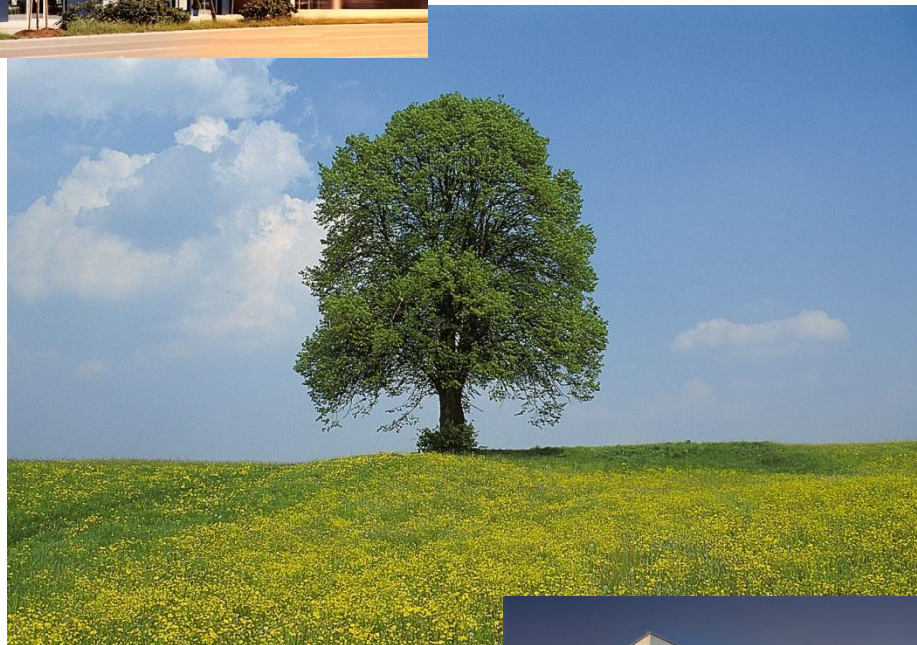


MANAGEMENT MANUAL QM / EM



DATA MODUL
DISPLAY AND EMBEDDED SOLUTIONS



DIN EN ISO 9001:2008
DIN EN ISO 14001:2004



Rev. 2.1 / February 2011



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1. Declaration of commitment

This management manual describes the management system of the company DATA MODUL AG in Munich and its one hundred per cent subsidiary CONRAC GmbH in Weikersheim on the basis of the corporate policy that has been formulated.

The management system meets the requirements of the reference standard DIN EN ISO 9001:2008 as well as DIN EN ISO 14001:2004 which both are integrated in one management system.

Application of the management system ensures,

- that all operational processes that have an impact on the quality of our products and services but also on our environmental performance, have an orderly and standard-compliant procedure,
- that the products created in these processes and the services provided are checked continuously for fulfillment of the specifications,
- that the performance and results of quality- and environmental-related activities are recorded and
- that the quality capability and environmental performance of our company is checked and improved continuously.

By way of this declaration the management recognizes the statements of the corporate policy and the regulations of the management system as being binding for its corporate activity. At the same time all employees are obligated to perform their activities in accordance with the stipulations of this manual and the secondary process descriptions.

Munich, February 2011

With responsibility for the corporate of DATA MODUL AG and CONRAC GmbH:



Peter Hecktor, CEO



Walter King, CTO



Dr. Florian Pesahl, CFO

2. Glossary, abbreviations

Term	Definition
5-M method	Problem-solving tool for the purpose of breaking down an effect into its causes, usually subdivided into man, machine, method, material and society.
8D report	Complaint form with root cause analysis and remedy counter measures
A	
AA	Working instruction (job-related instruction)
Adjusting	Adjusting or aligning a measuring device so that the display of the correct value remains within defined error tolerance limits.
Allocation	Distribution process, if the actual stock is less than what should be dispatched in accordance with the orders.
Application	Department for consultation relating to special applications, e.g. customized solutions
APQP	Advanced Product and Quality Planning
AQL	Acceptable Quality Level
Audit	Verification of the management system or of individual processes or products
Auditor	Person with the qualification to perform an audit
B	
Balanced scorecard	Method with tools for a key data system in the objective management system
Brainstorming	One of the seven quality tools
C	
Calibration	Checking by the calibration authority of a measuring device in accordance with the calibration regulations
Calibration	Determination of the systematic measuring error (not adjusting !!)
Call-off orders	Orders against which a certain quantity must be purchased by a final deadline. The individual delivery lots are called off.
CAQ	Computer Aided Quality Control, quality control with the aid of EDP
CE	Communautés Européennes (European Community, EC)
CE marking	Declaration of conformity in relation to EU guidelines
Certificate	Confirmation of certification that has proceeded positively by means of a quality symbol or quality seal, often in the form of a certificate
Certification	Checking of entire companies, operating procedures or products as to the fulfillment of specific criteria by impartial third parties.
Chief executive management	Person or group of persons who manage and control the organization at the highest level.
CoC	Certificate of Conformity
Conformity	Fulfillment of a requirement
Controlled process	Process, the parameters of which change only under controlled conditions
C_P, C_{PK}	Item of key data for process assessment, $C_P =$ ratio of process variance relative to the stipulated tolerance $C_{PK} =$ position of the mean value relative to the tolerance midpoint
Credit insurance	Guaranteeing of outstanding orders and customers' claims.
Customized articles	Articles that are developed and/or procured for one or a few customers only
D	
Danger	Possibility of the occurrence of a negative event
DAkkS	German accreditation council
Development articles	Articles that are required by the development department for development tasks and cannot be procured via the normal channels.
DGQ	German society of quality
DIN	German institute of standardization reg. soc.
Distribution	Wholesale distribution
Distribution merchandise	Articles that are procured only from the distribution partner
Distributor	Wholesaler

