

# Quality- Management Manual



## **ChenYang Technologies (HK) Co., Limited**

Rm F, 16/F, Shield Industrial Centre,  
84-92 Chai Wan Kok Street,  
Tsuen Wan West, New Territories  
Hong Kong

Tel.: +852 9062 4953

Fax: +852 3741 7321

<http://www.chenyang-tech.com>  
[info@chenyang.de](mailto:info@chenyang.de)

## Table of Contents

### Content

1	Foreword / Enactment.....	4
2	Data of the company .....	5
2.1	Company's Chronicle.....	5
3	Management System.....	6
4	Context .....	6
4.1	Organisation and its Context.....	6
4.2	Requirements and Expectations of Interested Parties.....	6
4.3	Range of Application .....	6
4.4	Processes of the QMS .....	6
5	Responsibility of the Leadership.....	7
5.1	Commitment of management.....	7
5.1.1	General information .....	7
5.1.2	Customer Orientation.....	7
5.2	Corporate Policy .....	8
5.2.1	Content and handling .....	8
5.3	Roles, Responsibilities, Authorizations .....	8
6	Responsibility of the Leadership.....	8
6.1	Actions to deal with risks and chances.....	8
6.2	Actions to deal with risks and chances.....	8
6.2.1	General information .....	8
6.2.2	Actions to reach Q-goals .....	9
6.3	Planning of Changes .....	9
7	Support .....	9
7.1	Ressources.....	9
7.1.1	Preface.....	9
7.1.2	Persons .....	9
7.1.3	Infrastructure .....	10
7.1.4	Work environment .....	10
7.1.5	Control of Monitoring and Measuring Devices .....	10
7.1.6	Knowledge of Organisation .....	11
7.2	Competence .....	11
7.3	Consciousness .....	11
7.4	Communication .....	11



---

7.5	Documented Information.....	12
7.5.1	General Information.....	12
7.5.2	Creation and actualization.....	12
7.5.3	Documented Information.....	12
8	Product Realization.....	12
8.1	Planning of Product Realization .....	12
8.2	Requirements on products and services .....	13
8.2.1	Communication with the Customer .....	13
8.2.2	Determination of the requirements of products and services.....	14
8.2.3	Evaluation of Requirements in Reference to Products and services .....	14
8.2.4	Changes in Requirements of Products and services.....	15
8.3	Development.....	15
8.3.1	General information .....	15
8.3.2	Development Plan .....	15
8.3.3	Development Input.....	15
8.3.4	Development Results.....	15
8.3.5	Development Verification .....	16
8.3.6	Control of Development Changes .....	16
8.4	Controls of externally provided processes, products and services .....	16
8.4.1	General information .....	16
8.4.2	Type and scope of controls.....	16
8.4.3	Purchasing Information .....	17
8.5	Production and Service Provision.....	17
8.5.1	Control of Production and Service Provision.....	17
8.5.2	Labeling and Traceability.....	18
8.5.3	Property of customer and external provider .....	18
8.5.4	Product Preservation.....	18
8.5.5	Product Preservation.....	18
8.5.6	Surveillance of changes .....	19
8.6	Approval of products and services .....	19
8.7	Control of Defective Product.....	19
9	Performance evaluation .....	19
9.1	Control, measurement, analysis and Evaluation.....	19
9.1.1	General information .....	19
9.1.2	Customer satisfaction.....	19
9.1.3	Analysis and evaluation .....	20



9.2 Internal Audit..... 20

    9.2.1 Monitoring and Measurement of Processes..... 20

9.3 Management review ..... 20

10 Performance evaluation ..... 21

    10.1 Continuous Improvement ..... 21

    10.2 Corrective and Preventive Measures ..... 21

**1 Foreword / Enactment**

The quality of our products and the performance of our company are of great importance. In order to meet the increasing demands of our customers, a permanent quality management system is indispensable.

We, the **ChenYang Technologies (HK) Co., Limited**, are prepared to face these challenges.

The present Quality Management Manual (QM M) describes the Quality Management System (QM) of the **ChenYang Technologies (HK) Co., Limited**, according to DIN EN ISO 9001:2015 and is binding for all employees. The expression "employee" refers to both female employees and male employees and merely serves to simplify the QMM.

According to the requirements of the manual, all employees have duty to obey the illustrated principles, Process descriptions and regulations to act and to implement the guidelines to the best of our knowledge and belief.

Hereby, the Executive Board is committed to the maintenance, development and improvement of the quality management system. The quality management representative is responsible for the further development and improvement of the management system and the monitoring of its application.

**The manual, the process descriptions and operating instructions are directed only in electronic form (no printing) and are only valid in this form!**

The present Management Manual is hereby enacted.

