

SMS Implementation with Focus on Safety Culture within a Small but Complex Organisation

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Presentation Objective

- Overview of Kuerzi Avionics AG Business and the Way to an process-orientated Integrated Management System including SMS.
- Presentation of **Safety Culture Principles**
 - General Principles useful / practical for our Business
 - Specific Elements of the Kuerzi Safety Culture with Focus on **Design, Production** and **Maintenance**.



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1. The Business of Kuerzi Avionics AG

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Our Business ... Today.

Small ...

- 15 ... 20 Employees

... but Complex ...

- Design, Development, Certification
 - Production
 - Installation and Maintenance
- of any Avionics and Electrical Systems
on any Rotorcraft and Fixed Wing Aircraft ...
- including DO Privileges regarding Flight
Condition Approval and Issuing Permit to Fly.

- Part 21 Design Organisation Approval (DOA)
- Part 21 Production Organisation Approval (POA)
- Part 145 Maintenance Organisation Approval (MOA)
- EN 9100:2009 Compliant
- SMS Implementation in DO, PO & MO



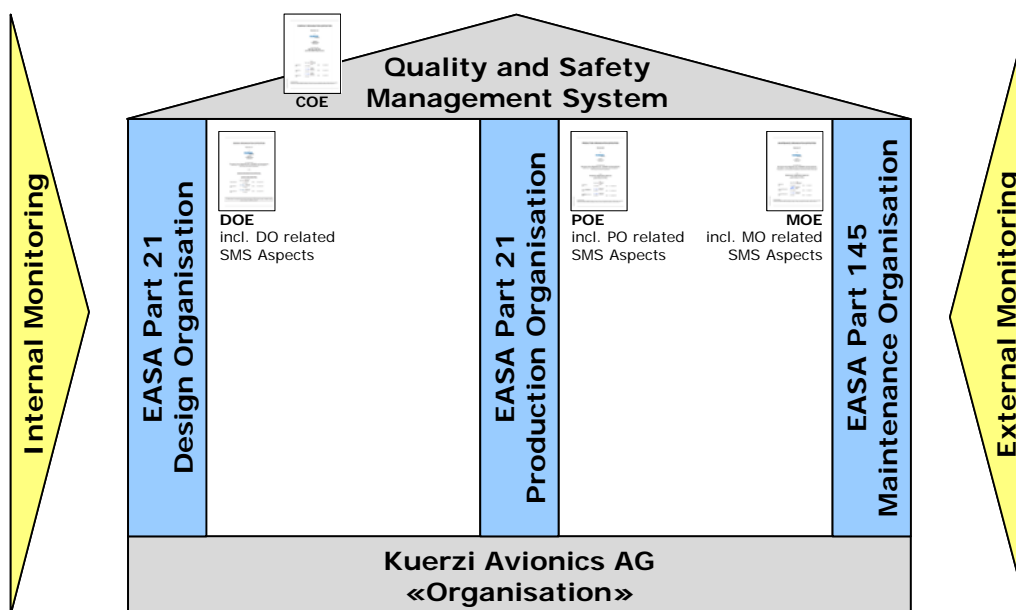
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2. History and Development of Kuerzi Avionics AG