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DoC	Deklaration of Conformity
Documents	Documents of proof (forms, templates, contracts, documents, certificates ...)
E	
EDP	Electronic Data Processing
EK	a) Purchase price b) Development - design
EMM	Environmental Management Manual
EMO	Environmental Management Officer
EMP	Initial sample testing
EMS	Environmental Management System
EN	European standards programme
ERP	Enterprise Resources Planning, computer-aided planning of resources for entrepreneurial activities
F	
FIFO	First in/first out, logistical stock turn principle
FMEA	Failure mode and effects analysis
FO	Form
G	
GTC	General Terms and Condition
H	
Hire stores	Stores for hired equipment
I	
IMS	Integrated Management System, e.g. quality and environmental management
Initial sample	Product made for the first time under series production conditions
IQC	Incoming Quality Control
ISO	International Organization for Standardization
J	
K	
Kanban	Modified form of the just-in-time principle
Key account	Major customer
Key data	Quantitative (countable) parameter
KVP	Continuous improvement process
L	
Limit sample	Sample that embodies the limit value of a quality characteristic
M	
Marketing	Observes all product-related marketing tasks, subdivided according to product group
MRD	Market Requirement Document, specification at DATA MODUL AG
N	
Non-conformity	Non-fulfilment of a requirement
Non-financial backlog	Order with a term > 12 months, which has no fixed classification because of an excessively high degree of uncertainty in terms of order backlog
O	
OHSAS	Occupational Health and Safety Assessment, work safety system
OQC	Outgoing Quality Control
P	
PA	Inspection instruction / testing instruction
PB	Process description
PDCA	Plan Do Check Act: continuous improvement process
ppm	Parts per million (10^{-6}); 1 part per 1 million parts
Precision	Degree of the proximity of investigation results to the reference value
Process	A set of interrelated or interacting activities that convert inputs into results
Product manager	Member of staff in marketing
Production article	Article that is produced by the production department for sale

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Production component	Article that is required for production
Prototype	Advance sample of a later series production item
Q	
Q-...	Quality...
QA	Quality Assurance
QM..	Quality Management...
QMM	Quality Management Manual
QMO	Quality Management Officer
QMS	Quality Management System
Qualification	Proven capability of using knowledge and skills
R	
Release	Permission to skip to the next stage of a process
Reworking	Measure performed on a non-conforming product so that it fulfils requirements
RMA	Return Material Authorization – process for the structured return of goods.
RMA no.	Identification number issued by the supplier for the return of goods
S	
Sales	Sales is subdivided into the field sales service, which visits customers, and the office service, which supports the former in the processing of orders and deals with customers on the telephone. Sales is organized according to region and major customers.
Sample stores	Stores for samples presentations to the customer
SCAR	Supplier Corrective Action Report = 8D report
Special release	Permission to use or release a product that does not meet the defined requirements.
Standard articles	a) Articles that can be procured directly via purchasing. b) Articles that can be sold without change to several customers.
Support	Support of the customer
T	
Telesales	Telephone sales primarily for the servicing of small customers
TKA	Technical customer requirement, specification at CONRAC
Traded goods	Standard goods that are sold on in their original condition.
U	
UMH	German for : Environmental management manual, see EMM
UMS	German for : Environmental management system, see EMS
V	
VA	a) Process instruction b) Field sales service
Validation	Confirmation by the provision of objective proof that the requirements have been fulfilled for a specific intended use or a specific intended application.
Value added	Refining of traded goods by other services, e.g. fabrication
Verification	Confirmation by the provision of objective proof that defined requirements have been fulfilled.
VI	Office sales service
VK	Selling price
W	
WEP	Goods received inspection (= IQC)
X	
Y	
Yield	Output of good parts from production, sometimes as quote in reference to portion of bad parts
Z	

3. Corporate profile

3.1 DATA MODUL AG

DATA MODUL AG is a manufacturer and supplier of flat displays, complete information systems, software and services that is active all over the world.

DATA MODUL AG has been developing, producing and selling displays, electronic components, assemblies and systems for display, acquisition and transmission of data and images in Germany, Europe, Asia and the USA since 1972. We have been constantly improving our leading position in the European market in the display technology segment for nearly 40 years.



The headquarters of DATA MODUL AG is in Munich and the main production plant is in Weikersheim near Würzburg. The factory, which has a production area of 18,000 sqm, has a modern design and state-of-the-art technology.

The company has its own sales offices in the USA, Singapore, Dubai, United Kingdom, Italy, France and Spain. The products are also supplied via special distributors and sales representatives.

DATA MODUL AG is active in two main lines of business - professional information systems and industry. Manufacturers of medical and marine technology, information technology, transport services, telecommunications, machinery manufacturers, plant manufacturers and the automotive industry are the purchasers of the assembled or individually fabricated products. Complete information systems based on TFT, LCD and plasma technology from DATA MODUL AG are a booming market. These are used at airports, railway stations, hotels and trade fairs all over the world.

All development activities are orientated towards market requirements. The latest technologies are introduced consequently, ultra-modern control board electronics from our own company R&D are used and the fulfillment of market-specific standards and regulations is monitored.

The headquarters of the company is in Munich. We have branch offices and subsidiaries in Dusseldorf, Hamburg, Stuttgart, Birmingham, New York, Paris, Madrid and Milan. CONRAC GmbH is a 100% subsidiary of DATA MODUL AG. Furthermore DATA MODUL AG is holding 100% in the companies BATRON GmbH, Munich and Datamega GmbH, Munich, but these are not active on the market any more. We are using these names still als brand-names for products and services.

3.1.1 Organization chart of the company DATA MODUL AG

The organizational chart of DATA MODUL AG will be published for reasons of timeliness as a separate document and is – same as this manual – available for download on our website www.data-modul.com in the section of service / quality management.

3.2 CONRAC GmbH

CONRAC GmbH is a worldwide active manufacturer of high-end display products for a multitude of areas of application. Since the company formation in 1956 CONRAC GmbH has devoted itself to the development and production of innovative products.



To be able to serve the individual market segments even better, we have subdivided our organization into the following lines of business:

1. Industrial displays
 - Industrial solutions
 - Ship navigation
 - Medical applications
 - OEM displays
2. Professional displays
 - Airport solutions
 - Transport solutions
 - Business solutions

CONRAC GmbH is proof of how "High-tech Made in Germany" can still work. Development and production with ultra-modern equipment at the headquarters in Weikersheim near Würzburg, is covering an area of 18,000 sqm. The products meet the highest requirements of quality in accordance with ISO 9001, ergonomics and service.

It is the aim of CONRAC GmbH to always be one step ahead with its development and to offer customers optimal solutions for the relevant area of application. For example, CONRAC GmbH supplied the first large-sized color plasma displays in the world for an airport application, paving the way for this new display technology to this specific area of application in 1997.

All development activities are aligned with market requirements. The latest technologies are introduced consequently, ultra-modern control board electronics from our own company R&D are used and the fulfillment of market-specific standards and regulations is monitored.