Finsing, 19.02.2025

\_\_\_\_\_  
Dr.-Ing. habil. Jigou Liu

## 2 Data of the company

### 2.1 Company's Chronicle

January 2002:	ChenYang Engineering Office of Sensors and Measurements was founded
April 2005:	ChenYang Engineering Office of Sensors Magnetics & Measurement was expended
June 2006:	Registration of ChenYang Technologies GmbH & Co. KG
September 2007:	Company removal from Erding to Finsing near Munich
September 2010:	Long term Cooperation with University of Shanghai for Science and Technology, Training Program of Postgraduate Students
May 2011:	Production of Magnetic Pole Detector and Hall Effect Gear Tooth Sensors
March 2013:	Cooperation with the company "ChenYang Technologies (HK) Co., Limited" in Hong Kong
October 2013:	Beginning with the Production of Hall Probe for magnetic field measurement
December 2013:	Cooperation with the company "SONNE Technologies (Shanghai) Co., Ltd." in Shanghai, China
February 2014:	Beginning with the Production of precise Open Loop Hall Effect Current Sensors
July 2014:	Cooperation with Institute for Electrical Drive Systems and Power Electronics, Munich University of Technology in areas of direct rotational speed measurement and current measurement, Training Program of Postgraduate Students and doctoral candidates
November 2014:	Registration of the European Union trade mark SONNECY for all ChenYang products
November 2014:	Registration of the Chinese trade mark SONNECY for all ChenYang products in China
January 2015:	Registration of the subsidiary company SONNECY GmbH for sales of all ChenYang sensor and measuring instrument products on global markets outside the European Union (EU).
August 11, 2015:	ISO 9001:2008 Certificate by TÜV SÜD for development, manufacture and distribution of products in the areas: Sensors, measurement technology and magnetics.
August 5, 2017:	Cooperation with the company "SONNECY Technologies Inc." in Canada for product sales in North and South America and support in the development of new products in sensor and measurement technology.



### 3 Management System

Chen Yang means "Rising Sun" in Chinese.

The development work of Chen Yang concentrate on electromagnetic measuring and sensor technology, Hall sensors, measurement of weak magnetic fields and current, speed and position measurement, precise measurement technology, applications of permanent magnetic materials etc.

Chen Yang stands for continual technology innovations to improve the quality of our products and to meet the high customer requirements, Chen Yang Technologies (HK) Co., Limited offers first-class services.

### 4 Context

#### 4.1 Organisation and its Context

Our goal is to fully fulfill the high requirements of our customers. To create the necessary conditions the company needs to know and understand his context. By analyzing our legal, technical, competitive, market related, cultural, social, and economical environment we derive the external and internal subjects of our organization and visualize them in a PEST-Model and a SWOT-analysis.

#### 4.2 Requirements and Expectations of Interested Parties

To ensure the company success in a long term, it is essential to know the Interested Parties and its requirements and expectations. Therefore the organization attaches great importance to the identification, control and examination of all relevant parties. The results can be found in "Umfeldanalyse\_vX". It's the foundation of our company processes.

#### 4.3 Range of Application

The management system meets the requirements of:

Quality Management	DIN EN ISO 9001:2008
--------------------	----------------------

The system applies to the entire company and the QMM applies to all fields of Chen Yang Technologies (HK) Co., Limited.

Not applicable processes are "Activities after delivery".

Furthermore we outsource parts of our processes to other companies. This is specified in "Ausgelagerte Prozesse des QM-Systems" in more details.

#### 4.4 Processes of the QMS

Our company operates, documents, implements and maintains according to the requirements of the underlying standards ISO 9001:2015 a management system and continually improves its effectiveness. All processes in the company are identified ("Prozesslankarte") and their inputs, outputs, chronology, interfaces, ressources, measurements, risks and chances evaluated. They are directed by the QMS.

## 5 **Responsibility of the Leadership**

### 5.1 **Commitment of management**

#### 5.1.1 **General information**

Our goal is to meet all the requirements of DIN EN ISO 9001 and to guarantee a steady improvement of our QM. Our ambition is to satisfy customer's requirements in a long term. To do this, it is necessary to bring transparency in work flows, task rules and responsibilities and to optimize them.

We want to be one of the main suppliers of Hall Effect Sensors (Hall IC, current, voltage, speed, position sensors), measuring instruments and magnetic products in Germany and in Europe.

We aim to exceed the expectations of our customers on quality, delivery and cost, with continuous improvement and customer interaction.

