8D Methodology and Its Application

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Abstract: Today the quality is the big challenge for the automotive manufactures. By means of large and mass production of the many types of products in different lines of gathering and manufacturing. The 8D methodology is used to sort out and ameliorate the problems and errors in production. It can be followed out on product as well as system and process as well. The 8D method is used as tool for regular improvement and corrective measure to rectify the minor and major conformities. The primary use of 8D method for client complaints as well as inter plant complaints. 8D also applied for better understanding the problem and finding solutions, the primary advantage of this method, it is an easy and legitimate method to find out problems according to occur. It takes into tools and technique of the various attacks on the PDCA (PLAN-DO-CHEACK-ACT) cycle. The 8D is a team oriented problem solving (TOPS) methodology. The present work offers a direction to examine the 8D philosophy with the utilization of quality improvement thinking in producing high quality products, increase earnings and reducing defects too.

Key Words: Quality Sureness, Quality Tools & Technique, Problem Solving Method 8D, 8D methodology, 8D concept.

Introduction

Definition

The Eight Disciplines Problem Solving approach can be used to identify, rectify and eliminate the reversion of quality problems. 8D is a problem solving methodology for process and product improvement (Lalit Kumar Biban & Deepak Dhounchak, 2017). It is designed into eight disciplines, accentuating team collaboration. The team as a whole is believed to be better and smarter than the quality sum of the individuals (Lalit Kumar Biban, Deepak Dhounchak & Shakti, 2017). 8D is also known as global 8D, Ford 8D, TOPS 8D.

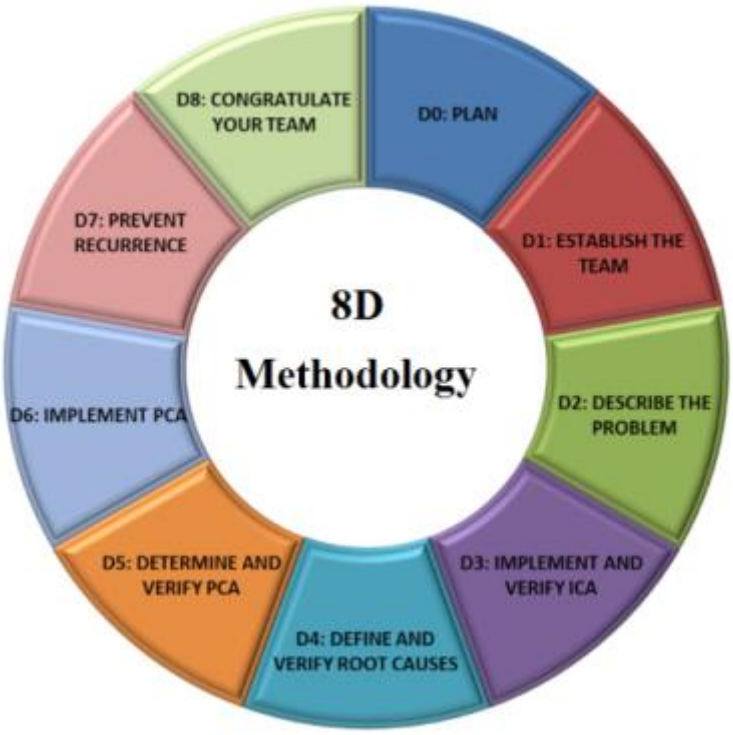

Figure 1: 8D Methodology

History of 8D

The first time the US Government used 8D process during the Second World War, discussing to it as a Military Standard 1520 "Corrective action and tendency system for Nonconforming material". The Ford Motor Company documented first time 8D method in 1987 as a course manual permitted "Team Oriented Problem Solving". The senior management of the Power Train Organization of the automotive industry request to the quality improving department for making those steps which is employed by US military in the Second Word War, which was facing growing obstruction at the same problem that is repeated year after year.

Steps of 8D methodology

The 8 Disciplines are:

D0: Make Plan- Make plans for resolving the problem and learn the basic principle.

D1: Prepare a team- Prepare a team of people, on the basis of product and procedure knowledge.

D2: Describe and define the problem- Resolve the problem by finding in countable terms that who, what, where, when, why, how, and how many (5W2H) for the problem (Lalit Kumar Biban, Deepak Dhounchak & Shakti, 2017).

D3: Determine an interim containment plan; implement and verify interim containment actions- Determine and implement containment actions to identify the problem from any client.

D4: Determine, identify, and verify root causes and escape points- find all applicable causes that could explain why obstacle has passed. Also identify why the problem was not detected at the fourth dimension where they took place (Lalit Kumar Biban & Deepak Dhounchak, 2017).

D5: - Confirm permanent corrections (PC's) for the problem will resolve problem for the customer- Using the pre-output systems, quantitatively confirm that the selected correction will resolve the trouble. Sustain that the correction will actually decide the trouble (Deepak Dhounchak and Lalit Kumar Biban, 2017).

D6: - Describe and carry out disciplinary actions- Assign and enforce the best corrective action.

D7: - Prevent recurrence/system problem- Rearrange the management systems, operating system and processes to prevent return of this and similar problem (Lalit Kumar Biban & Deepak Dhounchak, 2017).

D8: - Congratulate your team- Endorse the collective efforts of the team. The team needs to be officially thanked by the system.

