

Right First Time Improvement in Agco Mexico Pdi – Dmaic Method

Sivaram.S, Chella Ganesh.D, Adamkhan.M

Abstract: Tractors / Units which are reaching to the Dealer end from the plant after passing the mandatory checks & Inspection. The Quality requirement involves various elements process, people, material, resources and logistics which is more important to meet the customer satisfaction. The feedbacks are received in terms of pre delivery inspection (PDI) observations from AGCO Mexico team. The adequacy and adherence are to be strengthened from receipt to dispatch / transit of end product till dealer point at Mexico. The sustainable actions are initiated using the RCA and problem solving tools and 6 sigma tools to reduce the variance at various stages of manufacturing plant and transit. Quick wins are implemented for the single cause issues as well as low cost actionable issues. Hence the desired enhancement of Right first time (RFT) at dealer / Mexico can be achieved which is under progress. The Pre-Delivery inspection (PDI) is process of checking the units before dispatch to the requested customer when the time of sale. Basically it is a Check sheet kind of documents which carried by a specially qualified engineers. They are basically check all functional parameters of the tractors and cross examine the aesthetics of the products based on customers' expectations.

PDI will vary from product to product and classified based on the features inbuilt in the units, but essentially a complete and thorough examination of every aspect of the tractor which basically exterior panels to the interior, mechanical parts and electrical functions. A complete road test is also included by a professional driver, and if there by any minor issues, that will be fixed immediately before given to customers.

Customer satisfaction is the key playing a biggest role in now a day's business and is the key to sustain in the market. It is one of the leading indicator to evaluate customer loyalty, identify unhappy customers, reduce churn and increase business revenue. It is a main difference that helps us to grasp new business and customers in very competitive environments. This will give on positive sign for customer centric approach to sustain in the business in long term.

Keywords: RCA, DMAIC Approach, Lean Implementations

INTRODUCTION

In General tractor industry, First time right means correct in first go. When a process input is 100 and output is 100 finished products then the first time right is 100%.any input which is not passing through first time because of any reason will lead to some sort of rework and will reduce the first time

Revised Manuscript Received on December 30, 2019.

* Correspondence Author

First Author Name *, Department of Mechanical Engineering department, Kalasalingam Academy of Research & Education, Virudhunagar Dist., Tamilnadu, India. Email: ssr.ngl@gmail.com

Second Author Name, Department of Mechanical Engineering department, Kalasalingam Academy of Research & Education, Virudhunagar Dist., Tamilnadu, India. Email: d.chellaganesh@klu.ac.in

Third Author Name, Department of Mechanical Engineering department, Kalasalingam Academy of Research & Education, Virudhunagar Dist., Tamilnadu, India Email: adamkhan.m@klu.ac.in

rightpercentage.

Let us take an example and understand.

---100--> Step 1 ----98----> step 2 ----98

Input to step is 100 and output is 98. Two pieces are scrap. First time right is 98% , There is possibility that in step 2 there was some rework in 2 pieces but we were able to correct them before the final product is delivered however the output will be 98 products but First time right will come down to $96/98=97.9\%$

So clearly the concept for the entire process which has different steps involved is called rolled first time right. This we deals for AGCO Mexico mkt units and relative score from dealer end when doing Pre delivery Inspection

I. METHODOLOGY

Quality defects are mainly incorporated with costs and mainly associated with warranty. Which being involved many resources like money, time and lost reputation? Also it is more expensive to sustain in the market after overcoming these all burdens. So, "Zero Defects aiming is the elimination process of defects almost zero without involving the cost much. Or, we accept that a certain, very small percentage of defects is acceptable based on the viability. This phrase was coined by Philip Crosby in his 1979 book titled, "Quality is Free." His position was that where there are zero defects, there are no costs associated with issues of poor quality and hence, quality becomes free. This we learnt not only as a philosophy. Practically it is been explore by many and succeeds in many business models."Zero defects" is a mentality or a movement which creates builds quality in the first time right. It has an optimistic program nor does it have distinct steps to follow the rules to accept by. This achieved by strengthening the process product parameters with stable conditions and control the progress within targets and sustainable. The capability of the process. Parameters should achieve within 3 sigma results may give most repeatable results to achieve zero defects.

A. Root Cause Analysis:

When you are dealing with lots of machineries, equipment and involvement of human obviously cause raise problem on any process or any location. We can eliminate, prevent, and isolate issues through planning and preventive actions which are raise by expected causes, but due to some special causes or unexpected reasons some problems can appear in regular processes, needs specific techniques to eliminate and prevent it. Fortunately, since decade we have some analytical methods are widely used worldwide by successful implementation for elimination of appropriate problems and that is Root Cause Analysis (RCA).

- ❖ During performing any specific process, it is possible repetitive human errors are occurred, or equipment failures associated with manufacturing processes.
- ❖ Found Involvement of any surprise risk event during processes.
- ❖ Process failure during performing manufacturing activities, and production stoppage.
- ❖ Resources / Asset damage or loss
- ❖ Quality degradation / or customer dissatisfaction, that is performance is generally below expected standard.

The root cause analysis (RCA) is a method or technique that widely used in manufacturing industry to conduct effective actions to addressing problems / non-conformance, by identify root cause of the problem. To identifying all the possible failures in a manufacturing processes and its design. You have to organize step by step process such as key processes and steps, inputs, outputs to identify which part of the process or inputs go wrong, and what is the impact on the outputs. Causes the potential failure, occurrence of failure and required prevent the failure in in existing controls are conducted in the root cause analysis.