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From 1978 to 2011

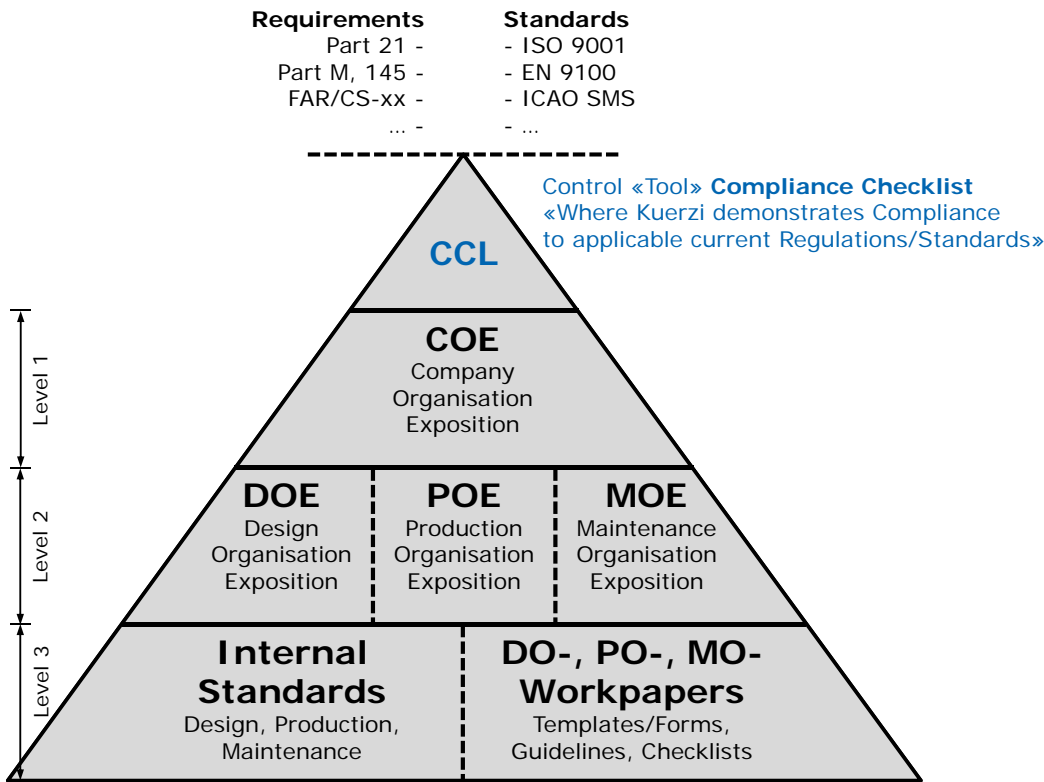


- 1978 founded by Paul Kürzi
- 1978 FOCA MOA
- 1994 JAA JAR-145 MOA
- 2004 EASA Part 145 MOA
- 2006 EASA Part 21 ADOA
- 2007 EASA Part 21 POA
- 2008 EASA Part 21 DOA
- 2011 EN 9100 compliant MS incl. SMS
- **Today's Kuerzi's Integrated Management System**

COE covers «Gaps» between Design, Production, Maintenance Activities,
ensures proper linkage between the DO/PO/MO Organisations
and Customers/Operators,
and supports the Balance
of «**Business Needs**» and «**Safety/Airworthiness/Quality Needs**»

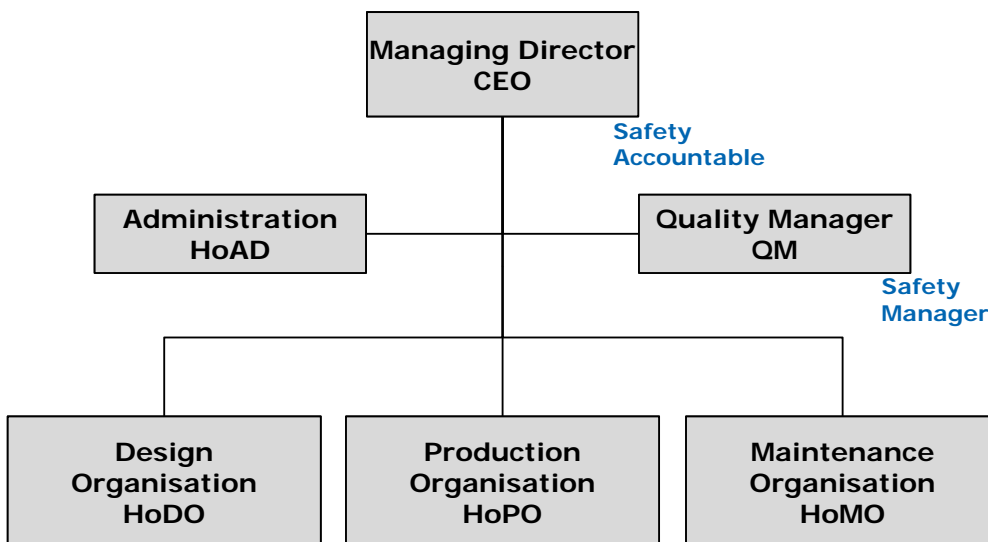
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MS Documentation Structure



- COE
«How Kuerzi basically Works»
- DOE / POE / MOE
«How Kuerzi's DO, PO, MO work in Detail»
- Standards/ Workpapers
«What Kuerzi Employee need for Daily Work»

Organisational Structure



- Including SMS Responsibilities

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3. Safety Culture Principles of Kuerzi Avionics AG

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Safety Culture Principles identified as Useful/Practical for Us ... [1/3]

An Organisation should be:

Informed

Managers should know what is going on in the Organisation and

Employees should be willing to Report their own Errors and Near Misses;

Wary

The Organisation and its constituent Individuals should be on the **Look Out for the Unexpected**,

Maintaining a high degree of Vigilance;

Just

The Organisation should operate a **«No Blame» Culture within constraint** that some Actions can be agreed by All to be totally Unacceptable and Worthy of Approbation;

Flexible

Such Organisation can operate **according to the Demands**, so they can provide Both **High Tempo** and **Routine Modes of Operation** and can change when required by Circumstances;

Learning

Organisation should be **ready to Learn** in order to Improve and be Capable of Implementing what needs to be done to Reform.



