Quality improvement through 8D methodology: an automotive industry case study

Karyadi Rusman[1*], Dorina Hetharia[2]
[1,2] Department of Industrial Engineering, Universitas Trisakti, DKI Jakarta, Indonesia
* Corresponding author: karyadi.k@lecturer.sains.ac.id

ARTICLE INFO

Article history
Submission: 26th April 2023
Revised: 16th June, 2024
Accepted: 20th July, 2024

Keywords
8D method
Quality improvement
Automotive industry

https://doi.org/10.22219/oe.2025.v17.i1.126

ABSTRACT

Nowadays quality is a key factor for the success of a product or company to survive and be accepted by consumers. Repeated quality problem in automotive industry become one of factor that influence company performance. However the problem is visual aspect, if this repetitive will increase customer dissatisfaction. Problem covers pillar loop scratch becomes the repeated and worst problem in Feb–March 2020. This research aims to assist in quality improvement by using the eight discipline (8D) method to solve the problem “cover pillar loop scratch. An 8D method is a problem-solving tool that has complete and systematic corrective action stages in problem-solving, which is for short-term action and long-term corrective action also effective in preventing the re-occurring problem. Result the implementation of the 8D methodology in problem-solving seat belt production problems in the SB3 line of Automotive Industry succeeded in reducing and eliminating the number of problems “cover pillar loop scratch” from 60 pcs in March 2020 to 0 in July 2020.

1. Introduction

It is no need to argue that quality is a key factor for the success product or company to survive and be accepted by customers. There are many definitions of quality, but the quality concept is one or more characteristics of a product or service. Quality is one factor that consumers determine to choose a product or service. Quality is perceived as the ability of the product to perform design function (Performance), reliability against failure (Reliability), durability level (Durability), ease to repair (Serviceability), the product looks (Aesthetics), owned ability of product (Feature), product or company image (Perceived Quality), and conformity product to design (Conformance to Standard). Quality is also defined as the suitability of use, in modern definition quality is inversely proportional to variability (Montgomery, 2009). In other words, quality is a product that does not vary much from standard.

Automotive industry is a company that produces automotive parts that have recurring quality problems, and difficult to solve. Based on historical data product defects that occurred in February until March 2020, the internal defect production line SB3 it was found that in March the problem “Cover through anchor (pillar loop) scratch” became the worst problem amount 111 pcs, followed by problem sewing webbing loop not full due to webbing length not standard (accidental caused) amount 108 pcs. Meanwhile, part return data from customer (reject by customer) due to same case in February 47 pcs and in March 60 pcs. Based on that condition action improvements to reduce and eliminated the recurring problem are needed as much as possible.

8D is the term from Eight Discipline; there are 8 discipline stages for problem resolve for quality improvement. 8D methods used to identify, improve, and prevent recurrence problems. In 8D the method, there are fast response actions (temporary), and corrective, preventive actions. The 8D method was first introduced by Ford Motor Company in 1987, as guidelines published by the title

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

Operations Excellence: Journal of Applied Industrial Engineering, 2025, 17(1): 1-11

"Team Oriented Problem Solving" or TOPS, and due to development, has additional planning at its stage into Ford global standard called the Global 8D.

Rumanian scientists disclose the usage of the 8D method to solve problems in processes and products, by identifying, improving, and eliminating repeat problems (Muncut et al., 2019). Research in Poland uses the D2 from 8D (problem description) as a critical and sensitive discipline from 8D, to make algorithm procedure as a quality management tool to make proper problem description in welding cases, so can decide that problem occurred in customer or fabrication process (Cyganiuk et al., 2019). The G8D concept is used for quality improvement by root cause analysis for quality problems, then improvement action can prevent the quality problems at the wire rod coils surface (Chomicz, 2020). 8D problem solving integrated all important aspects of problem-solving. That approach decides on corrective and permanent action based on static analysis of the problem and focuses on the real root cause (Alexa & Kiss, 2016). The proper 8D implementation means, the right state of root cause problem and efficient corrective action from cost, time, and customer effect also company. 8D is a tool to integrate and solve difficult problems that cannot solve by individuals or problems that spend resources (Chlpeková et al., 2014). 8D has an advantage in root cause problem description, and proper root cause identification, enabling to take preventive action needed to eliminate all potential repeated problems (Broday & Júnior, 2013).

8D provides structured problem-solving in a short time, by originator this tool is used for complain resolve from the customer, which required fast follow-up and proper, this method is also effective in internal problem-solving. Generally project that use the 8D method spend time until three months (Sharma et al., 2020). The 8D method was first time introduced to solve problems in the automotive industry and aircraft, then spread to electronic companies and is nowadays used in a lot of industries, that must be considered that implementation of this method needs training. Practice Global 8D (G8D) implementation can solve technical problems, by the way, all of the things organizations need concern for G8D training, enabling G8D became a continuous solution for problem-solving in organizations (Guo et al., 2019).

