



evi: **One**

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BOOTHROYD DEWHURST, Inc

EARLY VALUE IDEATION[®]

Finding Ideas with DFMA and then?

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DFMA Preventive Optimization - Organization

Working with DFMA brings many advantages in the early development phase. This is where organizations find and move around 70% of their product costs. But what is the basis for this?

Correct - it is the management's decision to invest in these preventive measures.

But why should a manager do this? What does he get back in return?

Role of the management / stakeholder

Management – especially in these times of transformation – is huge responsibility. Management takes the risk of product development. They invest money in tools for development (also, DFMA), invest money for education and training, invest money for prototypes and qualification, and spend a lot of time for controlling and monitoring.

So why should they invest more time and money in preventive measures like team meetings? This is always a major reason why VAVE/DFMA measures or workshops are cancelled or postponed.

Are they not aware of the output of a DFMA activity?

Are you aware of the output of a DFMA activity?

Holding a DFMA workshop doesn't just mean harvesting quick "low hanging fruits", but often complex innovations that affect many parts but can also move a lot of money.

How to plan and conduct DFMA® activities with EVI®

To support Product- / Project management Activities with DFMA should / could be planned a little bit more in detail.

The typical information flow interacting with project management is the team, the quantity structure and a milestone plan. So exactly that is the starting point.



Project starting point EVI®

The starting point of EVI is the interface to the PMO (Project management office).

Normally there is a quantity structure over time, a team and a timeline with gates or milestones. Exactly this could be selected for each project. Also a shift model (for estimation of the tact time) and characteristically variants for a product can be determined. (i.e. Right-hand drive / Left-hand drive).

Years	Manu quantity p.a.	Total quantity	Increase	Takt time
2024	85,000	85,000	85,000	15
2025	85,000	170,000	0	15
2026	85,000	255,000	0	15
2027	85,000	340,000	0	15
2028	85,000	425,000	0	15
2029	85,000	510,000	0	15
2030	85,000	595,000	0	15
2031	85,000	680,000	0	15
2032	85,000	765,000	0	15
2033	85,000	850,000	0	15

Then... conduct a DFMA workshop but with ONE requirement.

No discussion - Only questions - and ideas
(Also possible with an online whiteboard in MS Teams)

The typical output as we know it are a lot of ideas.



How to assess the ideas within EVI®

Ideas normally categorized according to the Suggestions for redesign of DFA. And then, every idea will be assessed within EVI®

What is the advantage of working out an idea within a team?

It is a second creative process and brings the expertise of every team member together.

NOW - DISCUSSIONS are allowed → towards a goal.

- Category 1
 - Candidates for elimination other than fasteners and connectors
- Category 2
 - Fasteners
 - Connectors
 - Separate operations
- Category 3
 - Handling or insertion difficulties



Assessment of ideas within EVI®

Every idea can be listed within the project. Starting with the description and the “Post condition” means the target situation of the idea.

Number	Description	Post condition	Sketch	Weight [kg]	Direct costs	Invest costs	Total Amort	Total Lifecycle	W	T	C	F	Impl. year	Category	State
001	Piston	Piston manufactured as one part		0.00	(€0.81)	€13,500.00	(€0.64)	(€0.78)	1	2	2	1	2024	Piston	D Imj
002	Piston Stop	Piston-stop will be combined with the cover		0.00	(€0.34)	€2,000.00	(€0.33)	(€0.34)	1	2	2	1	2024	Cover/Endstop	B Che
003	Piston	Reibung optimiert		0.00	(€0.15)	€0.00	(€0.15)	(€0.15)	1	1	1	3	2024	Piston	D Imj
004	TEST DXM	neue Idee Ziel		0.00	(€0.68)	€3,000.00	(€0.66)	(€0.68)	2	2	1	3	2024		A Imj
005				0.00	€0.00	€0.00	€0.00	€0.00					2024		A Imj

Then, open the evaluation dialog to assess the idea and insert the data getting out of DFA working sheet. (the DFA analysis helps to get coordinated information) and is the

Description	Comment	Part number	Labor costs	Part costs	Quantity	Manu. invest	Assembly invest	Part weight [kg]
Steel cover		1234-5	€0.140	€0.100	1.00	€1.000	€0	0.00000
Screws		1234-6	€0.240	€0.030	2.00	€0	€0	0.00000
Piston stop		1234-3	€0.060	€0.350	1.00	€5.000	€2.500	0.00000

	per part	over time
Amortisation	(€0.33)	(€55,800.00)
Lifecycle	(€0.34)	(€287,000.00)

starting point for discussion.

After the team created a target situation (with a sketch and a brief description) change to the “post situation” and describe all necessary changes. And copying the sketch in. The result is a cost balance considering also investment and depreciation time.

	per part	over time
Amortisation	(€0.33)	(€55,800.00)
Lifecycle	(€0.34)	(€287,000.00)

But cost is only one side of the medal. Also, project risks must be considered.



Risk estimation

Weight: 1 | Time: 2 | Cost: 2 | Function: 1 | Decision: B

After a common estimation of technical risks, the team decide on the next steps.

