MAHLE

8D ASSESSMENT

EVALUATION OF THE 8D REPORT

Table of content

Table of figures

1. 8D Assessment Tool

After completion of the 8D process, the 8D assessment is carried out.

The 8D Assessment Tool is a standardized format to assess an 8D process. For each D-step (D1-D8) 3 levels are defined:

- Insufficient → 0 points
- Basic → 2 points
- Excellent → 3 points

Each level is defined by standardized criteria. Based on the fulfilment of the criteria a level can be selected.

The target of this tool is a review of the 8D processes for example in a plant and it can also be used as guidance how to create a good 8D report.

2. 8D Assessment Score Ø

The result of the 8D Assessment is summarized based on the average rating over all D-steps with the 8D Assessment score ø from 0 to 3 points. An average score ø of 2 points corresponds to the fulfilment of the requirements of the basic level.

If one D step is rated as "insufficient" the entire 8D report is rated as insufficient.

2.1 MAHLE 8D assessment rating comparison

- Evaluate 8D reports in Jaggaer using three rating levels.
- **Insufficient assessment:** report should be rejected and corrected by the supplier

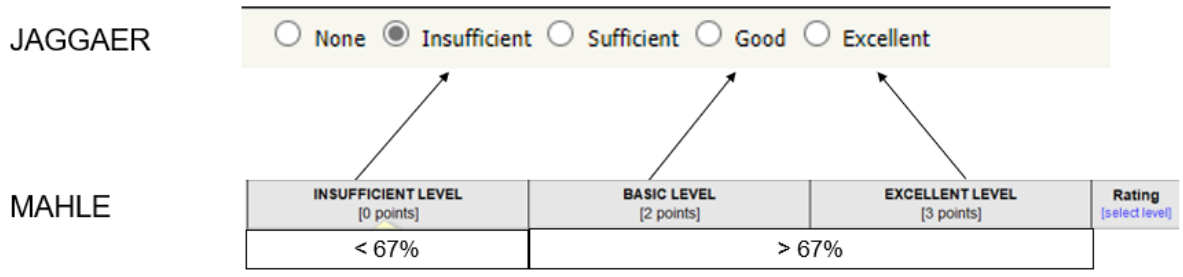

Figure 1: MAHLE 8D assessment rating

3. 8D Assessment Sheet

The Assessment Sheet is to be used to evaluate the quality of the content of your 8D-Reports.