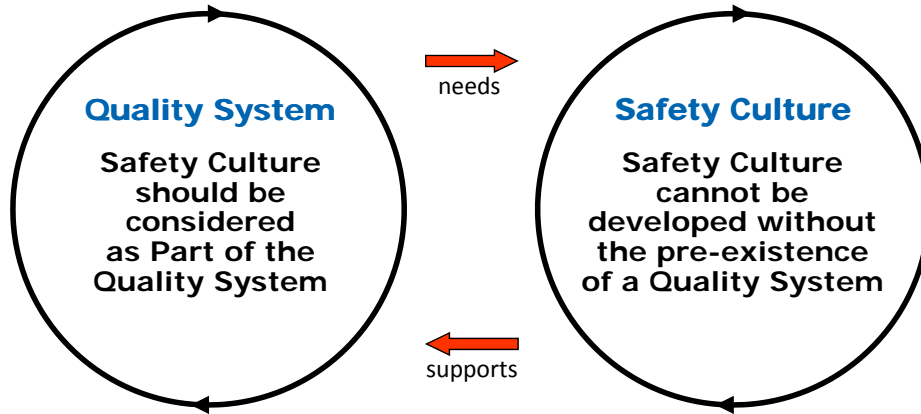
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Safety Culture Principles identified as Useful/Practical for Us ... [2/3]

«The Existence of a Quality System alone does not guarantee the Prevention of Incidents/Accidents and even Compliance and Good Practice are not enough if they are carried out in a Mechanical Way without Conviction.

Mistakes made by Persons do not occur only do to lack of Knowledge ...»



Safety Culture represents a valuable «Tool» in archieving effective and efficient Quality Systems.

Based on Rodolfo Touzet «The Practical implementation of Safety Culture

- Relation between Safety Culture and Quality System.

Safety Culture Principles identified as Useful/Practical for Us ... [3/3]

Motivators

«The Organisation must be sure that its Personnel is aware of the Relevance and Importance of their Activities and how they contribute towards the Achievement of the aims of Safety/Quality»

Personal Involvement

- Provide continual Training
- Facilitate 2-Way open Communication
- Check need of Persons Continually
- Use Rewards and Ways of Recognition
- Communicate Suggestions and Opinions
- Measure Satisfaction
- Ensure effective Teamwork
- Create Conditions to encourage Innovation
- Define Responsibilities and Authorities clearly

Encouraging Personal Involvement

- Possibility to Promotion in the Organisation
- Providing Stimuli and Recognition for Tasks
- Being Informed of what is Happening and what is Written
- Clear Knowledge of Responsibilities
- Being Qualified for assigned Tasks
- Working in Atmosphere of **Trust**
- Being able to take part in Formulation of Objectives



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Based on Rodolfo Touzet «The Practical implementation of Safety Culture (ISO 9004, Kaoru Ishikawa)

12 Basic Elements of Our Safety Culture

[1] Ensuring the Future:
Balance of «Business and Quality Needs»

[2] Commitment:
Company Safety and Quality Policy

[3] Interface Management:
Quality Interface Meeting

[4] User Friendly Procedures:
Process-orientated Approach in DO, PO, MO

[5] Improvement by All:
Regular Company Review Board

[6] Simple to Use Handbooks:
Standardized Content (Procedures/Methods)

[7] Open Eyes and Ears:
Management by «Walk Arounds»

[8] Safety Awareness:
Priority on Human Factors Trainings/Discussions

[9] Learning from Projects:
«Lessons Learned» on Project End

[10] Signature Rules:
Meaning of Signatures and «4-Eye Principle»

[11] Teamwork and Comm.:
Communication is Everything

[12] Corective Actions:
Root Cause Analysis Method



[1] Ensuring the Future: Balance of «Business and Quality Needs»

Business Needs

- Time
- Cost
- ...



Quality Needs

- Safety
- Airworthiness
- Reliability
- ...

Our Small Business Approach:

Ralf Kuerzi

acting on both sides of the Balance

▪ Managing Director (CEO)

▪ HoOoA
▪ CVE
▪ Certifying Staff

- Keeping the Balance of «Business Needs» and «Quality Needs» is essential!
- Unbalance in both Directions endanger the Future of a Company!

[2] Commitment: Company Safety and Quality Policy

3.2 Company Safety and Quality Policy

[SMS 1.1]

In the following is the **overall Safety and Quality Policy** of Kuerzi Avionics AG presented. In addition for the Design Organisation (DO), Production Organisation (PO) and Maintenance Organisation (MO) are more specific policy elements given. Refer to the **DOE, POE and MOE Ch. 2.2 «DO/PO/MO Safety and Quality Policy»** for the design/certification, production and maintenance specific policies.