The 8D method offers the essential solution from root cause identification until preventive action implementation and is used to resolve complaints, also contributing to quality improvement and organization performance (Grecu et al., 2015). The fast and proper of process customer complaints resolving, will minimize costs and maintain the company image. The 8D method introduces systematic improvement and eliminates problems also a failure, which can be used on products, systems, and processes (Jacek et al., 2015). Efforts to reduce the rejection of products are carried out using root cause analysis, the 8D method, and the 5W principle, that's aims to eliminate, wasting time and material to obtain low production costs (Saravanakumar et al., 2020).

In this research, the 8D method is used due to this method being well suited to fast resolve internal and external problems, 8D is used to identify and resolve the often problem, intermittent or repeated that is difficult to solve, and needs team involvement. 8D it's a framework philosophy that encourages individuals as part of a team problem solving based on fact, 8D has a stage to appreciate teamwork, which will give a positive influence on the work environment. In many cases, the 8D method is suitable to use in the continuous improvement of quality. Quality improvement going to reduce the cost of poor quality.

This research aims to implementation 8D method for quality improvement in Automotive Industry by reduce reject product "cover through anchor scratch" and eliminated recurring problem. The research quality improvement started on 27 March 2020 and was evaluated until the end of July 2020.

2. Methods

Quality Improvement attempt to reduce variation in process and product result, over variation called waste. In the production process that variation it's a problem. There are many problem-solving methods to solve the problem, there are PDCA, A3, DMAIC, 10-step, Kepner-Tregoe, 8D, etc. (Okes, 2019). Problem-solving method comparison can see in Table 1.

8D method, the D term of "Discipline" means on 8D implementation needs discipline to use tools in each step to get a maximal result (Sharma et al., 2020). The 8D step describes in the 8D stage can be seen in Fig. 1.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

Table 1 Problem-solving method comparison

10-Step	A3	8D	DMAIC	Kepner-Tregoe	PDCA
		Establish the team			
Define the problem	Problem definition	Describe the problem	Define	Situation analysis	Plan
	State goal	Develop interim containment action			
10-Step	**A3**	**8D**	**DMAIC**	**Kepner-Tregoe**	**PDCA**
Understand the process	Root cause analysis	Define/verify the root cause	Measure	Problem analysis	
Identify possible causes			Analyze		
Analyze data					
Identify possible solution	Countermeasure	Choose/verify corrective action	Improve	Solution analysis	
Select solution				Potential problem analysis	
Implement solutions		Validate/implement corrective action			Do
Evaluate effects	Confirm			Situation analysis	Check
Institutionalize change	Future actions	Prevent recurrence	Control		Act
		Recognize the team			

Source: Problem-Solving Comparison, Resource Root Cause Analysis, The core of problem-solving and corrective action, American Society for Quality, Quality Press, Milwaukee, WI53203, 2019 by Duke Okes.

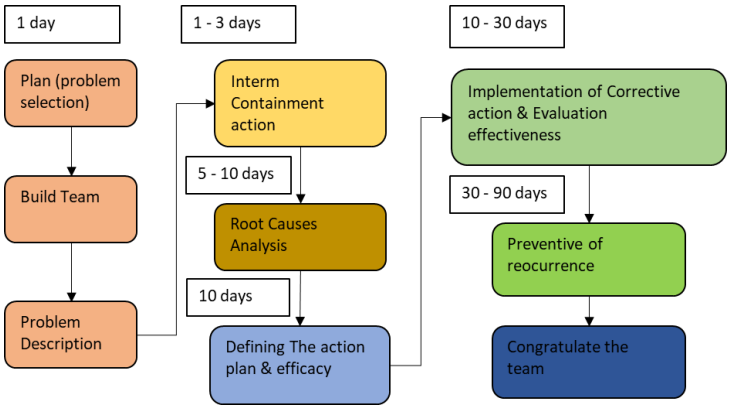

Fig. 1 8D stage methodology implementation.

D0. Plan

Plan shortly describe the problem, timeline, and resources needed. The plan is the first step to make a round activity to achieve a goal or objective decided, that its short & long goal, the essence of the basic plan is can do it and be right on target (Nurdin, 2019; Setiawan & Hasibuan, 2021).

D1. Build team

Discipline one is building a team that will contribute to support give input and action to resolve the problem. Usually, team members, it's representatives of expertise in each department. This team is called Cross Functional Team (CFT), the member from cross departments cooperate, integrate, and collaborate to find ways to resolve the problem, by building awareness that the problem is our responsibility (Sniazhko, 2022). Support and cooperation from each department are needed, an employee involvement approach is important to support the 8D problem-solving report on continuous improvement activity (Knol et al., 2022).

D2. Problem description

This step must describe the clear problem, part type, part no, and point critical to quality. By 5W+1H analysis (What, When, Where, Why, Who, and How), to get detailed identification how to detect the problem. The number of SOD and Risk Priority Numbers (RPN) on FMEA when the problem occurred. FMEA is one of the techniques to ensure the reliability of a model, use to analyse failed behavior in a complex system (Balaraju et al., 2020). With a clear and correct description of the

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

problem, one could find the real cause problem and decide the proper action for improvement needed. 5W+1H method assist on investigation to determine systematic question, general and complimentary, enable to start and speed up in good definition for problem mapping (Jia et al., 2015).