8D Assessment Tool MAHLE

MAHLE Complaint Number (Web/8D) | **Evaluated by**

8D-step	INSUFFICIENT LEVEL [0 points]			BASIC LEVEL [2 points]	EXCELLENT LEVEL [3 points]	Rating [select level]	Result	Status	Comments
D1 problem solving team	no evidence of team work: - no team responsible announced - no team announced			all team members listed: - 8D responsible and 8D moderator defined - other team members listed - all necessary functions covered in the team	**basic level fulfilled and:** interdisciplinary team: - clear function description - contact info (E-Mail) of all team members - 8D moderator attended Problem Solving Moderator training				
D2 problem description	empty or weak problem description: - insufficient problem description - no visualization - no numbers, no data, no facts - only symptoms described"			clear problem description based on: - numbers, data & facts - object and deviation described - product failure effect (customer view) - product failure - IS / IS NOT used	**basic level fulfilled and:** additional information available: - attachments: pictures good vs. bad, video, .. - all affected customer plants Yokoten / read across process started for similar processes and products within the plant				
D3 containment action (customer protection)	unclear or incomplete containment action: - no concrete containment action defined - no due dates - no batch identification			containment actions to protect the customer are clearly described and introduced: - due dates & responsibilities - possible side effects checked - identification of first OK batch - entire supply chain covered or justification for no containment actions given & documented	**basic level fulfilled and:** efficiency is assessed: - NOK quantity - sorted quantity - ratio NOK / sorted quantity (%) Containment actions defined and implemented in time & communicated to the customer within 24 hours.				
D4 root cause analysis - technical (occurrence)	weak root cause analysis - only direct causes - main root cause not named - no usage of problem solving tools - no cause and effect relations shown			technical root cause systematically identified and confirmed: - usage of problem solving tools like IS / IS NOT Analysis, cause test & investigation, 5 Why / FTA - confirmed based on facts	**basic level fulfilled and:** - system root cause identified - technical root cause is linked to a root cause classification - risk assessment documented				
D4 root cause analysis - quality assurance (non-detection)	weak root cause analysis - only direct causes - main root cause not named - no usage of problem solving tools - no cause and effect relations shown			quality assurance root cause systematically identified and confirmed: - usage of problem solving tools like IS / IS NOT Analysis, cause test & investigation, 5 Why / FTA - confirmed based on facts	**basic level fulfilled and:** - system root cause identified - quality assurance root cause is linked to a root cause classification - risk assessment documented				
D5 / D6 corrective actions - technical (occurrence)	weak or incomplete corrective actions: - not specific - no schedule and responsibility - lack of implementation - actions not validated			effective corrective actions implemented: - corrective actions defined for all confirmed technical root causes - action plan defined with responsibles and realistic due dates - actions implemented - effectiveness fully validated - D3 containment actions removed	**basic level fulfilled and:** - usage of tools (e.g. decision matrix) for systematic selection of corrective actions documented. - risk analysis for implemented actions and possible side effects available				
D5 / D6 corrective actions - quality assurance (non-detection)	weak or incomplete corrective actions: - not specific - no schedule and responsibility - lack of implementation - actions not validated			effective corrective actions implemented: - corrective actions defined for all confirmed quality assurance root causes - action plan defined with responsibles and realistic due dates - actions implemented - effectiveness fully validated - D3 containment actions removed	**basic level fulfilled and:** - usage of tools (e.g. decision matrix) for systematic selection of corrective actions documented. - risk analysis for implemented actions and possible side effects available				
D7 preventive actions	missing actions to prevent recurrence: - no lessons learned - no evidence about update of local standards, documents and FMEAs			preventive actions defined and implemented: - local standards, documents and FMEAs updated	**basic level fulfilled and:** - prove of activities documented (evidence of updated standards and FMEAs) - if applicable: lessons learned published in MAHLE database				
D8 conclusion	- missing approval of plant manager			- 8D process documented in WEB/8D - closure approved by plant manager - congratulate the team - feedback from the team	**basic level fulfilled and:** - documented 8D assessment available				

Result 0 / 27 0%

ø points x

Figure 2: 8D - Assessment sheet

3.1 Requirements to the different levels

8D-Step	REQUIREMENTS	EXAMPLES
D1	**Key question:** Has a problem-solving team been defined?	
`basic level`	All team members listed: - 8D responsible and 8D moderator defined - Other team members listed	
`excellent`	Interdisciplinary team: - Clear function description - All necessary functions covered in the team - Contact info of al team members	
D2	**Key question:** Has the problem been identified and understood?	
`basic level`	▪ The problem has been quantitatively and clearly identified from customer's and originator's view. It includes facts, figures, and dates. ▪ The whole environment should be considered as far as possible. ▪ Evidence is provided for description and simplification of the problem analysis.	▪ Pareto analysis concerning all customers built up over time: number of rejected parts corresponding to production period - flow charts, trend charts, sketches, photos, drawings. ▪ Specific events that occurred (shift change or maintenance/setting in manufacturing), changes in the environment (seasonal climate variations, change in project teams…)
`excellent`	▪ Additional information regarding interfaces and impact on customer is provided. ▪ All parameters which allow the reproduction of the failure are available. ▪ Preliminary Risk assessment is available.	▪ History chart, accumulation of facts, situation/problem analysis according to Kepner-Tregoe, basic conditions, description of problem in assembly or vehicle. ▪ Effect on end customer (loss of some functions, complete product breaks down…).