The Kuerzi Avionics AG is committed to:

- recognise safety as a prime consideration at all times,
- apply the «Just Culture» concept and Human Factors Principles within the overall company,
- encourage personnel to report design, production and/or maintenance related errors/incidents,
- recognise that compliance with procedures, quality standards, safety standards and regulations is the duty of all personnel,
- recognise the need for all personnel to cooperate with Authorities and Auditors.

Kuerzi Avionics AG has a responsibility to provide a safe working environment for its workforce, and for this nation who are exposed to the risks associated with work on aircraft under the company's

- More specific Policies are given for Design, Production and Maintenance within the DOE, POE and MOE.



[3] Interface Management: Quality Interface Meeting (QIM)

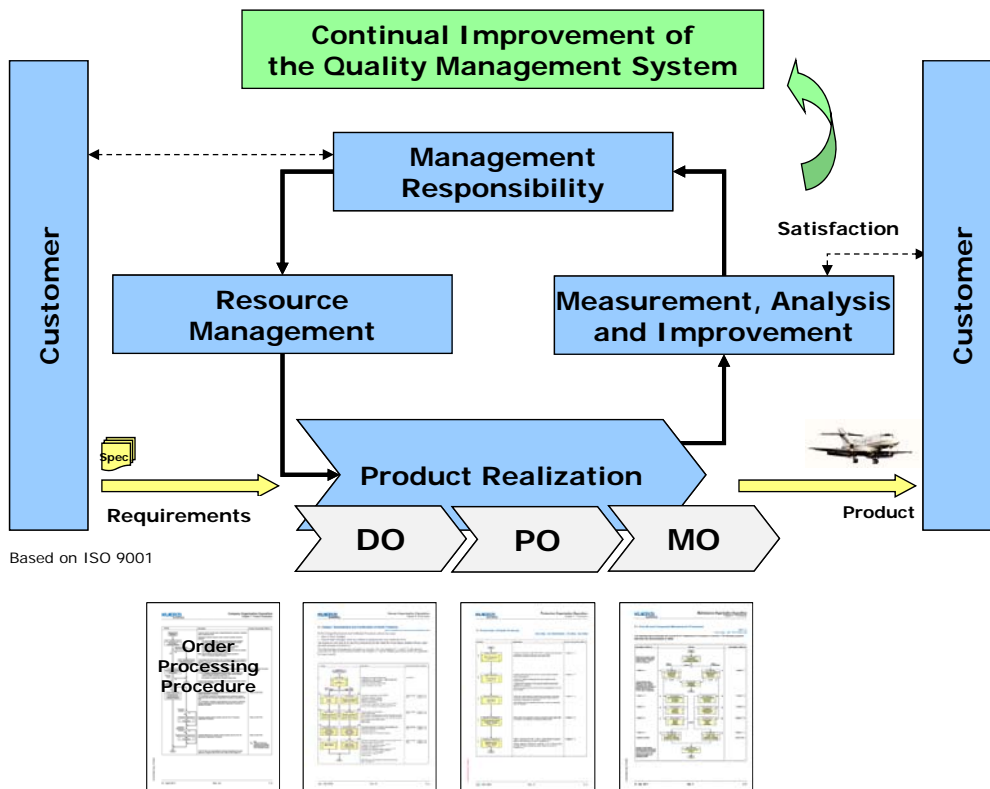
The KUAV Quality Interface Meeting (QIM) follows a **standardized agenda** which is structured as described in the following table.

Theme	Notes
Administrative Data	
1. Overview/Activities from last QIM to next planned QIM and look-out for the next months	Currently on-going activities.
2. Status Actions/Activities from previous QIM Short Protocols	
3. Significant Problems/Activities to notify to QM	Information from DO, PO, MO business.
4. Tasks which require Supports/Activities by QM	
5 Customer Satisfaction	
6. Occurrences (Failures, Malfunctions, Defects) since last QIM	
7. Status of Corrective/Preventive Actions from Findings	
7.1 DO Authority Findings	
7.2 PO Authority Findings	
7.3 MO Authority Findings	
7.4 Internal Findings	
7.5 Other External Findings	
8. Internal Monitoring through QM	Activities necessary beyond planned ones.
9. Need for Change on CO/DO/PO/MO Expositions & Procedures/standards/forms	
10. Monitoring of Safety/Quality Performance Indicators	Depending on defined intervals.
11. Risk Assessments	If specific risks have been identified.
12. Activities related to Subcontractor/Supplier Evaluation and/or Monitoring	Incl. regular Subcontractor/Supplier performance review.
10. Trainings	Establishment of Training plan and needs in addition to defined training plan.
13. Occupational Safety	
14. New or changed Regulations / AMC&GM (incl. NPA, CRD, Opinions) with influence to KUAV	
14. Miscellaneous	

