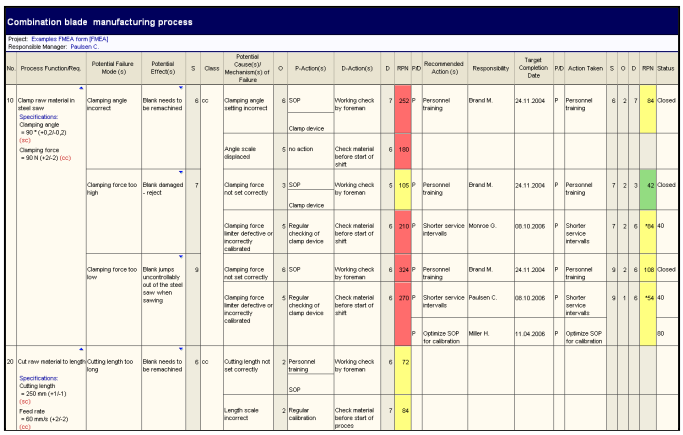
SCIO™-FMEA

Failure mode and effect analysis (FMEA) is a preventative method used to prevent failures. Possible errors in products and processes are to be detected early and minimized or eliminated by taking suitable action. Complaint handling and development costs are reduced in this manner, and potential losses for the user of the product are avoided.


Combination blade manufacturing process

Project: Examples FMEA form [FMEA]
Responsible Manager: Paulsen C.

No.	Process Function/Req.	Potential Failure Mode (s)	Potential Effect(s)	S	Class	Potential Cause(s)/ Mechanism(s) of Failure	O	P-Action(s)	D-Action(s)	D	RPN	P/D	Recommended Action (s)	Responsibility	Target Completion Date	P/D	Action Taken	S	O	D	RPN	Status
10	Clamp raw material in steel saw Specifications: Clamping angle = 90 ° (+0,2/-0,2) (cc) Clamping force = 90 N (+2/-2) (cc)	Clamping angle incorrect	Blank needs to be remachined	6	cc	Clamping angle setting incorrect	6	SOP Clamp device	Working check by foreman	7	252	P	Personnel training	Brand M.	24.11.2004	P	Personnel training	6	2	7	84	Closed
						Angle scale displaced	5	no action	Check material before start of shift	6	180											
		Clamping force too high	Blank damaged - reject	7		Clamping force not set correctly	3	SOP Clamp device	Working check by foreman	5	105	P	Personnel training	Brand M.	24.11.2004	P	Personnel training	7	2	3	42	Closed
						Clamping force limiter defective or incorrectly calibrated	5	Regular checking of clamp device	Check material before start of shift	6	210	P	Shorter service intervalls	Monroe G.	08.10.2006	P	Shorter service intervalls	7	2	6	84	40
		Clamping force too low	Blank jumps uncontrollably out of the steel saw when sawing	9		Clamping force not set correctly	6	SOP	Working check by foreman	6	324	P	Personnel training	Brand M.	24.11.2004	P	Personnel training	9	2	6	108	Closed
						Clamping force limiter defective or incorrectly calibrated	5	Regular checking of clamp device	Check material before start of shift	6	270	P	Shorter service intervalls	Paulsen C.	08.10.2006	P	Shorter service intervalls	9	1	6	54	40
												P	Optimize SOP for calibration	Miller H.	11.04.2006	P	Optimize SOP for calibration					80
20	Cut raw material to length Specifications: Cutting length = 250 mm (+1/-1) (cc) Feed rate = 60 mm/s (+2/-2) (cc)	Cutting length too long	Blank needs to be remachined	6	cc	Cutting length not set correctly	2	Personnel training SOP	Working check by foreman	6	72											
						Length scale incorrect	2	Regular calibration	Check material before start of process	7	84											

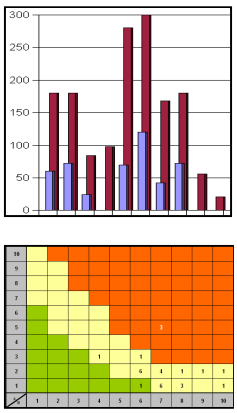


Fig.: Risk analysis determines characteristic values and displays them graphically