B. Six Sigma DMAIC:

DMAIC, pronounced (De-May-Ick), refers to a data-driven quality strategy for improving processes, and is an integral part of the company's Six Sigma Quality Initiative. DMAIC is an acronym for five interconnected phases: Define Measure, Analyze, Improve, and Control.

Simple methods such as checklists, screening diagrams are highlighted in the box for signatures to ensure things in pass through right the first time. In any hospital or manufacturing centers, the right first time approach achieve by exploring sustainable practices implement across the process and there by creates process robustness. This gives repeated results. Ultimately these progress give impressions to the customers about the product and its capabilities without branding by someone. Product performance reveals this status.

Rear Axle / Front Axle Scratches - Significant X's			
Sl No	Concerns / Issues	Process / input indicator (X)	Prioritization of X's (Significant)
X1	Axle (Front & Rear) rust at various location (2WD/4WD) Wheel hub paint damage	Paint Stroke	13 X's
X2		Frame Attachment in PKD	
X3		Paint Mixing	
X4		Improper mixing of 2K components	
X5		2K System problem	
X6		ES effect not working	
X7		Paint flow is less	
X8		Improper stuffing in container	7 X's prioritized for Next level Corrective Actions
X9		Cleaning frequency of masking material	
X10		Painting methods	
X11		Size of the spacer / washer used in PKD framing activity	
X12		Masking material's masking length	
X13		Frame Conceptual design	

Fig.1. Rear Axle and Front axle scratches

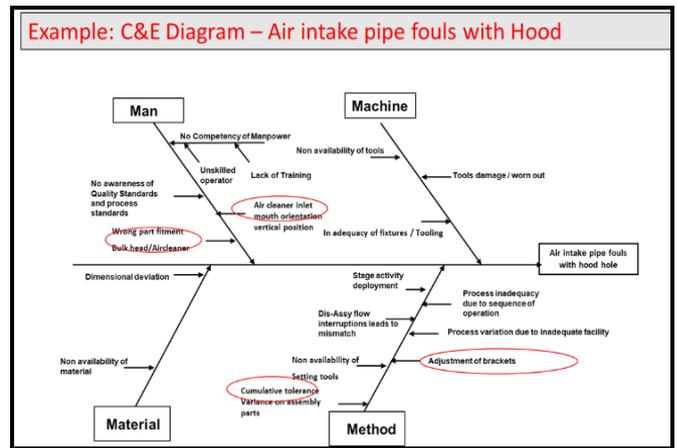


Fig.2. Cause and Effect Diagram

Cause and Effect Matrix – Significant X's										
TAFE LTD - MDU OPS										
Project: Air intake pipe fouls with hood profile Correlation: 9: High 3: Medium 1: Low 0: No correlation										
Process Step	Input Variables (X) ↓	Output Variables (Y) ↓				Weighted Score (S)	%	Rank	Status	Critical, potential, or all controls
		Wrong fitment	Fitment difficulty	Position of vertical	Assembly tolerance					
1	Bulk head	1	0	0	0	9	2.5%	4	Eliminated	
2	Air cleaner bracket	1	1	0	0	12	2.4%	3	Eliminated	
3	Air cleaner assembly	1	0	0	0	9	2.6%	4	Eliminated	
4	Air cleaner inlet mouth position	0	0	9	9	102	42.8%	1	Critical	
5	Adjustment of air cleaner support bracket	0	0	9	9	102	42.8%	1	more detail	
Weighted Score (Y)		27	3	162	162					
Rank		3	4	1	2					

Comments/Conclusions: Air cleaner inlet mouth position & Adjustment of air cleaner support bracket taken for actions

Fig.3. Cause and Effect Matrix

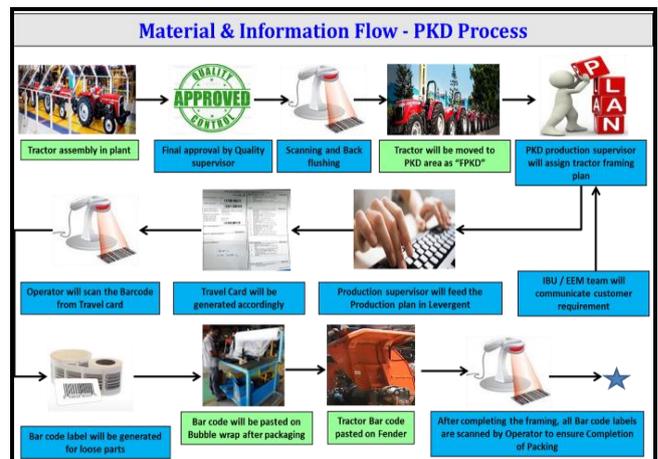


Fig.3 Material & information flow process

II. CONCLUSION

In this project, DMAIC approach has been used to identify all possible causes and its effects of failures. By doing the Implementation based on Analysis, the actions were sustained and giving results towards increasing RFT score at Mexico mkt. Parallel, as and consequential benefits resulting huge warranty cost elimination and rectification cost drastically reduced. From overall this project, DMAIC and Lean approach with customer centric methodology helps all improvement and results achieved.



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