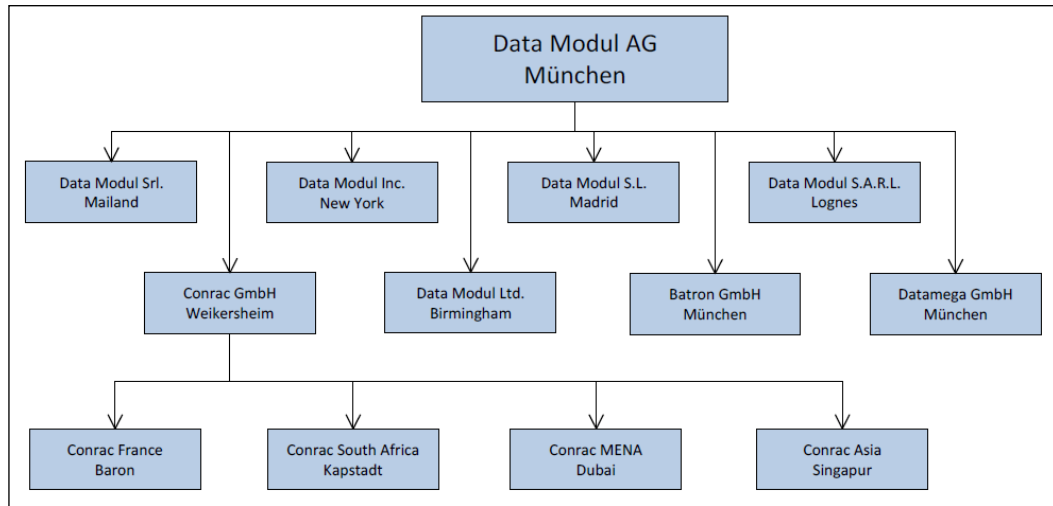
CONRAC GmbH has been a subsidiary company of DATA MODUL AG, Munich, since October 1998.

CONRAC GmbH has its headquarters in Weikersheim and has sales branch offices and subsidiary firms at its disposal in several European countries and in Asia. In addition we work together with a multitude of distributors and sales partners all over the world.

3.2.1 Organization chart of the company CONRAC GmbH

The organizational chart of CONRAC GmbH will be published for reasons of timeliness as a separate document and is – same as this manual – available for download on our website www.data-modul.com in the section of service / quality management.

3.3 Konzernstruktur



3.4 Konzern-Standorte



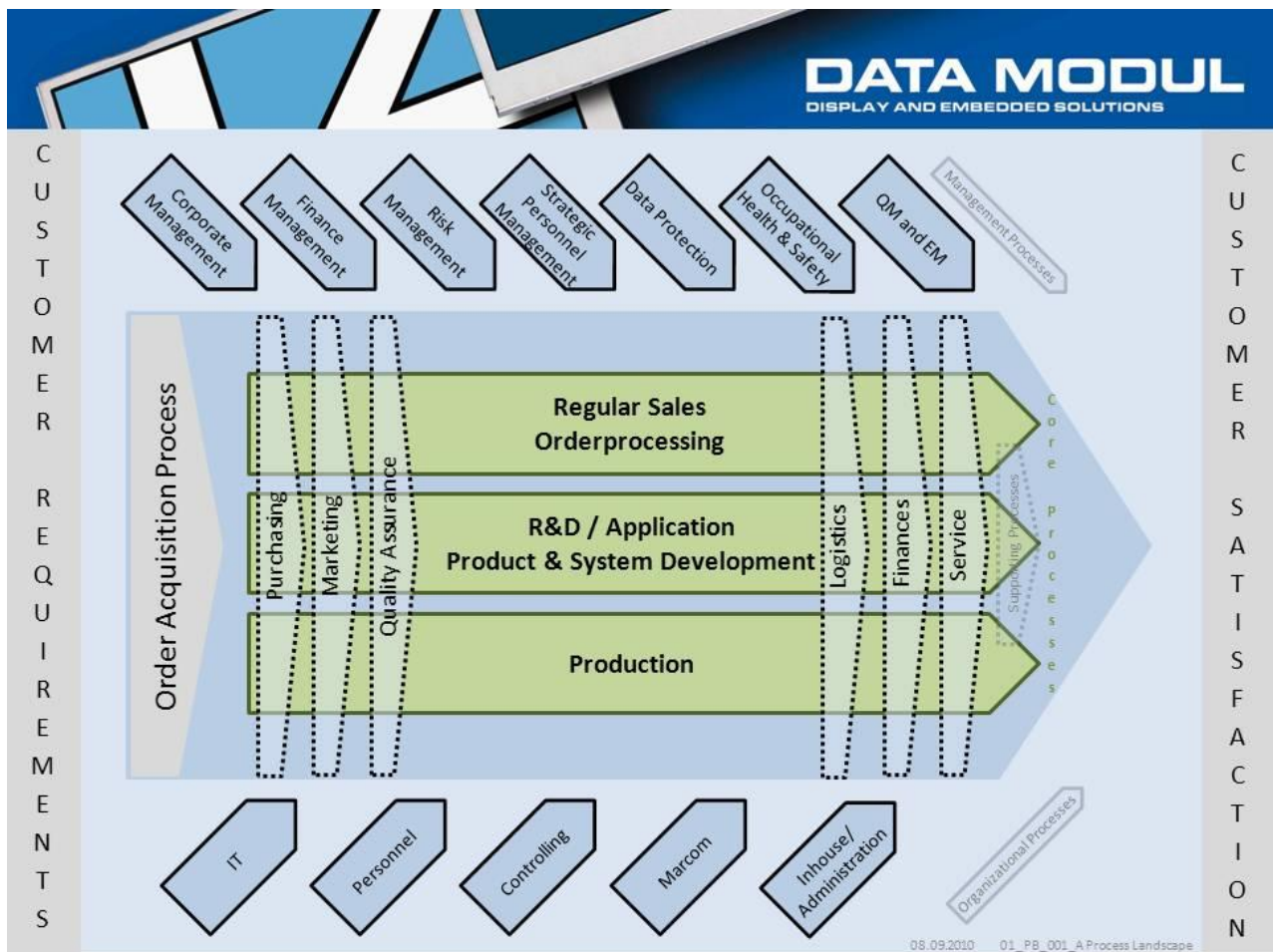
3.5 Process landscape of the company

Resolute process orientation makes it possible for DATA MODUL AG and CONRAC GmbH to ensure the required flexibility and further development of its organizational system.

The following illustration provides a summary of the processes performed in the company and their interaction with each other.

The classification in the company-specific process model is performed in accordance with the

- Management processes
- Core processes
- Supporting processes
- Organizational or administrative processes



4. Quality and environmental management system

4.1 General requirements

All processes of DATA MODUL AG and CONRAC GmbH are defined by the management system to ensure fulfillment of the customers' requirements. To do this it is necessary to adapt these definitions continuously to the needs of the customers, markets and company.