D3. In term Containment action

This discipline contains quick action to avoid problems found, usually 24 hours after the problem knowing or taken by the 8D method. Containment action to isolate the problem, eliminate potential problem flow out and deliver to customer, minimize problem impact until found a permanent solution.

D4. Root causes analysis

Next step is to find the real root cause, one of the methods is using the Ishikawa diagram or cause-effect diagram. Cause effect diagram is one of the effective solutions in identification of root causes, uncontrolled causes however can predicted (Gaspersz, 2006). Every problem occurred, it needs concern why the problem occurs, and why the problem flows out (why the process can not detect). 5M+1L its approach decided when the problem occurred that should be caused by Man, Machine, Material, Method, Measurement, and Environment factors. Cause effect diagram assists to find the root cause and the impact on the process and system, analysis is held by the group to find the root cause and solution by collecting ideas from group members in the same discussion (Weekes et al., 2018). 5M+1L analysis results continuously by 5Why method, for deep analysis of root cause. Deeply that we know the root cause, the action improvement will be more effective. Researchers in India prove that the 8D approach through root cause analysis by fishbone diagram could identify and find the improvement that changes material and using additional lubricants made breakdown time and the repair cost was reduced (Rathi et al., 2021).

D5. Action Plan & Efficacy

Discipline five contains an action plan for improvement, the person in charge (PIC), the due date, the finishing date, and verification result, for easy to monitoring usually by the table. Root cause problem identification results, need brainstorming by team members to determine and decide action plan for improvement needed by affinity diagram. The affinity diagram is a simple method to manage data from the shop floor, and interpret each team member's ideas in a hierarchy that reveals the problems and actions result from improvement taken or themes discussed (Holtzblatt & Beyer, 2017).

D6. Evaluation result effectiveness

This step is the evaluation of effectiveness from action improvement result, which will make an evaluation point, is that problem has been done by customer side (internal & external), which could make sure the problem does not recur, is the analysis result and data showed the target achieved, is that could confirm if the action did not have another impact and raise a new problem, to confirmed and make sure improvement effective need to monitor that improvement a month until three. This validation is needed to know effectiveness action of improvement, validation by statistic measurement makes it easy to find out.

D7. Prevent recurrence

The perfect solution is to ensure that no repeated problems. That way by standardizing, that can do after the D6 step convince and proven effective, all related document action improvements in D6 have to be revised and updated if needed, including flow process, FMEA, Control Plan, WI, Inspection sheet, Maintenance document, Procedure, Drawing, etc. Another action that needs to do is to update documents for process audit and verification corrective action periodically to reduce process risk. The better and correct way to prevent the repeated problem, when possible, using the error proofing/Pokayoke method. Doing tests for detection problems before problems occur. The next step also to prevent the recurrence problem is Yorkton/Horizontal deployment, this contains process identification for a product or a similar process to the problematic process or product, then the same action improvement could to implemented.

D8. Approval Closure/Congratulation Team

After all corrective action is complete, and D6 completed also effective, the 8D can propose to close. In the process to close a person in charge (usually the high level of quality "Plant Quality Manager"/PQM), will make notes if needed and gave congratulation for the contribution of all team members, and motivated the team members.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

ISSN-p: 2085-1431
ISSN-e: 2654-5799

3. Results and Discussion

Plan

In this step, the selection theme that going to propose by the 8D method, is based on customer claims and the problem often found in the internal process. This problem topic is raised in the macro activity plan (Fig. 2).

Workshop Description	Start Date	End Date	Frequency of Review	Reviewed by
NG scratch cover pillar loop Toyota Model	24-Feb-2020	30-Jun-2020	Weekly (Monday / Wednesday)	Arie Wirawan

Policy Deployment Link	Approval	Key indicator (Measurable)	Current value	Feb 47 Pcs,
Tactic No.5 Production process Excellence	APS Committees	Reduce/Eliminate NG Cover Scratch	Target value	March 60 pcs 0 pcs

