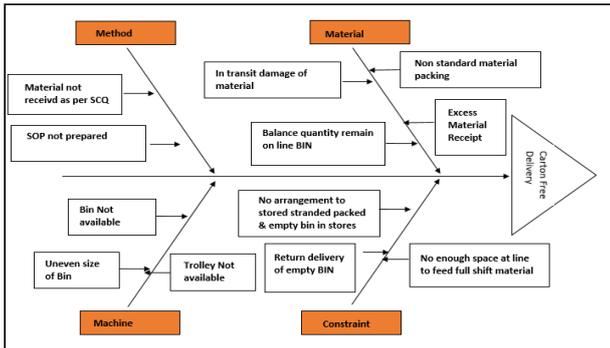
**3. Calculation of bin requirement**

Suppose monthly consumption of any cat number material is 500 item And design bin capacity is 10 number store in single bin So, all material are stores in total 50 bins We will purchase bin according to consumption of material (A & B).



**Figure 3.** Calculation of required bin (A & B category)

**4. Cause and effect diagram for carton free delivery**



**Figure 4.** Fish born diagram for carton free

**5. Carton free delivery arise problem, its root cause and action taken by us to tackle this problem**

**Table 2.** Action plan for problems of carton free

Sr. no	Problem Definition	Root Cause	Action Plan
1	Empty Bin return delivery to vendor	Empty Bin deliver Cost Problem in	-

		Outside vendor	
2	Material quality	In transit damage when material deliverin g in BIN	-
3	Non-standard packing of material	Material not received as per SCQ	Make standard packet of each component as per line requirement
4	Quantity verification at Line	Problem in small compone nt quantity verificati on at line	Make Component weight list as per line requirement put details of weight on each bin
5	Balance quantity remain on line BIN	Unable to feed fresh materia l	Make supermarket at line for such component
6	Full shift Material feed in one stroke	No enough space at line to feed full shift materia l	Create or Design material rack as per shift consumption
7	Bin Design	Differen t sizes & packing style of materia	Prepared Vendor wise Material list & Design BIN as per that

		1	
8	Material & empty Bin storage	No arrangement to stored stranded packed & Empty bin at stores	Make arrangement to store for standard small bin
9	Material Movement to line	Bin may slip while delivering on pallet	Design New material moving trolley

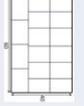
Problem of delivering empty bin and in transit damage those have on any alternative so in action plan indicated as “-”

There was always some present damage were happen in bin delivery due to road transportation.

**6. Sample design for carton free and material description as well as required bin dimensions.**

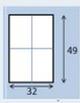
In below table finally implemented indicated 12 component designed bin picture and sketch with partition dimensions.

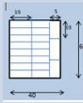
In this photo table also mention requirement of bin according to monthly consumption

Sr. No	CAT number Material description	Bin photo	Sketch with drawing (Dim: in CM)	Bin size and dimension (L X W X H) in CM	Bins out height	Partition height	Component /Bin
1	Hosing DN0 CM98927 (3P)			60 X 40 X 12	12	6	30
2	CM56002 RELEASE BOX DN4			60 X 40 X 22	22	20	20
3	CM98452:COVER 4P-DN3B MCCB			60 X 40 X 22	22	15	20

In this tables also mention bins size which are required in form of length x width x height. All dimensions are in centimetre.

Sr. No	CAT number Material description	Bin photo	Sketch with drawing (Dim: in CM)	Bin size and dimension (L X W X H) in CM	Bins out height	Partition height	Component /Bin
4	Cover DN2 3pole ST34850			60 X 40 X 22	22	17.5	20
5	SL94176 HOUSING			60 X 40 X 28	28	20	15
6	DN2 housing 3pole CM52031			60 X 40 X 22	22	17.5	15

Sr. No	CAT number Material description	Bin photo	Sketch with drawing (Dim: in CM)	Bin size and dimension (L X W X H) in CM	Bins out height	Partition height	Component /Bin
7	Release cover CM56003			60 X 40 X 22	22	17.5	12
8	Drive shaft 3p & 4p CM58411 CM58412			50 X 32 X 21	20	17	12
9	Release box SL57508			60 X 40 X 12	12	7	10

Sr. No	CAT number Material description	Bin photo	Sketch with drawing (Dim: in CM)	Bin size and dimension (L X W X H) in CM	Bins out height	Partition height	Component /Bin
10	DN2 housing 4pole CM52111			60 X 40 X 22	22	17.5	5
11	DT 630 Cover support			50 X 32 X 21	20	17	5
12	Release box DN2 CM93567			60 X 40 X 14	14	7	5

#### IV. RESULTS

- ✓ Reduce wastes of carton.
- ✓ Eliminate over processing
- ✓ Eliminate carton cost
- ✓ Process made count free.
- ✓ Reduce delivery time
- ✓ Improve 5s level

Figure 5. Final implemented bin photos with sketch drawing

Cost Calculation Of Bin Carton Material And Carton Free Material

Table 3

Cat no	Total no of bins	Total cost of bins	Carton cost per week	Carton cost per year	Carton cost per five year
CM98927	30	15000	90	4320	21600
CM56002	20	18000	288	13824	69120
CM98452	20	14000	30	1440	7200
ST34850	20	13000	40	1920	9600
SL94176	15	9750	30	1440	7200
CM 52031	15	12750	240	11520	57600
CM56003	12	10200	240	11520	57600
CM58411	12	10560	288	13824	69120
SL57508	10	8700	60	2880	14400
CM52111	7	4900	35	1680	8400
DT630	5	4150	280	13440	67200
CM93567	5	4150	250	12000	60000
<b>Total cost competitions</b>		125160		<b>89808</b>	<b>449040</b>

In this above table data shown cat numbers and cost of this bin and other column indicate cost of carton which is required for carton free and in last column mention 5 years carton cost.

Carton free project initial cost was 125160 and it will recover from successfully second year. If those all bin work up to 5 years than it give us huge benefit.

## V. CONCLUSION

In Indian industry, there is a lot of scope to improve in stores department as well as in material transportation systems, in delivery time, and damage during of material. Before implementing there was lots of carton wastes were happen now, carton free project huge benefit were achieve by us or we can say zero cost of carton. Initial cost of carton free project is little high but after implementing this cost will recover in from implementing 2 years or we can say we Rs. 35352 positive as discuss in result.

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