4.2 Documentation requirements

4.2.1 General

The management system and the relevant documentation are adapted accordingly to the changes in the structural and procedural organization of DATA MODUL AG and CONRAC GmbH.

The processes are defined in consideration of the following points:

- Sequence of the activities and interactions between the processes (particularly input/output at the interfaces)
- Criteria and methods for effective control of the processes
- Information required for execution of the processes (input)
- Measuring, monitoring and analyzing of the processes to check achievement of the planned results and to achieve improvements.

The executive management is responsible for the drafting of the management documentation. The performance of this task is delegated to the quality management officer.

4.2.2 Management structure

The management manual represents an overview of the management system introduced at DATA MODUL AG and CONRAC GmbH.

The process descriptions show the in-company procedures.

Working instructions define at workplace level how activities have to be executed.

Forms/check lists serve the purpose of systematic recording of information in recurring situations.

Additional documents are documents that are required in the context of the management system and that do not come within one of the preceding categories, e.g. overviews, compilations or tables.

The guidelines and instructions are drawn up by the respective process manager. If it becomes recognizable that the stipulations in the existing guidelines and instructions are not sufficient to ensure the quality and economy of the processes, the process managers are obligated to create new regulations.

The relevant valid version of the management documentation of DATA MODUL AG and CONRAC GmbH is published on the in-company Intranet and is therefore accessible for every employee in the form of an online manual.

Amendments to the management documentation are released only by the management officer.

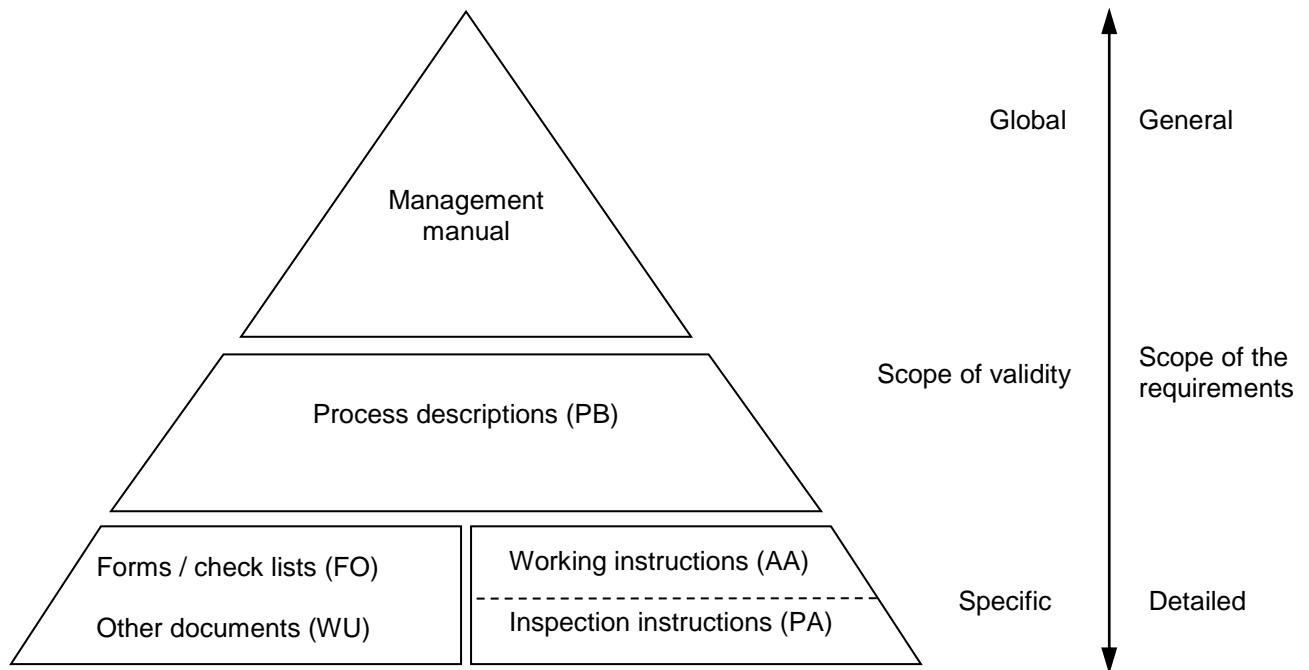


Fig. 4.1. Hierarchy of the management system documents

4.2.3 Control of documents

At DATA MODUL AG and CONRAC GmbH it is ensured by the management system that new and amended documents are controlled (internal and external, e.g. standards, guidelines, laws ...). The actuality of the documents must be ensured. For this purpose the released management documents are managed centrally on a data server and can be called off by any user at any work station.

It is ensured that:

- documents are checked and released
- documents are assessed and, if required, are revised and redistributed
- documents are marked with the current revision status
- the current issues of relevant documents are available wherever they are needed
- documents are marked in accordance with defined rules for the purpose of clear identification
- documents are legible, easily identifiable and retrievable
- the use of outdated documents is prevented and these are marked suitably and then archived.

The responsibilities, designations and filing locations are defined in a document matrix. Marking for the purpose of clear identification is defined in Fig. 4.2. Document numbering.

X	00	XX	00	00
Company	Department Division	Document designation	Consec. no.	Revision status
Example	D50-FO0102	(Market Requirement Doc. in German)		
i.e.	A - General (Data Modul and Conrac) C - Conrac GmbH only D - Data Modul AG only 50 - Development division (creator) FO - Form (document designation) 01 - Consec. no. within the documents drawn up by the division 02 - Revision status 02 (updated)			
Document designation:	FO - Form PB - Process description AA - Working instruction VA - Process instruction PA - Inspection instruction			

Fig. 4.2. Document numbering

4.2.4 Control of records

Quality records are proof that the requirements of the standard and the customers requirements are fulfilled and that the management system is working effectively. They serve as the basis for analysis of the causes of non-conformities and for the initiation of corrective measures. The quality records of suppliers are included.

The responsibilities for:

- drafting
- marking and storage of quality records
- collection, filing and archiving with storage times
- data protection/data security
- retrieval
- disposal of quality records, where necessary

are defined in process descriptions and working instructions.

It is ensured by means of systematic marking of the records that any reference of the quality records to the corresponding products, processes, audits, measures etc. is maintained over a defined time period after their creation.

4.2.5 Data security

Regular data security is defined bindingly by a working instruction in the IT department to avoid data loss. All data saved on central servers and documents are taken into account in this.

Company-related data that cannot be stored within the EDP system continue to be archived in hard copy form, with regard to the legal requirements as well.

5. Responsibility of the management

5.1 Duties of the management

The corporate policy as well as quality and environmental targets are regarded as being the guidelines for action in the entire organization.