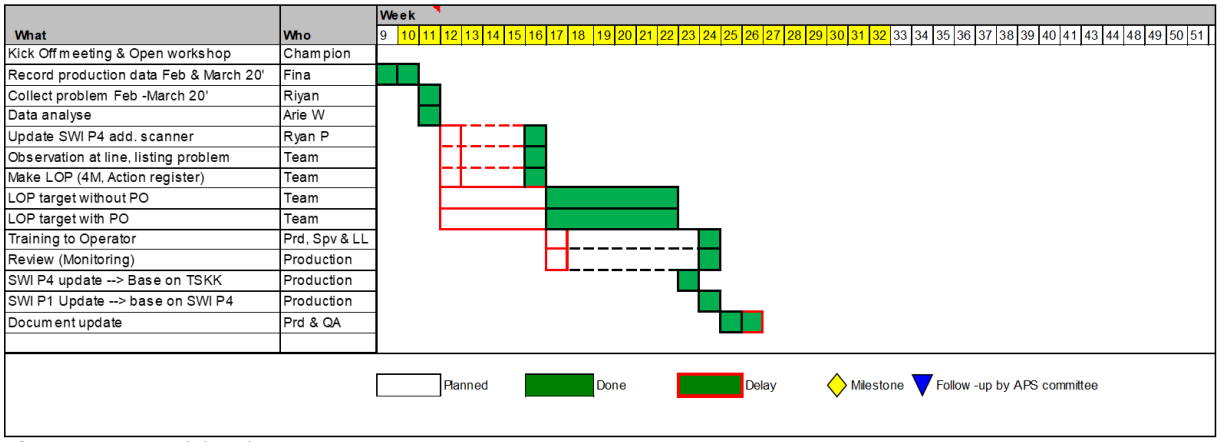

Fig. 2 Macro activity plan.

The macro activity plan contains the topic problem raised, the start date who will review estimated action by the general that will be done, also timeline estimation.

Build Team

8D team members it's coming from cross sections (CFT), to make it easy to communicate and cooperate in collection and data analysis (Fig. 3).

Function	Name
Facilitator	Arie I Wirawan
Production	Ryan Pujiarto
Administry	Lefryna S
Line Leader	Sularto, Andhika, Yayang
QA	Yadi Karyadi
Maintenance	Jefry, Hidayat
IE	Roviq A,

Fig. 3 Build team.

Every team member came from the cross section with different functions of skill and expertise, to assist to cooperate and kill the problem.

Problem Description

Part Name; Belt Assy, RR No. 2 Seat Outer RH, problem; Cover Pillar Loop scratch, part no. 73560-0K150-B0, found by the operator assembly line, on 24 Feb and 17 March, and tracking results the problem was also found in receiving area, detailed in (Fig. 4).

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

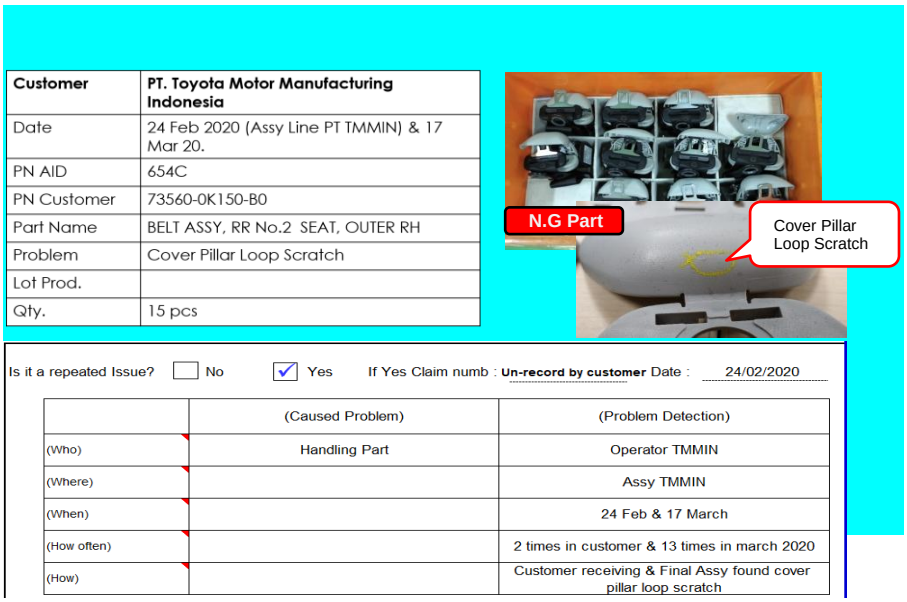

Fig. 4 Problem description.

From the problem description need to map the critical to quality (CTQ) problem, to define the critical point for problem scratch, then need to take improvement action (Fig. 5).

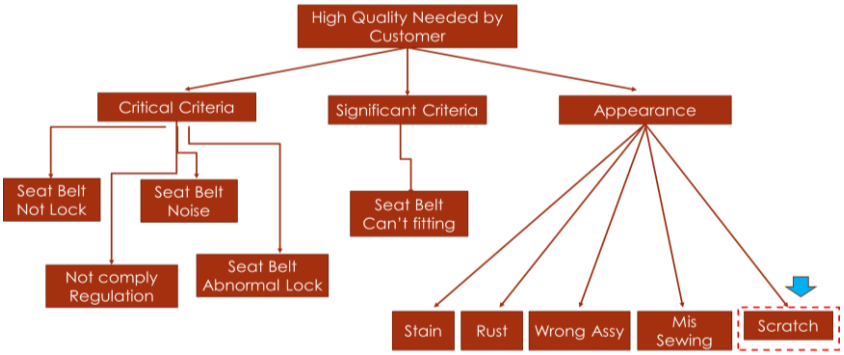

Fig. 5 Critical to quality problem scratch.

In term Containment Action

In term containment action for isolated scratch problem at cover pillar loop by quarantining the stock and do sorting stock and add. mark to guarantee after sorting part OK at every part can be seen in Fig. 6.