The top leadership shall demonstrate in this course his obligation regarding the development and implementation as well as the continuous improvement in the effectiveness of the management system. For the realization of our management system, including the risk management system, we are committed to

- ensure, to carry out and to determine the importance of customer requirements, the statutory and regulatory requirements, the management review and the availability of resources.
- Integrate the requirements of the QMS into our processes
- Support an awareness for the process-oriented approach
- Support people in their efforts for the QM-system
- Help executives to emphasize their leading roles in their responsibility areas.

We commit all employees actively to work on the objectives and demands mentioned above.

#### 5.1.2 **Customer Orientation**

We value our customers and want to understand their current and future needs, and strive to fulfill their expectations and to exceed them in the framework of the possibilities.

The procedures, which ensure that all customers' expectations and requirements are entirely determined and implemented, contain business processes.

- Sales / order processing
- Labor/ production
- Warehousing/ delivery

and clearly structured processes, in order to implement this requirement sustainably.

In addition, it is ensured that all the relevant legal requirements for product safety and conformity with the relevant standards are fulfilled, as well as some impacts on the environment are checked.

The strong focus on the customer is supported in various ways of communication:

- Customer surveys
- Market research
- Contact via phone and Internet
- If necessary personal contact

## 5.2 Corporate Policy

### 5.2.1 Content and handling

Our corporate policy was created by the company's management and includes obligations to meet the requirements. The enterprise policy is checked for its suitability, constantly evaluated for their appropriateness, and establishes a framework for the evaluation of our quality objectives.

### 5.2.2 Communication of the corporate policy

Our corporate policy is accessible by our website and is communicated to our Interested parties by that way.

## 5.3 Roles, Responsibilities, Authorizations

The responsibilities and their quality-related tasks are determined. We have following regulations of responsibility:

- The management is incumbent on all obligations and authorities.
- The authorizations of employees are determined and documented according to their training.
- The employees are obligated to pay attention to taken measures and to meet them. Furthermore they must ensure that all processes that are relevant to them deliver the intended results. Necessary changes are discussed with the management and implemented. The organizational structure of our company is shown in the organization chart.

Mainly the top management is responsible for the QMS. The representative of the top management supports the management in the fulfillment of his obligations. He has the power and the obligation to review all quality-related processes and to initiate appropriate remedial measures in case of deviations.

His areas of responsibility are given in the corresponding job description.

In the course of his duties, the representative of top leadership ensures that all employees are aware of the correct compliance with the relevant legal requirements and customer requirements.

The representative of top management is a professional supervisor in all aspects of the Quality Management System and has the right to be completely informed of all quality issues.

## 6 Responsibility of the Leadership

### 6.1 Actions to deal with risks and chances

The QM processes of our company should generate the desired outcomes, even if unexpected events influence the processes. Therefore the company's context, Interested Parties and their related risks and chances are taken into account during the planning of the QM-system. Afterwards actions to deal with the risks and chances are defined, integrated into the QM process and realized. The effectiveness of the actions is evaluated later.

The approach is described in the procedural instructions about risk management in more details.

### 6.2 Actions to deal with risks and chances

#### 6.2.1 General information

Based on the obligation of the leadership and the results of management review, the adequacy and effectiveness of the management system and other input information, realistic and measurable quality objectives are established and their performance is examined by the management at regular

intervals. A key factor here is the establishment of objectives that serve the continuous improvement of all processes of the company.

The management determines the required resources to achieve the quality goals and makes them available. All employees are obliged to supply the necessary information. The quality objectives are documented in the management review and in the management plans of the company and communicated accordingly.

### **6.2.2 Actions to reach Q-goals**

To reach the Q-goals measures are taken which define:

- What must be done
- Which resources are necessary,
- Who is responsible,
- When it is completed,
- How the results are evaluated.

The actions are documented in the management planning and are communicated accordingly.

## **6.3 Planning of Changes**

We plan the management system based on the needs of the market.

The management board is responsible for the quality planning of the company. This plan focuses on the determination of the processes that are necessary for the effective and efficient fulfillment of the quality objectives of the company and of the requirements in accordance with the strategy of the company.

If Changes in the QMS are necessary, they will be performed in a planned and systematic way, to ensure, that the QMS is fully functional during the change processes.

The following must be taken into account:

- The purpose of change and every possible consequence of it;
- The integrity of the QM-system;
- The availability of resources;
- The allocation or reallocation of responsibilities and authorities.

## **7 Support**

### **7.1 Resources**

#### **7.1.1 Preface**

The working environment of the company represents a combination of human and physical factors, which can affect the motivation, satisfaction and performance of all persons and potentially improve the performance of the company. Our company has recognized this requirement and provides the necessary resources to fulfill it. Thereby the skills and limitations of internal resources as well as external information are taken into account. In this way the maintenance of the quality management system, the employee satisfaction and a long-term customer satisfaction are achieved.