The management system forms the framework for realization of the corporate policy and achievement of the quality and environmental targets. In it, in accordance with the stipulations of the executive management, the responsibilities, structural organization and procedural organization are defined and quality-related topics are planned and aligned with the customer.

Stipulations that are laid down in writing and their internal communication provide clarity for all actions in the company. The effective functioning of the management system and the fulfillment of customer requirements are made retraceable and proved by means of records.

The effectiveness of the management system is ensured by the function of the quality and environmental management officer and by regular checking of the management system by organizationally independent personnel.

The regular performance of management assessments ensures the ongoing suitability, adequacy and effectiveness of the management system.

The executive management demonstrates its commitment to the fulfillment of customer requirements by:

- conveying the significance of the fulfillment of customer requirements
- application of the legal and official requirements
- specification of the quality policy and quality targets
- maintenance and further development of the management system
- the performance of management assessments
- assurance of the availability of the required resources (above all personnel).

5.2 Customer orientation

Customer needs and expectations are determined and specified in the form of defined requirements with the objective of gaining the trust of the customer in the product to be supplied / service to be provided. The customer needs and expectations are determined by:

- market analyses
- customer surveys
- individual determination at the enquiry/quotation stage.

It is ensured by monitoring and control of the corresponding processes that the customers' needs and expectations are converted into defined requirements and fulfilled to the satisfaction of the customers.

5.3 Corporate policy

The corporate policy of DATA MODUL AG and CONRAC GmbH will be published for reasons of timeliness as a separate document and is – same as this manual – available for download on our website www.data-modul.com in the section of service / quality management.

5.4 Planning

5.4.1 Quality and environmental objectives

The objectives for all functions and levels of the organization are derived from the corporate policy. The objectives must be quantifiable. The executive management is responsible for regular definition of the quality and environmental objectives. The setting of objectives and monitoring of the achievement of objectives are among other things a component part of the management assessment. The fulfillment of the requirements made of products, services and processes associated with them is taken into account when the objectives are defined.

Data are regularly determined and communicated or submitted to the executive management for appraisal in compressed form as part of the management report for the purpose of monitoring progress and objective achievement. Among other things the analysis of these data is the starting point for improvement processes.

The target data to be analyzed also includes business results in the form of financial variables (profit, sales volume, value creation, scrap, reworking proportion, complaint quota etc.) and in the form of non-financial variables (market share, variability of products, delivery on time etc.).

5.4.2 Planning of the management system

The processes necessary for fulfillment of the quality and environmental objectives are defined by a management planning system. The "process landscape" developed from this provides an overview of all the main processes in the company.

The planning is the basis for constant improvement, among other things by a continuous improvement process (PDCA). The executive management is responsible for the planning, maintenance and improvement of the processes.

By means of appropriate planning and monitoring the executive management has to make provision that in the event of any organizational changes it is ensured that the processes proceed smoothly during the changeover.

5.4.3 Environmental management system

In accordance with our corporate policy and on the basis of the legal requirements we feel committed to the sustained protection of our environment. For this purpose we have decided to expand our existing quality management system by additional certification of an environmental management system based on DIN EN ISO 14001:2004.

The processes and documents required for this are defined on the basis of this quality management manual and are aligned with DIN EN ISO 14001:2004 so that an integrated management system is created.

5.4.4 Risk management

Based on a multitude of key data and influence factors our company operates a comprehensive risk management system as part of the controlling. This is depicted in an own risk management manual and in addition to the management review represents a global link between quality management, environmental management and corporate planning.

5.5 Responsibility, authority and communication

By means of the specifications in the management system the intention is to create confidence in DATA MODUL AG and CONRAC GmbH being able to fulfill the requirements and expectations of customers.

5.5.1 Responsibility and authority

The responsibilities, authorities and interrelations of personnel (e.g. delimitations of and transitions between the areas of responsibility and activities) and the assignment of the respective employees can be referred to in the organization chart and technical instructions (process descriptions and working instructions).

5.5.2 Representative of the management

The executive management has appointed the management officer as the representative of the management to maintain the corporate policy passed by it. The management officer is bound to the executive management with organizational independence and has the following tasks and authorities:

- Monitoring and further development of the management system
- Release of regulations of the quality and environmental management
- Assurance of the introduction and maintenance of the processes of the management system
- Creation of prerequisites for the purpose of certification and their maintenance
- Further development of the management information system for quality and environmental control and reporting to the executive management
- Promotion of a consciousness for customer needs and requirements in the entire organization
- Maintaining of connections to external locations in terms of quality and environmental matters, in particular to customers, suppliers, certification companies and authorities
- Collaboration in training programmes for personnel development
- Further development of the management system in accordance with the structural organization of the company
- Preparation of the management reports (including the management review) for the executive management
- Planning and performance of internal audits and supplier audits

5.5.3 Internal communication

The corporate management ensures that suitable processes of communication are introduced within the organization and that communication on the effectiveness of the management system takes place. The following instruments serve this purpose:

- Management board meeting
- Department manager meeting
- Management review meeting
- Management meeting QM / EM
- Other organizational and process-related meetings

5.6 Management assessment

5.6.1 General

The adequacy and effectiveness of the management system as well as the suitability for fulfillment of the requirements derived from the relevant standards are monitored and documented at regular intervals (at least once annually). The requirement for management system updating, for quality policy and for quality objectives is determined as part of the management assessment.

5.6.2 Inputs for the assessment

The following are assessed with respect to performance and improvement possibilities:

- Results from internal audits, customers and supplier audits as well as certification audits
- Feedback from customers
- Meetings of the management department
- Meetings in quality circles
- Process performances and analyses
- Analysis for product conformity
- Status of preventive/corrective measures
- Changes that can have effects on the management system
- Data from earlier assessments

5.6.3 Results of the assessment

The results of the assessment contain the status or the measures relating to

- improvement of the management system and the relevant processes
- product improvements with respect to customer requirements
- the need for resources.

The results are summarized in an assessment report with an action plan.

6. Management of the resources

6.1 Provision of resources

It is ensured by means of the following ascertainties that the required resources are provided in good time to perform and improve the processes listed in the management manual in accordance with objectives and to achieve customer satisfaction.

6.2 Personnel resources

6.2.1 General

It is ensured by careful selection and assignment to the respective tasks, that personnel, whose activity has an effect on the fulfillment of requirements made of the products/services, have the required capabilities and qualifications due to a suitable education, training, skills and experience.

At DATA MODUL AG and CONRAC GmbH new employees are familiarized with the most important corporate processes (management system) and with the relevant rules and regulations (i.e. accident prevention ...) in an initial instruction.