D3	**Key question:** Has the customer been protected from using faulty products?	
`basic level`	▪ The containment actions ensure that there are no faulty products received by, delivered to, or used by the customer. ▪ The necessary customer information (internal / external) has been processed and required notifications to authorities done. ▪ Measures are effectively implemented. Effectiveness of containment actions must be documented. Not all containment actions ensure a 100% filtering, in such cases the evaluation of the efficiency is necessary to feed the risk assessment. ▪ If no containment action can be implemented, then the decision process must be transparently depicted.	▪ "Customers to be informed are for example: - **Production** (follow-up shifts, other production lines/ plants) - **Warehouses** (MAHLE, Logistic Service Provider, Transit) -Additional documents provided." ▪ "Containment actions are for example: - sorting actions or warehouses blocking, - build up for firewalls, - fast design review by development, - statistical analysis (Plant, 0 km, field), -start of endurance test or HALT (Highly Accelerated Lifetime Test), - ... "
D4	**Key question:** Has the root cause(s) been identified?	
`excellent`	▪ The complete Management RC (including Business processes and Leadership) was worked out. ▪ The causal relationship between fault, Technical RC and Management RC is transparently depicted. ▪ Precise and deep use of methodical tools so that the analysis process as well as the results is clearly explained and understandable.	▪ The focus is set on the business processes (for example how the use of a preventive quality tool or design rules is defined or regulated), as well as on the leadership (how the organization was set up, tasks and responsibilities defined and how competences and capacities were managed, how decisions were taken). ▪ Using a cause-effect diagram (Ishikawa) and a deep dive Why-Why-question technique, etc. ▪ If needed or useful, add Fault Tree Analysis (FTA), Six Sigma, process analysis.

D5/D6	**Key question:** Is the failure gone for good? – Could the failure be blocked with certainty?	
`basic level`	▪ The corrective actions define and fully cover the causes listed in D4. They are documented. ▪ Evidence of effectiveness of corrective actions taken is provided before immediate measures are withdrawn. ▪ Persons responsible are designated and dates set. Reason for withdrawal of containment actions is documented.	▪ Photos, sketches, Tests, simulations… ▪ Firewalls do not catch faulty parts anymore after implementation of corrective actions. ▪ In case of baseline defectivity concrete failure rate reduction programs are defined and followed up, failure rate is under survey: a specific action on singular event would then not be requested.
`excellent`	▪ **Occurrence:** - Effectiveness is assessed and evaluated with regard to risks on other products / processes. A protection via Poka Yoke could be introduced. - The MRC in the business processes and/or Leadership is fixed."	▪ A theoretical representation of the changed process sequence is possible using a flow chart. ▪ Procedure or design rule were revised (for example how to define, release and control the use of a product or process design rule, how to define a maintenance interval, how to define validation test). Or if the organization was changed (new responsibility split, clarified interfaces,…), or competences/capacity was adapted. ▪ The decision taking process can also be changed (rules for strategic override, management release…).

	▪ **Detection:** plan for monitoring effectiveness provided.	▪ e.g., “Check the Checker” ▪ While protecting the manufacturing flow via Poka Yoke, it must be assessed whether test or controls have become redundant (for example visual check by operator, sensor control, ….), in such cases the detecting process could be suspended.
D7	**Key question:** Is the failure gone for good (even somewhere else)?	
`basic level`	▪ Documentation of knowledge and experience regarding measures for eliminating known failure modes. ▪ The fault is prevented from occurring elsewhere by transferring findings to related products / processes / locations. ▪ The changes for example in FMEA are to be exemplified via keywords.	▪ Suggested SMART-Action (specific, measurable, attainable, realistic, time-bound) ▪ Failure Mode and Effect Analysis (FMEA), Fault Tree Analysis (FTA), “Control Plan”, drawings, development / design guidelines, test plans. Updating of work instructions or process descriptions.
`excellent`	▪ The findings are transferred to ALL relevant products / processes / locations using the Lessons Learned Network and confirmation / evaluation from LL Network is provided.	▪ New knowledge must be transferred to a Lessons Learned database. ▪ If change / adjustment of products / processes from areas not directly affected is needed, a time plan with actions / responsibilities is sufficient. ▪ The application of Lessons Learned should be checked on a regular basis (e.g., by audits).

D8	**Key question:** Has the 8D Report been concluded properly?	
`basic level`	▪ Signatures from team leaders, sponsors are provided (department manager level).	
`excellent`	▪ The discussion / debriefing and evaluation of the 8D steps is complete. ▪ Signatures from plant- and BU-management are provided. ▪ Self-assessment has been carried out.	▪ Conclusion of Problem-Solving with consent from participants and, if necessary from customer. ▪ Analysis of teamwork and 8D process is documented.

Figure 3: Requirements to the different levels