- QIM all 4-6 Weeks (CEO, QM, HoDO, HoPO, HoMO)



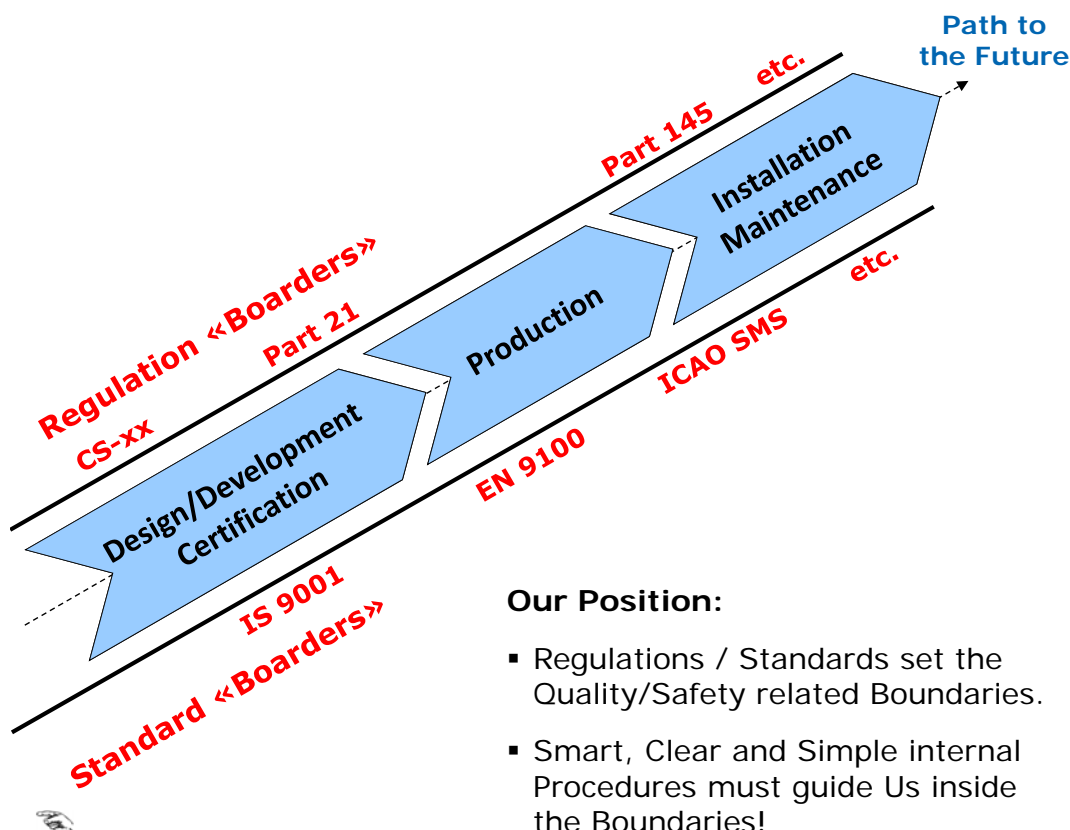
[4] User Friendly Procedures: Process-orientated Approach in DO, PO, MO [1/2]



Process-orientated approach emphasizes the importance

- Understanding and meeting Requirements,
- Need to consider Processes in terms of Added Value,
- Obtaining results of process performance and effectiveness
- Continual improvement of processes based on objective measurement.

[4] User Friendly Procedures: Process-orientated Approach in DO, PO, MO [2/2]



Our Position:

- Regulations / Standards set the Quality/Safety related Boundaries.
- Smart, Clear and Simple internal Procedures must guide Us inside the Boundaries!



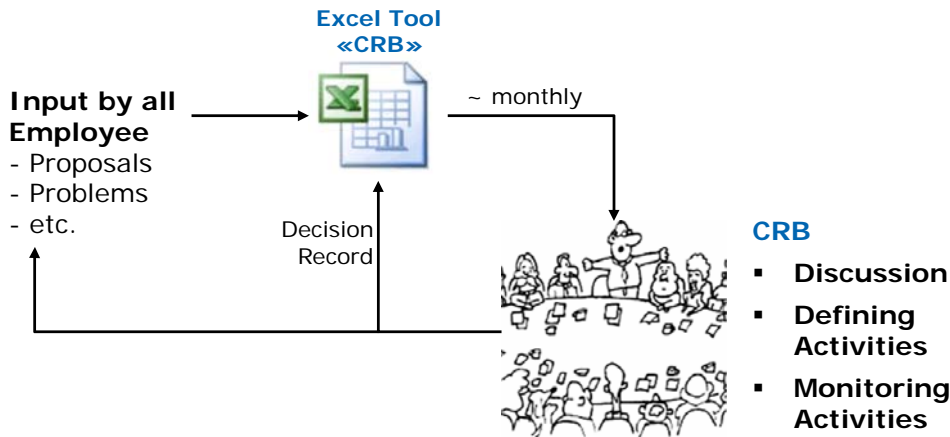
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[5] Improvement by All: Regular Company Review Board (CRB)