6.2.2 Skills, consciousness and training

The need for personnel skills is determined annually by the divisional managers at an employee meeting. On the basis of this need and the qualifications of the existing personnel a training programme, which is filed in the personnel development plan (PEP), is prepared jointly by the divisional directors and the executive management (DATA MODUL AG) or personnel department (CONRAC GmbH). The required knowledge and skills are imparted in the training sessions.

After an appropriate time period (at the latest after 3 months) following the training course the effectiveness of the training measure is documented jointly by the employee and the divisional director on a seminar assessment form. Records are kept on the education, training, qualifications and experience of employees. A copy is kept in the personnel file.

Moreover, it is ensured by suitable training measures that the employees are conscious of the meaning and importance of their activities and know how much they contribute to the attainment of the quality, environmental and corporate objectives.

6.3 Infrastructure

To achieve products that are in compliance with requirements the necessary facilities have to be determined, made available and maintained. These include:

- the place of work and connected facilities such as premises, workplaces in administration and production, as well as the supply and disposal facilities.
- equipment with hardware and software, capital goods and operating means.
- the maintenance of capital goods and means of production.
- the procurement of manufacturing supplies.
- supporting services such as EDP, communication services, logistics ...

The required facilities are created and checked by annual works inspections. In addition, among other things, inspections are performed with the trade association. A report on the inspection is drawn up and forwarded to the executive management.

6.4 Working environment

The conditions covering the working environment are determined so that the requirements of products and/or services can be fulfilled.

Before product realization, the conditions for the working environment in the projects and/or of the process managers are clarified or determined and the required measures defined.

In the case of industrial health and safety matters the safety officer (DATA MODUL AG) or the industrial health and safety officer (CONRAC GmbH) is consulted.

The executive management is responsible for implementation of the measures.

The working environment is checked annually by means of a works inspection by the internal officers, the executive management and any external advisers (trade association, company medical service, ...). A report of the inspection is drawn up. In addition the employees can undergo a routine examination by the company doctor (external). The employees are informed in writing by the company doctor, if anything conspicuous occurs.

7. Product realization

Fulfillment of the defined requirements of the product is ensured under controlled conditions by control of the (production) processes.

7.1 Planning of the realization processes

It is the task of the process management to configure all processes connected with realization of the products/services in the organization. To do this the following points must be taken into account:

- Consideration of all requirements of the management system
- Suitable documentation of the planning results
- Quality and environmental objectives regarding the product
- Need for processes to be introduced
- Need for documents to be drawn up
- Need for product-specific resources to be provided
- Verification and validation activities based on acceptance criteria
- Monitoring and checking activities
- Written documentation of the verification and validation of process and product

7.2 Customer-related processes

7.2.1 Determination of the requirements with respect to the product

The customer requirements are determined in the context of the market analysis, market processing and direct customer service for the processing of enquiries, quotations and orders/projects. The following have to be taken into account:

- Requirements of the product/service, including requirements of availability, delivery and support, defined by the customer
- Requirements that are not explicitly defined or expressed by the customer, but are necessary for fulfillment of the objective
- Other requirements that are connected with the product/service including the official and legal requirements.

7.2.2 Assessment of the requirements with respect to the product

In principle, a careful assessment of the requirements of the product/service is carried out for all incoming enquiries (both written and verbal enquiries) and invitations to tender. This assessment includes the defined requirements that go beyond the customer requirements and must be performed before the obligation to deliver to the customer is entered into (e.g. by submission of a written quotation, acceptance of an order or entering-into of a contract).

The assessment ensures that:

- product requirements are adequately defined
- customer requirements are confirmed prior to order acceptance, if they are not defined or are insufficiently defined in writing
- any contradictions between the contract and preceding specifications (e.g. quotation or contract) are dispelled
- the defined requirements of the product/service can be fulfilled (assessment where necessary with the different agencies involved, e.g. suppliers concerned, development, production etc.).

This requires measures:

- Quotations are not released until the assessment has been completed.
- Customer orders are checked as to whether the specifications made in them are identical to the requirements in the quotation. If this is not the case, a reassessment of the product requirements is carried out (related in each case to the deviations between the quotation and customer order).
- Orders without a previous quotation are assessed prior to the acceptance.
- Product requirements are also assessed when there are order changes. Changes are documented (internal and external) and are reported as quickly as possible to all agencies concerned (internal and external). Any required changes in documents have to be effected.

The results of the assessment and, where necessary, the required measures are recorded.

7.2.3 Communication with the customer

All agencies that have contact with the customer are responsible for the configuration of effective collaboration with the customer.

The customer reactions to fulfilled requirements of products/services (customer satisfaction) are acquired by these agencies and evaluated by the marketing/sales division.

Marketing and sales are responsible for informing the market and customers about products/services.

7.3 Development

The quality of a development result is influenced and determined decisively by the preceding planning activities and target-settings.

7.3.1 Development planning

The development planning includes:

- planning of the phases of the development process with development activities including assessments, verifications and validations
- definition of the responsibility and authorities for the development activities
- provision of the required documents
- updating of the planning, if development progress makes it necessary
- specification of the interfaces between the various agencies involved in the development ensure effective communication and clear responsibility

7.3.2 Development inputs

The drafting of development specifications includes:

- the function and performance requirements
- the specification of acceptance criteria for development verification and validation
- the applicable official and legal requirements
- consideration of the safety requirements
- the applicable information from earlier similar products/services
- all other decisive requirements
- The clarification of incomplete, ambiguous or contradictory requirements in the development specifications.

The development targets are documented in the form of specifications. These are elaborated by the sales/marketing/project management in collaboration with the customers and in co-ordination with the development department.

7.3.3 Development results

Recording of the development results (e.g. in drawings, parts lists etc.) is performed:

- inclusive of suitable information for production or provision of the service
- in a form that makes possible verification in comparison to the development specifications
- inclusive of the acceptance criteria (limit values, specifications etc.) or references to them
- inclusive of the product features necessary for safe use in accordance with the intended use.

The development results must be released prior to their issue.

7.3.4 Development assessment

Assessment of the development is performed

- for the purpose of determining the ability to fulfill the product requirements and development targets
- for the purpose of identifying possible problems
- for the purpose of defining prevention measures.

The assessment results are documented.

7.3.5 Development verification

The results of the respective development steps are verified by milestones. The development verifications and the records of the results and of any corrective measures required are documented in writing to ensure fulfillment of the development requirements.

7.3.6 Development validation

It is ensured by means of the documentation, validation of the development results and any corrective measures required that the product fulfils the defined requirements and demands of the customer.