#### **7.1.2 Persons**

To carry out all work in the company, qualified personnel are employed. The leadership ensures that all employees are trained and educated in accordance with their assigned fields/ responsibilities. A sufficient qualification of personnel is determined by



- Verification of suitability when hiring
- Vocational adjustment
- Demand-oriented training
- Maintenance of knowledge and skills (recurrent training)
- Maintenance of experience (archive).

Relevant literature is always accessible to each employee. In agreement with the executive board all employees can use rooms, in order to share experiences, discuss issues, develop new ideas etc.

Qualification certificates of the employees (testimonials and participation protocols) are provided in all the external training and stored in collection folders. The training is internally recorded in the training list. Topic, date and participants must be mentioned in the certificates. The leadership or a person delegated by him is responsible for the storage of documents. He also makes an overview of the conducted training of every employee. The certificates are kept at least till the departure of an employee from the company.

The leadership improves the effectiveness and efficiency of the company, including the management system through the involvement and support of the staff in all processes of the company and the communication with the customer.

### **7.1.3 Infrastructure**

The infrastructure includes buildings, places of work, inventory and supporting services like logistics, etc. The executive board has established an infrastructure to ensure the development, manufacture and delivery of faultless products. Means to maintain and to improve the management system and to achieve customer satisfaction by meeting customer requirements are also scheduled.

### **7.1.4 Work environment**

The work environment promotes motivation, satisfaction and performance of all the staff. In particular, the human factors influence the quality of our service. In our company, the factors providing an appropriate working environment are confirmed. The work areas and the subordinate rooms have been designed and set up according to the respective requirements. The statutory conditions of health protection and safety at work are fully complied with.

The leadership considers the tasks of Occupational Safety & Health as legal obligation. He keeps close contact with the trade association. At the annual occupational safety instructions for all staff, as well as during meetings, employees have the opportunity to give their superiors advices aimed at improving their working methods and work environment. Advices are documented in a meeting report and in an action plan if necessary.

All staff are obligated to be careful with the equipment, materials etc. they deal with. Damages, defects, deficiencies etc. should be directly reported to the director.

Defects or deficiencies are detected in advance and can be eliminated through regular inspections of the company facilities. Confirmed defects etc. should be recorded by the leadership or by a delegated person.

Fire extinguisher, heating system etc. are tested within the stipulated time and maintained by an authorized specialist (external).

### **7.1.5 Control of Monitoring and Measuring Devices**

All measuring and test equipment used in the laboratory / in production for planned testing tasks are recorded in terms of data and calibrated at fixed intervals. (see Procedural Instructions Test Equipment).

## 7.1.6 Knowledge of Organisation

To execute the company's processes and to reach product conformity, necessary knowledge is determined, maintained and communicated to the relevant employees. In case of knowledge deficits measures are taken to remove the deficits. The knowledge management is specified in the process instructions "Knowledge Management".

## 7.2 Competence

When offering positions to new employees, their qualification is verified in accordance with the requirements of the job description. In addition, they are guided and trained by experienced professional personnel. At the same time the employees also learn:

- To know the instructions, processes and measures that can ensure the quality and are applicable for their professional field
- Importance of compliance with corporate policy and the requirements of the quality management system
- The impact of their activities on the product and service quality
- The benefits of improved personal performance
- Their role in the implementation of corporate policy and the quality objectives and
- Potential consequences of deviation from specified procedures.

The leadership within the company ensures that its employees are continuously informed and trained as needed, and that the achievement of training activities is reviewed.

To ensure the demand-orientated training, the training needs and the resulting training activities for the coming period are established through training plans and regular conversations.

Based on the requirements for the daily business and in view of future required employee skills the leadership organizes and coordinates the training with aid of training plans.

In reference to qualifications, training and cultivation of employees, Excel-based records are taken and an assessment of the effectiveness of the training is conducted. Furthermore qualification confirmations and certificates are made and preserved.

By the use of external resources the required competence is ensured by checking confirmations.

## 7.3 Consciousness

Our organization attach importance to teach his employees a consciousness for the quality policy, the relevant quality goals, their contribution to the effectiveness of the QM-system, the advantages of an improved quality performance as well as the consequences of not fulfilling the requirements of the QM-system. Therefore

- A presentation of the quality management system occurs during job training,
- A timely communication of all relevant changes in the QM-system,
- A timely communication of our quality goals and the evaluation of goals from previous years ,
- And an Emphasis of the importance of QM-systems by supervisors occur.

## 7.4 Communication

The communication usually occurs directly via meetings, short discussions or emails. The communication in our company is specified in "AA\_Kommunikation\_v" in more details.