General:

- CRB performed with all On-Site present Employee typically monthly after a Company Planning Meeting
- Discussion, Defining and Monitoring of Improvements and Trends out of Daily Work Experience, Trainings and Audits.

It Works quite Simple:



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[6] Simple to Use Handbooks: Standardized Content (Procedures/Methods)

General:

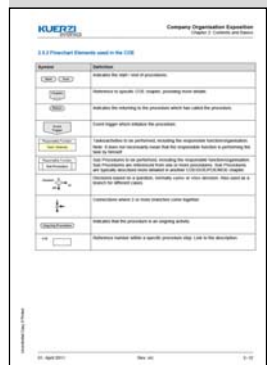
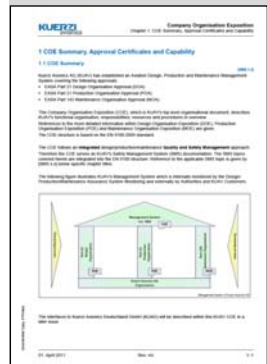
- Complex Regulations/Standards Requirements
- Kuerzi's typical Small Business Situation: Several Persons have more than one Function in DO, PO and/or MO
- Required Procedure/Information should be Simple to Find, simple to Understand and Use by every Kuerzi Employee.

Some Kuerzi Handbook Design Basics:

- Attractive Document Layout
- DOE, POE and MOE Process-Orientated and Equivalent Structure
- Emphasis on Clear and Complete Definitions and Abbreviations and consistent Use of them
- Flowchart Elements Standardized and Explained
- Chapters contain References to applicable Requirements
- ...

Kuerzi's Approach: Handbooks are primarily made for the Employees and should secondarily satisfy the Authority!

Everyone is Everytime invited to provide Inputs.



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[7] Open Eyes and Ears: Management by «Walk Arouds»

«If you wait for people to come to you, you'll only get small problems. You must go and find them. The big problems are where people don't realize they have one in the first place.»

W. Edwards Deming



Walking through the Company with **Open Eyes and Ears** is a very good Management Instrument

- Effective, informal Monitoring
- Feel the Spirit, Motivation, Safety Attitudes, ... of the Employees.

Benefits:

- Builds Trust and Relationship
- Motivate Employees by demonstrating that Management takes an active Interest in People
- Encourage Employees to achieve Individual and Collective Goals
- Strengthens Ability to drive Cultural Change for higher Organizational Performance
- Refreshes Organizational Values
- Makes work Less Formal
- Creates a Healthy Organization.

- Formal Audits are not assumed by Kuerzi as the only effective Monitoring Method.



Ref.: www.motivationsposter.de

[8] Safety Awareness: Priority on Human Factors Trainings/Discussions

Kuerzi's Position:

- Company-wide Human Factors Trainings/Discussions assumed as important Element also to support the **Company and Safety Culture**, performed
 - Periodically as «Refresher» and/or
 - in case of Needs due to specific Problems/Incidents.

- Human Factors Trainings beyond Maintenance.

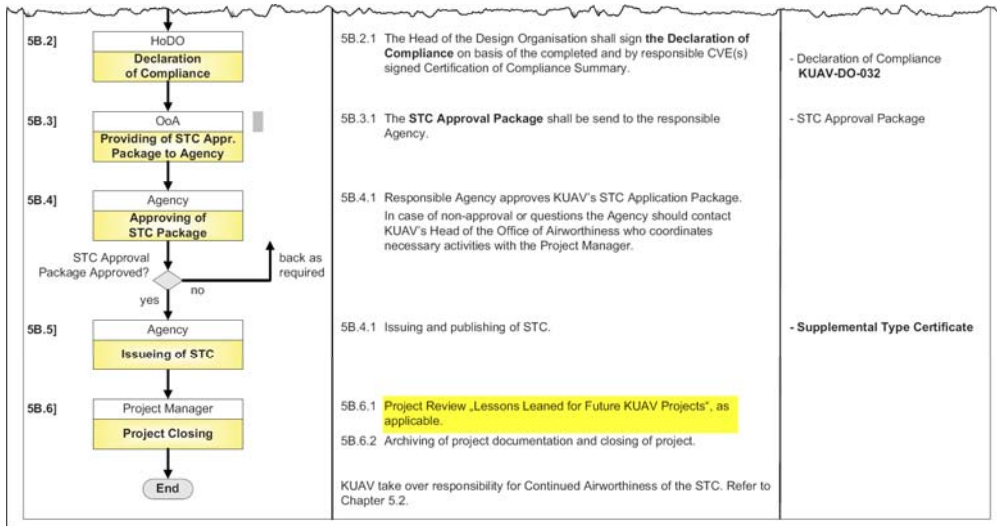


Ref. Maintenance & Ramp Safety Society (www.marss.org)