7.3.7 Control of development changes

After the release of a technical document the change system comes into force in accordance with the specifications of the management system and in accordance with the contractual specifications.

7.4 Procurement

7.4.1 Procurement process

The procurement of products is performed in accordance with defined rules.

- Measures are defined that ensure that the procured products comply with requirements. The measures can be performed in our company or by the supplier on the basis of corresponding agreements.
- For series production, orders may be placed only with assessed and cleared serial production suppliers.
- The scope of the measures for the control of procurement depends on how strong is the influence of the procured products on the production/installation/customer service or service processes and the results arising from this.
- The measures at the suppliers premises are monitored and assessed, e.g. by evaluation of the quality key data of the procured products/services, audits at the suppliers premises etc..

7.4.2 Procurement specifications

Product-describing details for the supplier/manufacturer are summarized in procurement documents. They must contain clear, adequate descriptions of the requirements, as a rule in the form of specifications. This concerns in particular requirements with regard to the approval or qualification of:

- Products
- Procedures
- Processes
- Equipment
- Personnel
- Requirements of the management system.

Procurement documents have to be checked and approved prior to their release with respect to the adequacy of the requirements defined.

7.4.3 Verification of procured products

As a rule, verification of the properties of the products delivered against the procurement documents is performed in the form of a goods received inspection in co-ordination with the persons responsible for the ensuing processes.

Acceptance tests are required in certain cases at the suppliers' premises. These cases can be:

- non-existent testing facilities
- direct delivery to customers or third parties
- contractual agreements.

Acceptance tests at the suppliers' premises are defined in the procurement documentation.

7.4.4 Selection of suppliers

The selection of suppliers is performed in accordance with the following criteria:

- Released suppliers with contractual agreements
- Suppliers prescribed by customers
- Suppliers recognized by national and international approval authorities
- Suppliers whose quality capability is evidenced by proof (e.g. audits)

7.4.5 Assessment of the suppliers

Existing suppliers are assessed in accordance with defined criteria:

- Regular supplier assessment by purchasing, marketing, development, logistics and quality
- Process audits
- Reference information provided by the suppliers themselves
- Goods received quality and field quality.

New suppliers are assessed and selected in accordance with defined criteria by a team made up from marketing, purchasing, development, logistics and quality. The instruments that are used for initial qualification of the suppliers are as follows:

- Reference information provided by the suppliers themselves
- Supplier audits
- Initial sample inspections
- Conclusion of a quality assurance agreement.

Positively assessed suppliers are recorded in the "released suppliers" list and are thus released for orders.

7.5 Production and service provision

7.5.1 Control of production/service provision

The control of production and service provision processes includes the points described below:

- Ensuring that all specifications that define the product features are available
- Drafting of production schedules, working instructions and inspection schedules
- Definition and use of suitable equipment for production or service provision
- Maintenance of the equipment
- Availability and use of capable measuring systems
- Monitoring of the production or service activity
- Release and delivery in accordance with specifications
- Customer service in accordance with the specification
- Initial qualification of operating means, production processes, supply and conveying devices
- Use of released operating means, supply and conveying devices
- Performance of controlled production processes
- Compliance with normative and legal regulations (disposal, environment)
- Qualification of employees.

The measures performed (including the qualification of new operating means and production processes) are documented and archived as quality records.

To ensure that only contract-compliant products are delivered to the customer, it is necessary to subject the products to a final inspection and to also check the fulfillment of non-functional contractual requirements. Release for delivery is performed on the basis of the results of the final inspection.

7.5.2 Validation of the processes for production and service provision

Special processes, the results of which cannot be verified by ensuing tests, are validated in order to prove that they can provide requirement-compliant products/services. They have to be planned accordingly. This includes:

- Specification of the criteria for the assessment and approval of processes
- Specification of the equipment and qualification of the personnel
- Use of specified methods and procedures
- Requirements regarding records
- Revalidation.

The validation of special processes is defined and performed within the context of the process development and process planning.

7.5.3 Marking and traceability

The following features serve the purpose of identification of the products and of the relevant documents:

- Ident number, reference number or item number
- Designation
- Change index (documents)
- Change status (construction condition, delivery condition of the products)
- Serial number.

Parts with the same reference number are functionally the same, independent of the change status. The relevant current change status is registered.

The reference numbers link the products with the relevant technical product documentation in all processes.

The product status is marked so that in the various phases of product realization it is clearly recognizable on the product whether any inspections have been performed or whether the result is OK or not OK.

The inspection status is made recognizable by a special marking of the products or accompanying documents/inspection reports.

The serial number of a product is the clear and unmistakable marking of the product and is the prerequisite for its traceability. The traceability of products back to production batches or batches of procured products is ensured.

7.5.4 Property of the customer

The property of the customer must be carefully treated as long as it is in the area of responsibility of DATA MODUL AG and CONRAC GmbH. Customer property that is used or becomes a part of our products, has to be marked, verified, protected and maintained. If any customer property is lost, damaged or becomes unusable, corresponding records are made and the customer is notified.

Documents that are designated as being confidential by the customer must be kept safe accordingly and may be used by authorized personnel only.

Customer property has to be treated like ordered material in consideration of the contractual regulations. Products provided, such as materials, parts, subassemblies or devices are subjected to the usual goods received inspection.

7.5.5 Product preservation

To avoid damage or impairment of the products during processing and delivery to the destination the products are accordingly:

- marked
- handled
- packed
- stored
- protected.

Products are kept safe in a suitable way so that intermediate storage and internal transport can be performed without any quality impairments.

The packing of the products and their marking is performed in accordance with the packing regulations defined in the contract or technical documents. If no stipulations are made, the packing and marking is performed depending on requirements.

All materials and products can be stored only via an inspecting agency. The stock levels are managed means of by data processing, both with regard to allocation and stock locations.

A suitable and cost-effective mode of transport is selected for dispatch so that the product is transported to the ordering party or customer without any quality losses.

7.6 Control of monitoring and measuring devices

7.6.1 General

The conformity of products with defined features is confirmed by means of measuring systems that are capable of doing this. To do so the measuring devices are:

- calibrated regularly,
- their calibrating results are documented in a measuring device file,
- secured against maladjustment,
- protected against damage or impairment during handling, maintenance and storage,
- and subjected to a measuring system analysis.

If it is ascertained subsequently that any of the measuring devices were not (or no longer) calibrated correctly, the results of the preceding inspections have to be reassessed with this measuring device and corrective measures have to be instigated.

All measuring devices are recorded, entered in an inventory and it is then differentiated whether they are subject to measuring device monitoring or not. Non-calibrated measuring devices are marked appropriately. Measuring devices that are used for the monitoring of quality features are always subject to measuring device monitoring.