## 7.5 Documented Information

### 7.5.1 General Information

Our documentation for management system (QMS) includes documented company policy and quality objectives, a management manual, and all necessary documents for planning, implementation and control of our processes.

We hold the required procedures and records of the standards DIN EN ISO 9001: 2015. According to note the standard we minimize the extent of our documentation by the ability of our staff.

All relevant procedures are shown in the QM documentation (online system). We distinguish at the same time responsibility for the implementation of a process, the decision function and information obligations. All employees can obtain information about the description of their processes via the online system on the computer or via printouts.

### 7.5.2 Creation and actualization

While creating and actualizing our documents and records we make sure, that they are properly marked and described as well as preserved in the right format and medium. A more detailed description of the creation and actualization of documents you can find in the work instructions "Dokumentenverwaltung".

### 7.5.3 Documented Information

In which form the mentioned documents and records are controlled in the organization, is regulated by a special procedural instruction in detail. Therefore, it is guaranteed that approval, change service, readability, unintended use and availability on site with all relevant documents and software are given.

We maintain the necessary records for proving, even with regard to the effective functioning of our management system, and control the documents by the following procedure:

1. Create the record
2. Check the right content
3. Archiving (if necessary, temporarily)
4. Evaluation of recording
5. Filing for the scheduled duration
6. Destruction of documents

Further details are regulated by a special procedure (see also "document control" in the QM system).

## 8 Product Realization

Objective of product realization is to manufacture our products according to the needs of the customers.

### 8.1 Planning of Product Realization

We determine, plan and carry out the processes necessary for the production of our products, their sequence and interaction.

At the same time we take the results of quality planning into account. With appropriate work instructions and process descriptions, we ensure that our processes run under controlled conditions and produce results that meet the customer's demands.

We determine the processes according to their ability to meet the requirements of all interested parties (internal and external) in our products and service. We assure this with process descriptions which are displayed on the intranet.

We have identified different processes in our company and assigned them to the following categories:

Process Type	Processes	Validated through
Management processes	<ul style="list-style-type: none"> <li>Quality goals</li> <li>Evaluation</li> <li>Corporate Policy</li> <li>Training</li> </ul>	<ul style="list-style-type: none"> <li>Through the QM-Review</li> <li>Through the QM-Review</li> <li>Through the QM-Review</li> <li>Training evaluation</li> </ul>
System processes	<ul style="list-style-type: none"> <li>Employee satisfaction</li> <li>Customer satisfaction</li> <li>Document control</li> <li>Quality records</li> <li>Making improvements/ KVP</li> <li>Audits (internal and external)</li> </ul>	<ul style="list-style-type: none"> <li>Employee conversations</li> <li>Satisfaction survey</li> <li>Internal audit</li> <li>Internal audit</li> <li>Through the QM-Review</li> <li>Through the QM-Review</li> </ul>
Core processes	<ul style="list-style-type: none"> <li>Sales / order processing</li> <li>Production / delivery</li> <li>Purchase / warehousing</li> <li>Quality Assurance</li> <li>Research &amp; Development</li> </ul>	<ul style="list-style-type: none"> <li>Internal audit</li> <li>Internal audit</li> <li>Internal audit</li> <li>Internal audit</li> </ul>
Supporting processes for all mentioned procedures	<ul style="list-style-type: none"> <li>Test equipment monitoring</li> <li>Complaints / defective products</li> <li>Supplier evaluation</li> </ul>	<ul style="list-style-type: none"> <li>Internal audit</li> <li>Through the QM-Review</li> <li>Through the QM-Review</li> <li>Internal audit</li> </ul>

## 8.2 Requirements on products and services

### 8.2.1 Communication with the Customer

The communication with customers is mainly via telephone, Internet, fax and e-mail. Our clients can find information of our products in our website and partly in technical specifications, data sheets etc.

#### Products & Services

#### **Requests**

Requests by telephone or written requests regarding products, product specification, price, quantity, date of delivery and customer data are checked and recorded in written form. Each correspondence serves as proof.

To complete the record of our requirements, the documentation must include the following points:

- Availability,
- Delivery,
- Customer support in usage,
- Our products are suitable for the customer's expected application.

#### **Offers**

Based on the request and in coordination with the General Manager the sales create a written offer, which is stored in the offer file together with the request and the belonging correspondence.

#### **Order Processing**

All orders have to be checked whether they conform to the offer.

Deviations must be clarified with the customer and if necessary with the supplier. Every order gets a serial number that identifies the order during processing. The sales create an order confirmation and send one copy by fax, email or by post to the customer. The original one remains during the procedure. In case it refers to a call order, the goods and the accompanying documents are marked in accordance with the delivery contract.