Application and Use

- Risk analysis (Design FMEA, Process FMEA, System FMEA, etc.)
- Preventive failure avoidance
- Support provided from the management of claims to analysis of the causes
- Tracking actions in improvement processes
- Documentation in forms for VDA, QS 9000, AIAG 3rd Edition
- HACCP concept: Risk analysis and risk minimization

Branches and Standards

SCIO™-FMEA is used for products and production processes. Primary applications include automotive, aviation, medical technology, electronics, plant and mechanical engineering, services and the food, pharmaceuticals and chemical industries.

VDA, QS 9000, ISO/TS 16949, MPG and HACCP require risk analyses to be performed. It is required as a PPAP document for the „Production Part Approval Process“ release process.

The FAO/WHO HACCP Standard (ALINORM 97/13A, Annex II) requires risk analyses to be performed and risk reduction action to be taken and documented. It is the basis for legal regulations and food safety standards.

SCIO™ Database

FMEA supplies data for production control plans, process flow charts, and system analyses through the central SCIO™ database. This integration ensures effective and efficient teamwork throughout all departments – revisions and the necessity to maintain more than one database are eliminated

Main Features and Functions

Simple operation

- A flexible start lets you enter data in forms immediately so you don't have to wait for the function structures to be generated.
- The user is guided through columns (integrated Wizard) offers beginners security and also provides answers to questions of methodology.
- Suggestion lists for every entry supply knowledge from SCIO™ while taking relationships between pieces of in to account, e.g.: „Which causes are already known to produce this failure?“.
- An input aid (similar to the one in MS Excel) offers text for copying into the form.

Assessments

- Assessments are performed without any restrictions across all projects.
- Assessment filters can be combined as desired. Search results can be transferred to MS Excel, if necessary, for further processing.
- Every user can define and store search queries.
- RPN analyses, Pareto and risk graphs (portfolio presentation format) evaluate the risk figures.

Evaluations

- Standard assessments ensure that results can be compared and make it easier in team meetings to prioritize investments to implement measures of improvement.
- Company assessment catalogs are defined.

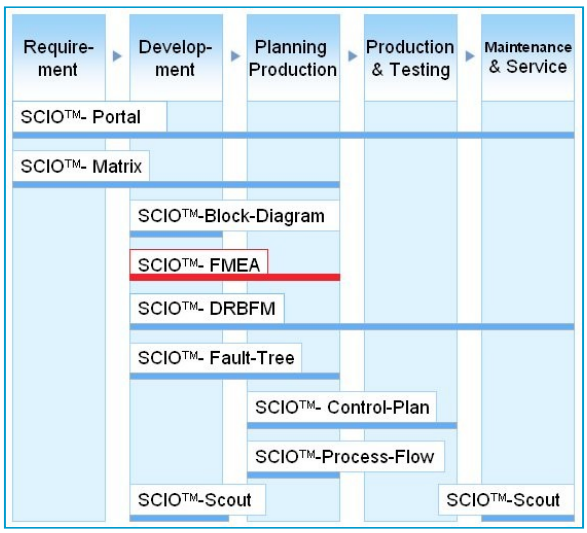
Multiple languages

- It is easy to display, print, and work in forms containing foreign languages.
- Translations are only entered once and can then be used in all documents.

Tracking actions

- Actions can be tracked (deadlines, persons responsible) across projects. Employees receive their actions via email, when necessary.

The Complete SCIO™ Product Family



SCIO™ - Building and sharing a knowledge base

The modules of the SCIO™ product family are optimized for their particular application. All modules use a common database and can add or update data. You can systematically build a knowledge base that is available now for all applications.

SCIO™-FMEA is used in the product and process development phases. Risks are examines based on the system analyses from Matrix and Block Diagram.

In the production, product application or product modification (variants) phases, SCIO™-FMEA receives new input and is updated.