7.6.2 Marking and monitoring procedures

The measuring devices are recorded and marked in a database. At least the following data are recorded in this database:

- Location (e.g. department)
- Last maintenance date
- Maintenance cycle
- Device type
- Year of purchase
- Manufacturer
- Works/serial number.

Measuring devices to be adjusted/calibrated and utility standards are provided with a sticker that indicates the calibrating status of the next calibration.

Non-calibrated measuring devices are marked with an adhesive label and must not be used for the verification of quality characteristics.

When due, in accordance with defined procedures and in suitable environmental conditions they are calibrated, adjusted where necessary and, if non-conforming, are repaired or singled out and subjected to a risk assessment.

For the calibration only calibrating reference standards are used that for their part have been monitored, i.e. calibrated with overriding reference standards.

8. Measuring, analysis and improvements

8.1 General

During the product creation processes it is ensured by scheduled measurements, monitoring, analysis of the measurement results and improvements

- that the products are in conformity with the customers' requirements
- that the processes are monitored and controlled
- that the performance of the company is measurable and controllable.

Organized performance and comparability of the measurements is ensured by the planning. The records of the inspection results make the measurements retraceable and provable. The analysis of data is for the purpose of performance assessment and the derivation of improvement measures.

The measurements to be performed have to be subdivided into the following categories:

- Measurement performed on the product for the purpose of determining conformity.
- Measurements performed on the production process or on the service provision process.
- Measurements performed on the management system, including customer satisfaction.

The effectiveness of the established measurements is assessed in connection with the analysis of the data. If appropriate, statistical data are used for determination of the process performance and for analysis of the data.

8.2 Monitoring and measuring

Determination of the need and type of inspection activities is performed during product planning, product development and on the basis of the processes to be used in the project. The need follows, for example, from:

- customer requirements
- economy considerations in product inspections
- risk assessments

8.2.1 Customer satisfaction analysis

The performance of the management system is determined also by measuring customer satisfaction. To do so, the data from customer surveys and customer discussions are analyzed and counter measures are initiated if necessary.

Data for the purpose of measuring customer satisfaction are included in the management assessment.

8.2.2 Internal audits

Compliance with, maintenance of and improvement of the management system are assessed by internal audits. These audits are arranged so that they

- include all requirements of the management system.
- take into account each area of the company and
- consider the processes and products.

The areas and processes to be audited, the auditors and deadlines for internal quality audits are defined in the audit plan that has to be prepared each year. Audits can be carried out unscheduled under given circumstances (e.g. in the event of customer complaints).

The audit results are recorded in an audit report and are made known to the divisional directors responsible. The results of the correction and prevention measures are reported to the executive management in the management assessment.

8.2.3 Monitoring and measuring of processes

The measuring and monitoring of processes relates to all corporate processes.

Variables are defined for the processes for the purpose of measuring the performance of the management system. The respective process managers are responsible for recording and assessing the data and for reporting the key data that is determined. The key data and improvement measures are reported regularly to the management and integrated into the management assessment. Any more extensive need for improvement is defined in the management assessment on the basis of the existing actual and planned data.

8.2.4 Monitoring and measuring of products

Product features are checked in defined phases of the realization process in order to verify their conformity with product requirements. To do so product inspections are planned and performed, which includes the specification of acceptance criteria (goods received inspection, process inspection, final inspection).

Product release or the provision of services must not take place until all activities have been performed in accordance with specifications, provided that these have not been expressly approved otherwise by the customer.

8.3 Control of non-conforming products

Non-conforming products are controlled so that they are not unintentionally further processed, used or dispatched. For this purpose any non-conforming products detected are:

- clearly marked,
- separated from the process, stored separately and
- documented by the drawing-up of error messages.

The marking forbids any further use of the disputed products or materials until a decision on further treatment has been taken by authorized persons. The measures can be as follows:

- Special release
- Rejection of non-conforming deliveries to the supplier
- Reworking
- Scrapping.

If required, the consent of the customer has to be obtained for special releases. Reworked products must be reverified.

If any non-conformities are ascertained on products after delivery or during use, measures to avoid the consequences of the non-conformities must be taken.

8.4 Data analysis

In order to assess whether the management system is suitable and effective, data are recorded and analyzed from the measuring and monitoring activities. Data on the following points in particular must be included:

- Customer satisfaction
- Features of processes and products
- Compliance with product requirements
- Supplier assessment

8.5 Improvements

Quality-related or organizational deviations or non-conformities, e.g. in

- production or inspection procedures
- products or product documentations
- management instructions or the management system

are recorded in quality reports and managed and evaluated by the management officer. Complaints from the customer that are attributable to a systematic non-conformity are treated in the same way.

Systematic problem solution procedures, e.g. FMEA, revision reports, quality circles or similar are used for determination of the causes and for the specification of corrective and preventive measures for deviations discovered internally and externally as well as for the non-fulfillment of requirements.

Non-conformity avoidance has priority over quality assuring inspections for the specification of corrective and preventive measures. The effectiveness and implementation of corrective measures is checked at regular intervals by the QMO and a continuous process of improvement is ensured.

8.5.1 Constant improvements

The planning of improvement processes relates to all corporate processes. The following are the starting points for constant improvement:

- Corporate policy
- Quality and environmental objectives
- Audit results
- Data analysis
- Corrective and preventive measures
- Management assessment

8.5.2 Corrective measures

Complaint management is performed in a standardized process for the lasting implementation of corrective measures. Corrective measures are defined and implemented on the basis of the quality data gained to eliminate the causal problem. The results of the measures are recorded and assessed with regard to their effectiveness.

Furthermore, it has to be checked whether the remedying measures can be transferred to similar products/services or processes and if necessary there has to be a reaction to this with corresponding measures.

8.5.3 Preventive measures

Preventive measures are defined in an analogous way to the corrective measures. In the process

- potential non-conformities and their causes are determined
- adequate preventive measures are taken
- performance of the preventive measures is monitored
- their results are recorded and
- the effectiveness of the measures assessed.

Information sources such as the following are the grounds for analysis of potential non-conformity causes and risks:

- Quality-related processes and work processes
- Special releases
- Results of internal audits and certification audits
- Quality records
- Customer complaints
- Failure mode and effects analysis (FMEA)

9. Appendix

9.1 Conclusion

This manual is historically based on the structure of DIN-EN-ISO 9001. The cross-references between DIN-EN-ISO 9001 and DIN-EN-ISO 14001 are already described in detail within these standards and therefore also valid for this manual.

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