## **Order Changes**

In case the customer desires changes, the feasibility should be checked. The customer is informed by the sales department with an updated order confirmation via fax / mail, the original version remains in the procedure. Internal company changes, such as delivery dates or quantities, require the immediate information of order processing and customers' approval. The approval given by the customer remains in the procedure.

### **Order Change by the Customer**

If a subsequent order change is made by the customer, it will be checked immediately to see whether the change is possible. The change will be recorded and stored in the process. Changes are processed individually by the sales in coordination with the executive board.

### **Change in the Delivery Date**

The purchase, the production or the warehouse reports any delay of date to the sales. They will notify the customers about this and explain how to proceed further.

### **Customer Complaints**

Customer complaints are handled by the sales / General Manager. They also check whether it's a possible feedback (see chapter 8.2.1 Feedback). The complaint is analyzed and handled according to defined procedures for dealing with customer complaints.

### **Documentation of Communication with the Customer**

Inquiries, offers and other correspondence are preserved by the order processing in the customer file. The customer file can be kept as sheet in EDP-System as well as in paper form. In case of a purchase order, the sales keep order confirmations, changes, correspondence and belonging offers in the customer file.

#### **8.2.2 Determination of the requirements of products and services**

The following requirements are determined in customer-related processes:

- Requirements specified by the customer
- Requirement concerning behavior and activities after the provision
- Requirements that are not directly specified by the customer, which however are necessary for specified or intended effects and behaviors
- Statutory and regulatory requirements related to the product

We consider customer satisfaction, the requirements of the owner, as well as those of other interested parties, the education and training of company's staff as well as the infrastructure.

#### **8.2.3 Evaluation of Requirements in Reference to Products and services**

We evaluate the requirements with regard to the product. Records about the results of the evaluation and its follow up measures are taken. If the customer provides no further requirements for the product, then the customer requirements are determined by our company, which are

confirmed before acceptance. If requirements change, we will ensure that the relevant documents are also changed and announced to the staff in charge.

Product requirements are defined in the following documents:

- EDP-Master data,
- Drawings,
- Websites,
- Offers and
- Supply contracts.

#### **8.2.4 Changes in Requirements of Products and services**

If requirements on our products and services change, we make sure that the relevant documents are also changed and that it's communicated to the responsible staff.

### **8.3 Development**

#### **8.3.1 General information**

We maintain a development department which is responsible for the development and creation of new products. Developments are processed as projects which are initiated by

- Ideas in the company
- Customer feedback
- Market research

At the beginning of the development process the product requirements are still not fixed and are still not determined by customers or other Interested parties.

#### **8.3.2 Development Plan**

We plan and control the development of our products. A detailed presentation of each process required for product manufacture is described in the VA development.

For new developments the major milestones, which define the phases of development and the responsibilities and authorities, are set here.

The milestones include the appropriate evaluation, verification and validation of the development phases. If other departments are also involved in the development process, the communication and the responsibilities are ensured by the development director and the system.

#### **8.3.3 Development Input**

The determination of the development input from requirements of Interested Parties, statutory and regulatory provisions, our own norms and rules as well as Know-how are carried out by the sales and the development departments.

The results of previous similar developments (derivatives), as well as other essential requirements (eg. country-specific laws and regulations) are also taken into account. The development regulations occur as expected by Interested Parties.

#### **8.3.4 Development Results**

The procedure of each phase of development is carried out based on the customer- and product-specific requirements in a given scheme (work plan).

There are regular meetings between the responsible employees. Due to the continuous status query of the project, or in other words, of the development, it is ensured that, potential problems are

detected early and the results in each phase with respect to the different requirements are evaluated.

### **8.3.5 Development Verification**

Milestones for checking the results serve as a specification. The verification includes the following activities:

- Examination of samples, prototypes and pre-series
- Examination of the technical documentation
- Design verification with similar, proven constructions
- Capability certifications

Milestones are means to check if the product is able to meet the requirements for a specified application.

The following documents can be considered as results of the validation:

- First part releases
- Test reports
- First acceptances
- Laboratory reports
- Permission license like VDE, UL, TÜV

### **8.3.6 Control of Development Changes**

Changes of technical documents, arising from changes in customer requirements, materials or modified manufacturing processes or resulted due to internal / external test results, are recorded, evaluated and processed accordingly.

The release of the developed product conducted by / with the customer can be considered as a successful conclusion of a development project.

## **8.4 Controls of externally provided processes, products and services**

### **8.4.1 General information**

The company only orders products and services from manufacturers and service providers, who have proven their qualification through satisfactory goods and services.

Before new suppliers are approved, they go through an extensive qualification process, which can consist of various alternative individual steps:

- certified QM-System of the suppliers
- Verification of compliance with the criteria for approval of new suppliers (see procedural instructions)
- Supplier assessment and evaluation on the basis of an audit
- Test programs for products / services

Our suppliers/external providers are continuously monitored and their performance is reevaluated regularly.