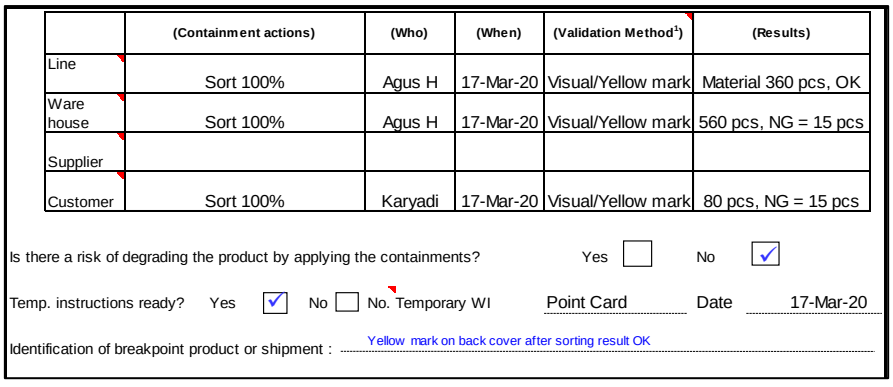

Fig. 6 Containment action problem cover pillar loop scratch.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

Containment action has to clear notes in list and record, part in line, warehouse internal & external & customer also document needed to do sorting activity.

Root Causes Analysis

CFT did brainstorming for process flow for problematic product charts, like in the below can be seen in Fig. 7.

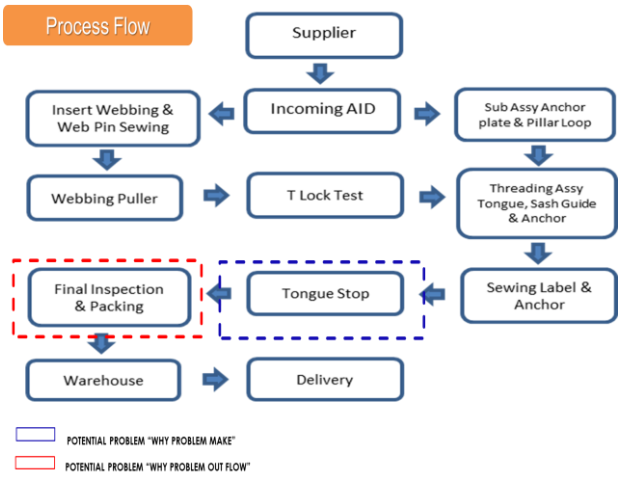

Fig. 7 Production process flow.

From that chart potential problems occurred in the tongue stop process and the potential problem didn't detect or outflow in Final Inspection & Packing process. The next step is cause-effect analysis, the cause-effect analysis used during root cause investigation as a theoretical foundation (Gangidi, 2018). Cause-effect diagram analysis result showed in Fig. 8.

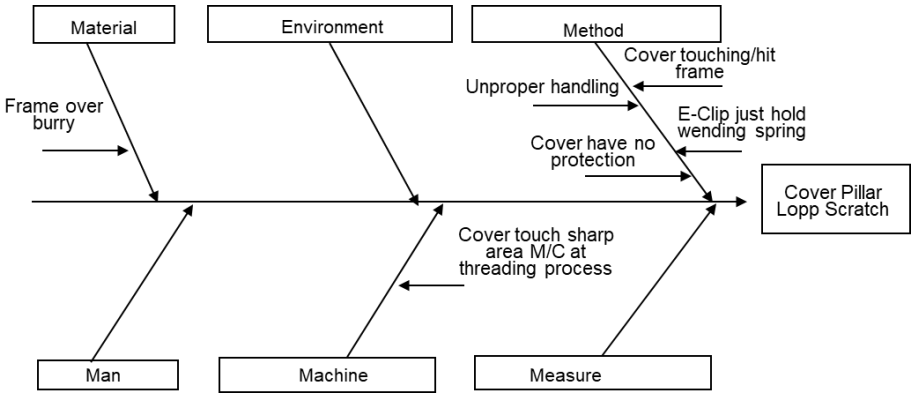

Fig. 8 Cause effect diagram cover pillar loop scratch.

Based on cause effect diagram analysis result, need analysis of potential factors from the production process that influenced and made the problem occur, the potential factor that can make the problem cover pillar loop scratch come from, Material; frame over burry, Method; assumption E-clip function just hold winding spring, no protection cover, cover touching frame, improper handling. And from the Machine; cover touch at the sharp area after threading process.

The cause-effect diagram it's to search for the possibility problem occurred from the 5M+1E side, after getting the cause-effect analysis result, next use 5 why analysis to get a deep analysis of the real root cause problem, why the problem occurred shown in (**Table 2**), and why the problem flows out to customer, we can see in (T**able 3**).