[9] Learning from Projects: «Lessons Learned» on Project End

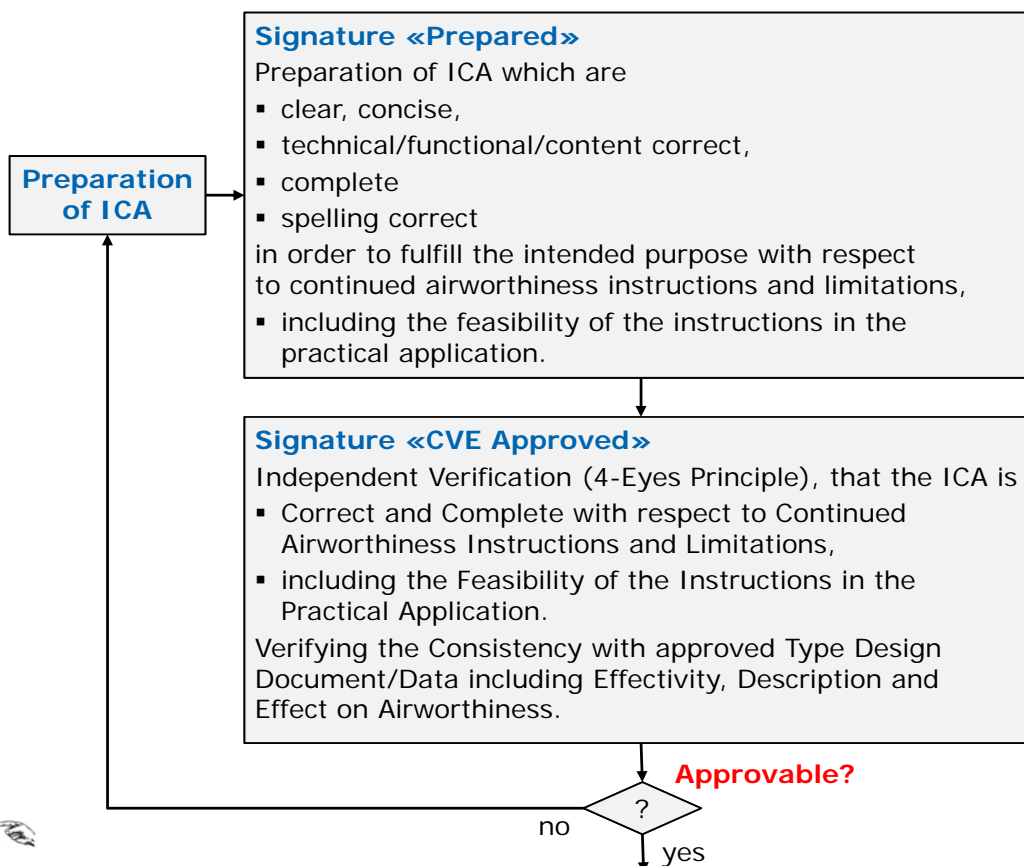
Final Project Review: What can be done better in Future?

- Project Planning / Controlling incl. Effectivity / Efficiency
- Interfaces / internal & external Communication
- Technical Aspects DO / PO / MO Activities
- ...



Ref.: www.motivationsposter.de

[10] Signature Rules: Meaning of Signatures and «4-Eye Principle»




- Knowing what to Sign for ...
- 4-Eye Principle
- **Example Instructions for Continued Airworthiness (ICA)**

[11] Teamwork and Communication: Communication is Everything [1/2]

Important Teamwork aspects supported by Kuerzi are:

- **Safety related Attitude** and Opinions of Team Members, characterized by
 - Questioning Attitude
 - Methodical Thinking
 - Role Model Function
 - Professionalism.
- **Communication**
(Information Exchange, Problem Notification, Understanding, ...)
- **Collaboration**
(Fair and Open, Disagreements are solved)
- **Coordination / Delegation**
(Optimal use of Team Resources)
- **To Aid one Another**
(e.g. Constructive Discussion of Problems/Difficulties)
- **Self Reliance**
 - Each Team Member is responsible for its Doing, but also for Ommission of necessary Doings.