### **8.4.2 Type and scope of controls**

Incoming goods systematically go through a goods acceptance inspection. In this process the delivery (item and quantity) is checked on Identity in comparison with the delivery note. In addition, the goods are checked whether there is damage. If there are any deviations, it will be immediately reported to the purchasing department. This department makes a complaint to the supplier according to the agreed supplier-specific or legal regulations.

In case of excluded processes the results of external providers is always verified. Only if the results meet our requirements, which we told the external provider beforehand, we accept the results. If there are deviations, we demand from the external provider to correct it. Afterwards we repeat the verification process.

The Purchasing department and Quality Management evaluate the suppliers at regular intervals in terms of different criteria (see Supplier Evaluation Procedure).

### **8.4.3 Purchasing Information**

The orders of purchase include following points for the products to be procured:

- Technical specifications, including quality requirements
- Quantity, price, delivery date
- General purchasing conditions

By purchasing it is ensured, that the referred documents have been checked and released and are available to the supplier.

Changes in procurement documents are transmitted to the supplier.

In case of excluded processes following information is provided to external providers:

- Description of what needs to be provided
- Requirements on approvals and clearances
- Requirements on competences and qualifications
- Actions of cooperation between customers and suppliers
- Agreements to control the performance of external providers
- Actions of verification and validation which the customer wants to perform to the supplier

## **8.5 Production and Service Provision**

### **8.5.1 Control of Production and Service Provision**

The control of all production-relevant processes is carried out by the executive board in consultation with the sales / purchasing department.

When there are present customer orders or internal orders, the production process has the task to produce all existing products of our product portfolio in an optimal way, with regard to:

- Date
- Costs
- Quality

The production contains all logistical and technical processes, starting with:

- Inspection planning
- Processing
- Pre-assembly
- Final assembly
- Intermediate and final inspections
- Storage and preservation

Specified characteristics of products and processes are monitored. Errors will be detected, analyzed, and accordingly corrected.

Employees must be adequately trained in the use of all required devices and machines if he works in the production department. Guidelines about training need to be considered. The competences of the production staff must be recorded in the qualification matrix.

The steering of these defective products is regulated additionally with a process description in details.

We continuously validate all processes, whose results cannot be verified. Our products are monitored throughout the production process and subjected to continuous tests. All processes, whose results cannot be monitored by downstream product tests, are monitored separately. This can be carried out with the help of statistical process control of all those process parameters that demonstrate the ability of the process to achieve planned results. It can also be carried out with an internal audit. (see also: Process Overview in chapter 8.1)

### **8.5.2 Labeling and Traceability**

With consistent recordings of our processes by entering all relevant data in our EDP and keeping the records accordingly in our form, an absolute traceability of orders or any related activities are guaranteed. This is important for us to comply with the Product Liability Law and requires the consequence of all employees.

Products, that are already completely mounted and delivered to us, are labeled. That mean, that product name, technical data, etc. can be seen. Products that are produced "in house" are labeled after successful test runs. Properties are shown clearly. During goods receipt, the receipt date is additionally marked on some certain products (Gaussmeter). In the Excel tables "warehousing magnets" and "warehousing sensors" every goods receipt and goods delivery is marked on each product.

### **8.5.3 Property of customer and external provider**

The customer or external provider may bring his own products to our house for following reasons:

- For repair
- For warranty service
- For further processing / refining
- Test equipment
- Specification drawings.

The treatment and labeling of these products are determined in the process instruction "Umgang mit Eigentum".

### **8.5.4 Product Preservation**

We ensure that the conformity of our products is maintained during processing, production, repair and delivery. In case it's possible, the following provisions also apply for the service range.

Materials, products and raw materials must be protected from adverse influences, damage, temperature, dust and humidity. Once the products are damaged, the laboratory will be informed immediately. The laboratory then will take corrective measures in accordance with Chapter 8 "Measurement, Analysis and Improvement".

### **8.5.5 Product Preservation**

After the delivery of the product we support our customers with technical consultation. If there are errors in the delivered products, the customer can start the reclamation process which is described in the process instructions "Kundenreklamation" in further detail.

## 8.5.6 Surveillance of changes

If changes, which are of great importance for the production, are necessary to maintain the conformity to other requirements, the change necessity is evaluated, the changes are approved, change actions are taken and their effectiveness is evaluated. The changes are documented in the formula "ChangeProduction".

## 8.6 Approval of products and services

The monitoring of the quality requirements of the product is ensured through measurements and comparisons with the specifications in form of tests. The type of tests to be carried out is documented and taken place for example in the form of:

- Goods receipt inspections
- Intermediate inspections
- Final inspections

Results of the tests are documented as needed and optionally used for further analysis.