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

Table 2 Why analysis, why problem occur

Variation	Why-1	Why-2	Why-3	Why-4	Why-5
Method	When take out E-clip on T Stop process, cover touch/hit tie	Webbing Pulled (winding spring effect)	When release webbing not holder	No instruction to keep/hold webbing, when E-clip take out.	No concern point for cover scratch in control plan.
Material	Cover touch frame	Tie bar frame burry/sharp	Burr debarring process not perfect	As per design max burr 0.3	
Machine	Cover touch sharp area M/C	M/C design no camper/radius	No request when lay out preparation	Leak knowledge	

Table 3 Why analysis and why problem flow out

Variation	Why-1	Why-2	Why-3	Why-4	Why-5
Method	Inspector hesitate then judge OK	No guidance/limit sample in FI	Only have one limit sample	Not consider to running in two lines.	
Material	Wrong judgement	Operator need time to compare	Limit sample placed far from FI	No space area in line	Close lay out (narrow)

Action Plan & Efficacy

After brainstorming the result to find the root cause by cause-effect diagram and 5why analysis, the next step is a discussion for an action plan that has to do. This can be seen in the table (Fig. 9).

ACTION REGISTER

Rev 06July 2016

Team: | Date:

Not Initiate | Action Assigned (Plan) | 50% Complete (Do) | 75% Complete (Check) | Complete & Verified (Act)

Item No.	Priority	Person Responsible	Action Required	Dates			Comments / Updates	Status
				Assigned	Target	Completed		
1		Yayang & Ocim	-Review NG process every station from process Threading –>Sewing Anchor->Tongue stop ->Final Inspection		23-Mar-20	23-Mar-20	Potential problem occure from: -Threading process-Sewing Anchor & Tongue stop process.	
2		Andhika	-Improve methode handling (take out) from JIG in station Threading.		20-Mar-20	23-Mar-20	Problem still occure, but reduce	
3		Karyadi	-Simulation add./put Protector after Threading and take out in Final Inspection		19-Mar-20	19-Mar-20	Material protector from green mat, easy to come out	
4		Jamaludin	-Provide WIP table transit in Sewing Anchor station.		3-Apr-20	10-Jun-20	Problem eliminate (review)	
5		Team	-Observ sharp area in transit area from station Threading until Final Inspection.		24-Mar-20	24-Mar-20	Coverage by felt & make radius	
6		Agus H	-Informasi to supplier relate control burry.		23-Mar-20	23-Mar-20	Done, (Supplier use carton) concern will add, cost & time).	
7		Arie/Roviq	-Study & Trial change E-Clip (prototype)		27-Mar-20	27-Mar-20	Problem still occure, but reduce	
8		Andhika/Karyadi/Jamal/Ryan P	-Change methode install E-Clip, before (insert e clip to frame tie bar), after (clamped tie bar). (SWI/Visual standard).		9-Apr-20	9-Apr-20	Problem reduce	
9		Team	-Review control plan/PFMEA PIC. Team		TBD	4-Aug-20	-SWI P1 Done -Need Update PFMEA & Control Plan (Change position for install & release E-Clip)	
10		Ryan P	-When expand line, concern to do copy limit sample. -Provide Lay out centralisation Limit Sample. D20		31-Mar-20	31-Mar-20	Provide copy of limit sample.	

Fig. 9 Efficacy monitoring of the action plan.

By using affinity diagram that will be made simple by table form for a collected action plan that going to do. The efficacy result of the action plan was monitored and recorded.

Evaluation result effectiveness

The improvement of the action plan, has to evaluate the effectiveness. To make it easy we can see the implementation from D5 by Pareto chart. Fig. 10 showed the evaluation result for improvement.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

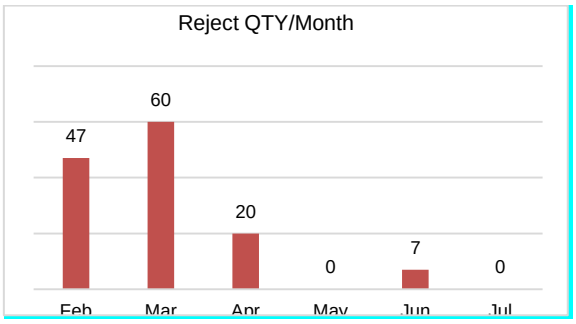

Fig. 10 Evaluation chart for effectiveness improvement.

Based on the evaluation of improvement results, the improvement activity is effective. This could recognize by observing the trend of reducing the number of defects found by the process. From 47 pcs in Feb, and March, then decreased in Jun to 7 pcs, and in July no problems were found for "cover pillar loop scratch".

Prevent re-occurrence

Standardization: To prevent the repeated problem, need to standardize for the process to install and release E-Clip. This did by revising the Standard Work Instruction Point 1 (SWI P1) line SB3, to ensure each operator do in the same step and rhythm. Process T Lock test did revise method how to installation E-Clip, E-clip must clamp frame retractor rev (Appendix 1). Process Tongue Stop Crimp did revise method how to release/take out E-Clip, "remove the E-clip after the crimping tongue stop process" rev (Appendix 2).

Every point that needs standardization has to make noted or listed and decide who person in charge to make or update, including the due date and actual completion date. This is to make it easy to evaluate and control updated documents. In (Table 4), the listing document has to update related actions of improvement.