Tasks within the idea

Of course, to convert an idea into money there are some tasks necessary, which can

002 - Piston Stop

Description	Responsible	Due date	Meeting	State	Priority	Capacity (h)
Make a sketch	Rene Machrech	01.07.2024	5/15/2024 Manufacturing Review	open	medium	4
produce prototypes	Helge Müller	01.07.2024		open	medium	24
RFC for Piston stop	Jona Than	01.07.2024		open	medium	16
Festsergebnisse liegen vor	Jona Than	01.07.2024		open	medium	33

Dev. / Change costs

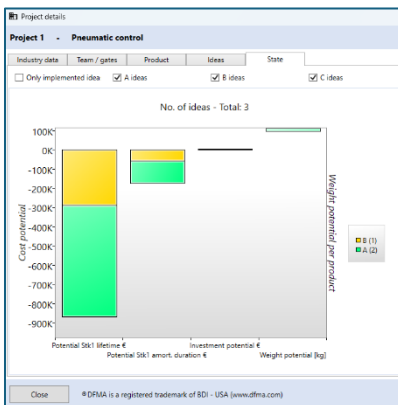
Hours to spend: 0
Hourly rate: €100.00
Add. expenses: €0.00
Dev. costs: €0.00
Dev. costs / part: €0.00

also document. Specifically, every task could be linked to planned meetings.

But why all do this?

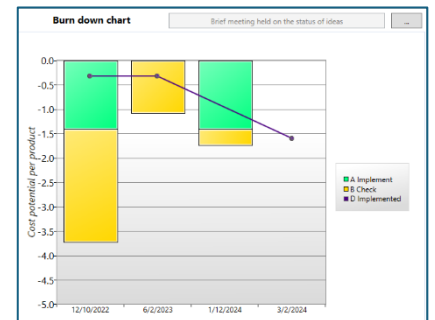
The results for the management

Related to the project



After finalizing the ideas, the project leader has direct overview over all ideas and potentials and all the necessary tasks to realize the ideas.

Over time it is possible for the project leader to see how the potentials are converted



into money. (burndown chart)

Related with the idea repository

Every idea could be a creativity stimulus for others. For that reason, within EVI it is possible to search and reopen every recorded idea.

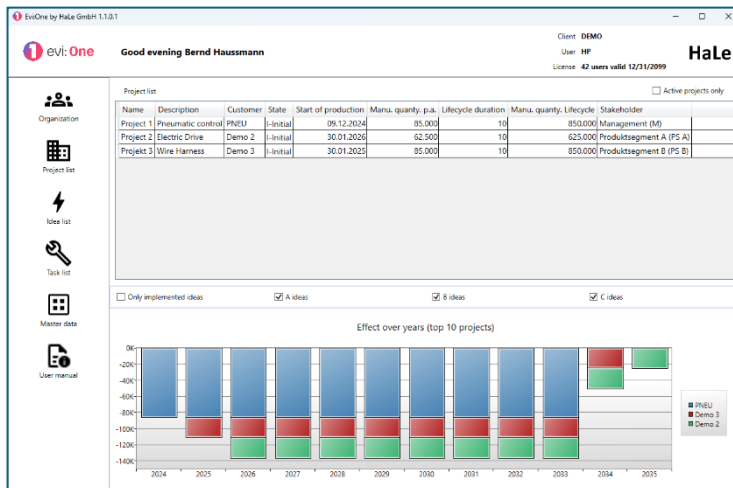


It is also possible to search for ideas only by name a possible component within an idea.

Number	Description	Post condition	Sketch	Category	State	Customer	Project	Total Lifecycle	Currency
000	Basic Idea	POST			A Implemented	Demo 0	Project 0	-4.33	EUR
001	Piston	Piston manufactured as one part		Piston	D Implemented	PHUL	Project 1	-0.70	EUR
001	Stecker verbinden / Connector combine (Kopie)	One combined wire			D Implemented	Demo 3	Project 3	-0.29	EUR
001	Piston (Kopie)	Kolben wird aus gegossen			V Variant (not implemented)	Demo 0	Project 0	-0.54	EUR
001	Piston	Kolben wird aus gegossen			B Check	Demo 0	Project 0	-0.54	EUR
002	Idee Nr. 2	nachher		Elektronik	B Check	Demo 0	Project 0	0.02	EUR
002	Titel	Nachher			A Implemented	Demo 3	Project 3	0.00	EUR
002	Piston Stop	Piston-stop will be combined with the cover		Cover/Endstop	B Check	PHUL	Project 1	-0.34	EUR
003	Piston	Reibung optimiert		Piston	D Implemented	PHUL	Project 1	-0.15	EUR
003	Stecker verbinden / Connector combine	One combined wire			A Implemented	Demo 3	Project 3	-0.29	EUR
003	Idee aus Präsentation	nachher			A Implemented	Demo 0	Project 0	-0.16	EUR
003.1	Idee aus Präsentation Variante	nachher			V Variant (not implemented)	Demo 0	Project 0	-0.50	EUR
004	TEST CIM	neue Idee Ziel			A Implemented	PHUL	Project 1	-0.66	EUR
004	Neue Idee	anders			A Implemented	Demo 3	Project 3	0.00	EUR
004.1	Idee mit Cliff	nachher			B Check	Demo 0	Project 0	-0.38	EUR
005					A Implemented	PHUL	Project 1	0.00	EUR
01	Make Housing in one part	One part			D Implemented	Demo 2	Project 2	-0.77	EUR
02	Make base with included bushings	One part different material			B Check	Demo 2	Project 2	-0.41	EUR

The sketch of the target situation is also helpful to have a visual support to identify different ideas.

Related to the overall situation



Output:
Every idea within a project leads to **higher profit** for the company.
If you summarize all the ideas of a project, the result is a huge amount that makes it possible to check how ideas (or innovative strength) drive

a company forward.

And, why management never should think about to reduce the preventive measures of DFMA within project management.