Review of the literature

Sr. No.	Mention	Year	Subject area
1.	US Army	1520	8D method has its historical roots in the quality standard MIL-STD 1520 "The Helpful Action and Outlook System for Different Material" issued by the US Army. Published, this is presented as a cost efficient plan of natural process to handle and dispose of nonconforming materials.
2.	Ford Motors	1986-87	The administrators of the Powertrain Organization (transmissions, chassis, engines) wanted a methodology where teams (design, engineering, manufacturing technology, and production) could work on persist enduring problems. In 1986, the assignment was granted to modified a manual and a successive course that would attain a fresh slide path to solving identified engineering design and manufacturing defects. The process for this procedure was known and limited in a Team Oriented Problem Solving (TOPS), first allotted in

			1987.
3.	Edler	2001	In Germany the UDA published its own variety for the OEMs and suppliers of the automotive manufacture. And nowadays usually utilized for undertaking customer complaints.
5.	Behrens	2007	Mainly the 8D method is a relevant methodology for complaints control and the related implementation of corrective activities. Every time, a fresh research shows that in most companies the link with the complaint management to the other business processor of the company by information technology and organization along with the valuation of the grandness of the highest quality in complaint management are nonetheless a problem.
7.	Marolt and Gomiscek	2005	8D problem solving methodology in any system is strongly connected with the process of continuous improvement is essentially problem solving process, so they tell the following: Reactive Improvement:- Due to solving a problem after identification, like when a faulty product or operation has been observed in the organization and at customer end. Proactive Improvement:- Using the suitable method and techniques for preventing the problems before they occur, and before the product manufactured.
8.	Nenadal	2011	For seeking the effective and efficient formula for motivating the 8D teams there has a constitution. An effective and efficient motivation system can combine the interests of employees with the business objectives during the staff meetings, which can easily achieve the personal satisfaction. Nenadal found the best solution of motivating the employee, the money is a very effective and expensive configuration of a reward to employees. Cash reward is the system has invested how much it requires people to get employed to speedy. And trying to have motivates the employee through the

			rewards.
9.	Helena Stantos Rodrigues	2013	By the Helena Stantos Rodrigues it is very important for any organization to motivate the employee and innovate for initiatives, it is easy to deliver and exchange of ideas and knowledge. It is the most important information as the 8D process may get down the introduction process for the most problematic region.

Research Methodology

The 8D method is also called G8D, Global 8D, TOPS8D, it is one of the most widely used problem solving methodology related to nonconformities recurrence prevention in the production process, it is commonly used for the complaints management in the automotive manufacturing (Deepak Dhounchak and Lalit Kumar Biban, 2017). The 8D methodology was developed for continuous improvement in the output scheme. In fact the 8D is a methodology for solving comprehensive problem of diverse points, that is the trouble resolution of which is generally not individuals, or solution of which requires more time and the possibility of more investment. By contrast, the 8D methodology is currently most commonly employed as an instrument for handling complaints in the automotive industries, and not just in the automotive industry it is employed in several other organizations (Lalit Kumar Biban, Deepak Dhounchak & Shakti, 2017).

Tools and techniques used in 8D

1. Flow chart
2. Check sheet
3. 5W, 2H (what, why, where, who, when, how, how much)
4. Root cause analysis
5. Ishikawa diagram

Flow chart

The flowchart is a type of diagram that denotes an algorithm, workflow or process, showing the steps as boxes of various types, and their order by connecting them with arrows. This diagrammatic representation explains a solution model to a given problem. Flowcharts are used in analyzing, designing, verifying or managing a process or program in various fields (Deepak Dhounchak & Naveen Khatak, 2017).

Check sheet

The check sheet is an arrangement used to collect data in real time at the situation where the data is generated. The data it detentions can be quantitative or qualitative. When the

information is quantitative, the check sheet is sometimes called a tally sheet (Shakti and Deepak Dhounchak, 2017).

5W, 2H (what, why, where, who, when, how, how much)

In this process find the problem in any organization with those 5W and 2H. What is the problem, describe in a single sentence, so that others will be able to understand what you mean (Lalit Kumar Biban, Deepak Dhounchak & Shakti, 2017). Why is it a problem? What is the cause? Where do we encounter the problem? Who is impacted? When first we had encountered the problem? How did we know there was a problem? How often do we encounter this problem?

Root cause analysis

RCA (Root Cause Analysis) is not a method itself, but a class of problem solving methods designed to find the root cause of problems or measures (Lalit Kumar Biban & Deepak Dhounchak, 2017). RCA is any structured approach that identifies factors resulting in the problem outcome, including signs, effects or moments. The practice of RCA is based on the acceptance that problems are permanently solved by addressing the root cause, slightly than addressing obvious symptoms. Counter measures directed at the root cause are more likely to prevent the problem re-occurrence (Shakti and Deepak Dhounchak, 2017).

Ishikawa diagram

The Ishikawa diagram is causal diagrams created by Kaoru Ishikawa in 1968. That shows the causes of a specific occurrence (Lalit Kumar Biban, Deepak Dhounchak & Shakti, 2017). Common uses of the Ishikawa Diagram are product design and quality defect anticipation to identify potential factors causing and overall effect. Each cause or section or faultiness is a source of variation. It is also known as Fishbone Diagram, Cause and Effect Diagram, Fishikawa Diagram.

Application of 8D

- Major non-conformances
- Customer complaints
- Reoccurring issues
- Team approach needed
- Provide best solution
- Easy to implement
- Used in manufacturing industries

Conclusion

The 8D methodology is one of the best techniques for solving the problem with minimum errors in the automotive industries. The 8D method identifies the root causes before the permanent prevention action. Companies, groups, individuals benefit by adopting a logical problem solving approach. Develop knowledge of variability and now how to deal with it. Start with your knowledge of subject matter and your best experience. Pay attention to the human side of an organization when seeking and implementing the solution.

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