Table 4 The listing documents have to be updated relate to improvement cover pillar loop scratch

Documents	Who	Target Date	Completion Date
Process Flow	Ryan P	08-Apr-20	08-Apr-20
PFMEA	Roviq	08-Jul-20	08-Jul-20
Control Plan	Karyadi	08-Jul-20	08-Jul-20
WI	Ryan P	08-Apr-20	08-Apr-20
Other			

Need additional improvement to update all documents in process, operator movement standard SWI P4, this to make the same movement each shift, to prevent the repeated problem. Also need to update flow proses, FMEA & Control Plan document by revision and additional point appearance inspection for cover pillar loop.

Yorkton/Horizontal Deployment: The effective improvement results in the SB3 line, became a reference for the improvement of the similar production line in SB1 & SB2 lines, to prevent the same problem occurred in the other production line. This should be announced and documented, as continuous improvement activity (Fig. 11).

Where above actions should be deployed?

Product number	Product Type	Line	Process
654 Model	Seat Belt	Belt Assay Line SB1	T Lock Test & Tongue stop process
654 Model	Seat Belt	Belt Assay Line SB2	T Lock Test & Tongue stop process

Date
30-Jul-20

Fig. 11 Listing similar production line.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

Approval Closure/Congratulation Team
When every step of D7 is effective by Plant Quality Manager (PQM), that have a high authority level for quality in the company, PQM did the last verification relate action improvement and makes sure that effective and decides to approve that 8D quality improvement for a problem “cover pillar loop scratch” in SB3 line finish and closed and gave congratulation to the team (Fig. 12).

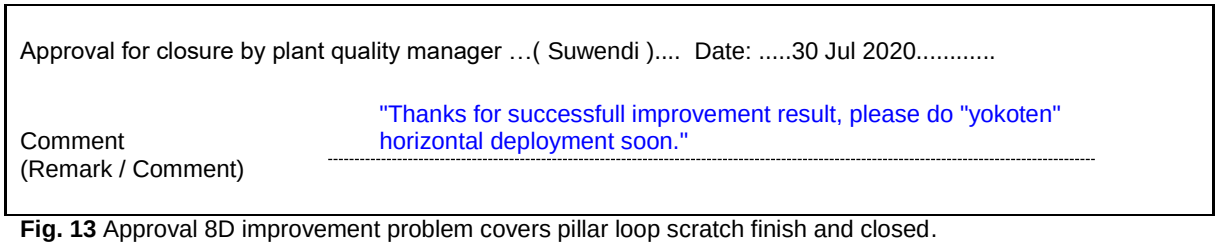

Fig. 13 Approval 8D improvement problem covers pillar loop scratch finish and closed.

4. Conclusion

Quality improvement by 8D methodology implementation in production seat belt Automotive Industry especially in SB3 line, by reducing the number of problems and eliminating the “*problem cover pillar loop scratch”* success and effective. Based on evaluation in March 60 pcs, and reduce 7 pcs in June and 0 in July. This research has a positive impact in helping organizations to implement systematic improvements for problem solving for short term and long term to prevent re-occurring problem. Furthermore, every phase in the 8D method that have been carried out have proven to be useful and effective as a framework to be used as a tool continuous improvement for Automotive Industry, and for other companies. The success of 8D methodology implementation for quality improvement in Automotive Industry and other companies need team member involvement and discipline to finish each step from D0 until D8.

References

Alexa, V., & Kiss, I. (2016). Complaint Analysis Using 8D Method Within the Companies in the Field Automotive. *Analecta-Technica-Szegedinensia-2064-7964*, *10*(1), 16–21. https://doi.org/https://doi.org/10.14232/analecta.2016.1.16-21

Balaraju, J., Raj, M. G., & Murthy, C. S. (2020). Fuzzy-FMEA risk evaluation approach for LHD machine – A case study. *Journal of Sustainable Mining*, *18*(4), 257–268. https://doi.org/10.1016/j.jsm.2019.08.002

Broday, E. E., & Júnior, P. P. A. (2013). Application of a quality management tool (8d) for solving industrial problems. *Independent Journal of Management & Production (IJM&P)*, *4*(September), 377–391. http://www.ijmp.jor.br

Chlpeková, A., Večeřa, P., & Šurinová, Y. (2014). Enhancing the Effectiveness of Problem-Solving Processes through Employee Motivation and Involvement. *International Journal of Engineering Business Management*, *6*(31). https://doi.org/10.5772/59431

Chomicz, A. (2020). Application of G8D Method for Analysis in a Manufacturing Company. *Scientific Papers of Silesian University of Technology*, *143*. https://doi.org/http://dx.doi.org/10.29119/1641-3466.2020.143.2

Cyganiuk, J., Idzikowski, A., Tomporowski, A., & Kruszelnicka, W. (2019). Application of Algorithm Discipline D2 of G8D Method in Solving Selected Problems of Quality. *Sciendo, System Safety: Human-Technical Facility - Environment, CzOTO*, *1*(1), 599–606. https://doi.org/10.2478/czoto-2019-0076

Gangidi, P. (2018). A systematic approach to root cause analysis using 3 x 5 why ’ s technique. *International Journal of Lean Six Sigma, Emerald*, *2040–4166*. https://doi.org/10.1108/IJLSS-10-2017-0114