- Teambuilding supported by several «Informal Events» 



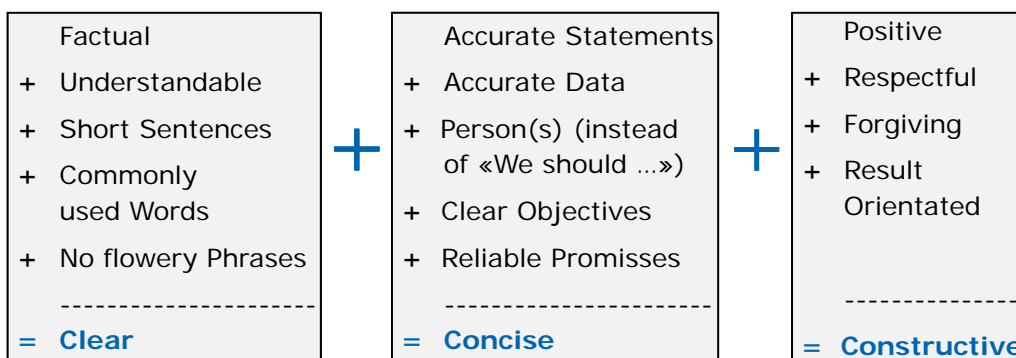
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[11] Teamwork and Communication: Communication is Everything [2/2]

Successors within verbal and written Communication

Make the Words:

- **Clear** (understandable)
 - **Concise** (accurate), and
 - **Constructive** (results-oriented)
- }
- Competent**

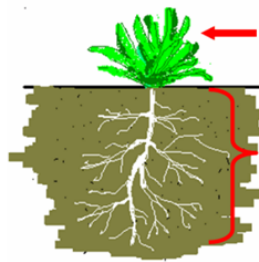


- Kuerzi strive to support Competent Communication in Organisational, Technical and other Issues.

Quelle: Einfach Organisiert! Praxishandbuch, Verlag für die Deutsche Wirtschaft AG

[12] Corective Actions: Root Cause Analysis Method [1/2]

Root Cause Analysis - Identifying the Problems



Symptom of the Problem.
„The Weed“
(above the surface - obvious)

The Underlying Cause(es).
„The Root“
(below the surface – not obvious)

«If you cannot say it Simply, you do not understand the Problem!»

In order to fix a Problem, it must be clearly and appropriately Defined.

Frequently, the Nonconformance identified is not really the Problem, but the Symptom of the Problem.

Asking Questions similar to the following will help to address the actual Problem and not just the Symptom that was identified as the Event:

- What is the scope of the problem?
- How many problems is it?
- What is affected by the problem?
- What is the impact on the company?
- How often does the problem occur?

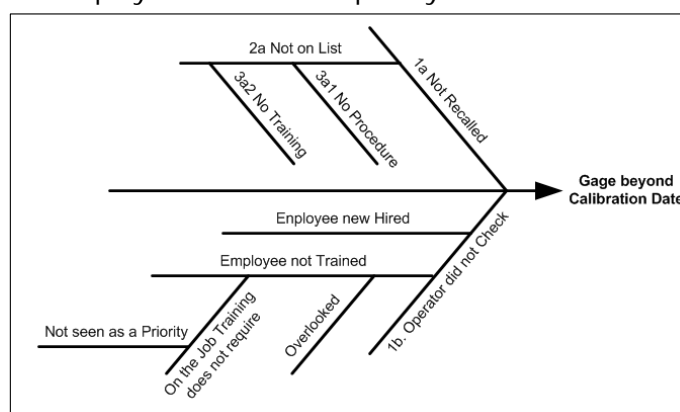
- Kuerzi uses the «5-Why» Method in case complex Organisational or complex Technical Problems as Basis for Corrective and Preventive Actions.

[12] Corective Actions: Root Cause Analysis Method [2/2]

Root Cause Analysis «5-Why» Method with «Fishbone Diagram»

Example Problem: A gage was found in use on the shop floor beyond its due date.

- [1] Why?
 1a The gage was not recalled.
 1b The Operator did not check the gage.
- [2] Why was the gage not recalled?
 2a Because the gage was not on the recall list.
- [3] Why was the gage not on the recall list?
 3a1 There is no procedure ensuring that new gages are listed on the recall list.
 3a2 The responsible employee was not adequately trained.
- [4] Why ...



- Simple but effective Method.

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4. Summary & Conclusion

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Summary & Conclusion



... and remember, Safety is everybody's Business!



... independent where Your Organisation is in the Chain.

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SMS Implementation with Focus on Safety Culture within a Small but Complex Organisation

Thank You for Your Attention.