## 8.7 Control of Defective Product

Products, that do not meet our requirements, will be set apart and stored in the EDP warehouse with the label "defective", to prevent an unintentional further processing or delivery to customer. Details regarding

- Labeling
- Permission, release
- Fault remedy
- Documentation

are regulated in detail in a process description.

If a defective product received a special approval, the person responsible for the approval is documented.

# 9 Performance evaluation

## 9.1 Control, measurement, analysis and Evaluation

### 9.1.1 General information

The systematic measurement of customer satisfaction through the determination of meaningful indicators, the implementation of internal audits, the systematic procedure to disorders in the production process, the improvement of our company and with the execution of preventive and corrective measures is an important issue to us. The systematic measurement and analysis enables us to recognize and initiate improvements. The following provisions (Chapter 8.2.x to 8.5.x) are subject to the special care of the executive board.

### 9.1.2 Customer satisfaction

Feedback on supplier evaluation (from our customers) is given to the leadership and the Quality Management. Negative supplier evaluation will be analyzed and measures will be taken accordingly.

Customers' feedback regarding our products are recorded, processed and evaluated in a complaint collecting list.

Furthermore surveys are regularly sent to our customers to capture the customer's opinion to our organization.

### 9.1.3 Analysis and evaluation

We evaluate selected data systematically. These data enable us to lead the enterprise. Among the data to be evaluated continuously are:

- Results of audits
- Customer satisfaction
- Corrective & preventive measures
- Evaluations of customer complaints
- Evaluation of supplier assessment
- Employee discussions to investigate employee satisfaction
- Resources (equipment),
- Resources (utilization)
- Capacity and
- Other selected commercial, operational data.

Measures are recorded and monitored in the "action plan".

## 9.2 Internal Audit

We review our own regulations. Compliance and effectiveness of our management system 's elements is checked at random through internal audit. Audits are carried out in all areas at specified intervals.

### Responsibilities

The commissioner of the top leadership is responsible for arranging the audits. The commissioner of the top leadership and executive board audit each other. The aim of the audit is to find improvements in the process and to discover deviations of the management system according to the requirements of the standard DIN EN ISO 9001: 2008.

### Procedure

The audits are carried out in accordance with the procedural instructions "Internal audits", which is determined based on the quality management manual, the process instructions and the quality management documents listed in it.

### Audit results

The result of an audit is summarized in a report, in which the deviations and recommendations are retained. The monitoring of the implementation of all measures is handled by the corrective and action plan.

### 9.2.1 Monitoring and Measurement of Processes

As far as possible we constantly measure the results with indicators. The results are discussed directly with the involved fields and followed in accordance with measures (plans).

## 9.3 Management review

At least annually the management reviews according to all summarized results, whether the demands of the company policy and quality objectives of the management system are really fulfilled. To ensure the suitability, adequacy and effectiveness of our management system, we take the following input information into consideration:

- Results and follow-up measures from previous reviews
- Changes in external and internal subjects, which are related to the quality management system
- Information about the performance and effectiveness of the quality management system
- Developments in customer satisfaction and feedback of relevant interested parties
- Scope in which quality goals were reached
- Process performance and the conformity of our products and services
- nonconformity and corrective measures
- results of controls and measurements
- Results of audits
- Performance of external providers
- Adequacy/demand of resources
- The effectiveness of the performed actions to deal with risks and chances
- Recommendations for improvement
- Changes with impacts on the management system
- Decisions and actions for the next year

From these single points the management review, which is available on the intranet and which the staff can use to inform themselves, is created.

## **10 Performance evaluation**

### **10.1 Continuous Improvement**

Our company is committed to making constant improvement.

We receive information and improving suggestions from:

- Customer feedback
- Internal forces (meetings, employee discussions)
- Professional field leader, (observation, learning achievement control)
- Market developments
- Data analysis
- And many more

We discuss these in regular meetings and derive follow-up measures, which are included in the constant action plan, from them.

We continually improve the effectiveness of our management system by using corporate policy, quality objectives, audit results, data analysis, corrective and preventive measures and through internal communication. The leadership strives for improvements in effectiveness and efficiency of processes instead of waiting until such improvement opportunities are discovered because of disorders (corrective measures).

### **10.2 Corrective and Preventive Measures**

The results of the data analysis serve as the basis for decisions regarding corrective and preventive measures.

Each corrective and preventive measure as well as the continuous improvement process are illustrated in separate process descriptions. The application of the relationships shown there ensures that the quality control cycle Plan -> Do -> Check -> Act is guaranteed within the organization.