Gaspersz, V. (2006). *Team-Oriented Problem Solving*. Vincent Foundation.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126

Grecu, I., Belu, N., & Misztal, A. (2015). Increasing Customer Satisfaction Through the Application of the 8D Methodology. *International Conference of Management and Industrial Engineering ICMIE*, *ICMIE Proc*, 488–496. https://www.researchgate.net/publication/289247004_Increasing_customer_satisfaction_through_the_application_of_the_8D_methodology

Guo, H., Chen, M., Zhang, R., Li, J., Li, C., Qu, T., Huang, G. Q., He, Z., & Zeng, Y. (2019). Research on Improvement of Truck Vibration Based on Systematic G8D Method. *Hindawi , Shock and Vibration*, *2019*(1416340), 11. https://doi.org/10.1155/2019/1416340

Holtzblatt, K., & Beyer, H. (2017). The Affinity Diagram 6. In *Contextual Design* (Second). Elsevier Inc. https://doi.org/10.1016/B978-0-12-800894-2.00006-5

Jacek, P. D., Poznań, Ł., & Com-, F. (2015). Problem-solving and developing quality management methods and techniques on the example of automotive industry. *Manager, Education, Leadership, Management and Antreprenorial Spirit*, *22*.

Jia, C., Cai, Y., Tak, Y., & Tse, T. H. (2015). 5W+1H pattern: A perspective of systematic mapping studies and a case study on cloud software testing Changjiang. *The Journal of Systems & Software*, *000*, 1–14. https://doi.org/10.1016/j.jss.2015.01.058

Knol, W. H., Lauche, K., & Schouteten, R. L. . (2022). Establishing the interplay between lean operating and continuous improvement routines : a process view. *Emerald Publishing Limited*, *42*(13), 243–273. https://doi.org/10.1108/IJOPM-06-2020-0334

Montgomery, D. C. (2009). *Introduction to Statistical Quality Control* (L. Sapira (ed.); Six Editio). John Wiley & Sons, Inc.

Muncut, E. S., Culda, L. I., Erdodi, G. M., & Sima, G. (2019). 8D complaint solving method in an automotive component processing company. *IOP Conf. Series: Materials Science and Engineering*, *568*, 1–6. https://doi.org/10.1088/1757-899X/568/1/012020

Nurdin, A. (2019). *Perencanaan Pendidikan Sebagai Fungsi Manajemen* (D. Safitri (ed.); 1st ed.). Rajawali Pers, RajaGrafindo Persada.

Okes, D. (2019). Root Cause Analysis, The Core of Problem Solving and Corrective Action. In *Root Cause Analysis* (Second Edi). American Society for Quality, Quality Press. https://books.google.co.id/books?id=remPDwAAQBAJ&printsec=frontcover&dq=8d+problem+solving&hl=en&newbks=1&newbks_redir=0&sa=X&ved=2ahUKEwj-8s3r38v9AhUYF7cAHQ4bDHoQ6wF6BAgNEAE#v=onepage&q&f=true

Rathi, R., Chandra, M., Reddy, G., Narayana, A. L., & Narayana, U. L. (2021). Investigation and implementation of 8D methodology in a manufacturing system. *Proceedings, Elsevier*, *xxxx*. https://doi.org/10.1016/j.matpr.2021.05.273

Saravanakumar, M., Murugapoopathi, S., & Sudhagar, S. (2020). Root Cause Analysis of Cover Assembly Line of Clutch Plate. *IOP Conf. Series: Materials Science and Engineering*, *988*, 1–11. https://doi.org/10.1088/1757-899X/988/1/012027

Setiawan, L., & Hasibuan, S. (2021). Improve ramp-up performance on the sewing process in a sports shoe factory using 8-disciplines and lean manufacturing. *Quality Innovation Prosperity*, *25*(2), 19-36.

Sharma, M., Sharma, S., & Sahni, S. (2020). Structured Problem Solving : combined approach using 8D and Six Sigma case study. *Sciendo, ISMSME, Engineering Management in Production and Service*, *12*(1), 57–69. https://doi.org/10.2478/emj-2020-0005

Sniazhko, S. D. (2022). Integration team members ' approaches to uncertainty management in M & A. *European Management Journal*, *40*(6), 917–931. https://doi.org/10.1016/j.emj.2022.10.002

Weekes, L., Lawson, T., & Hill, M. (2018). How to start a quality improvement project. *BJA Education*, *18*(4), 122–127. https://doi.org/10.1016/j.bjae.2018.01.004

Appendix

Appendix 1 Rev. SWI P1 T Lock Process, Instal E-Clip.
Appendix 2 Rev. SWI P1 T Stop Crimp, Take out E-Clip.

Please cite this article as: Rusman, K., Hetharia, D., (2025). Quality improvement through 8D methodology: an automotive industry case study. *Operations Excellence: Journal of Applied Industrial Engineering*, 17(1), 1-11. doi:http://dx.doi.org/10.22441/oe.2025.v17.i1.126