

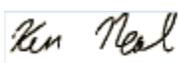
# QUALITY MANUAL



**4675 South Windermere Street  
Englewood, Colorado 80110  
(303) 761-2121**



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Approvals	Name	Signature	Date
General Manager	Mac Criswell		17-Jun-15
Quality Manager	Ken Neal		17-Jun-15

Revision Record Cover Sheet		
Revision	Date	Change Description
1	13-Apr-01	Initial Draft for Review
2	9-May-01	Added Columbine References, minor clerical changes
3	18-May-01	Added Columbine Logos, minor modifications for clarity
A	24-May-01	Released
B	28-Jun-01	Added Organizational Chart, Appendix A.
C	02-Oct-01	Modified Section 2, scope of registration. Added Appendix B, QMS flowchart. Changed 7.5.2 to affirming we validate processes.
D	31-Oct-01	Added Certificates of Registration
E	18-Nov-02	Added compliance with NQA-1:2000 paragraph, Section 2.
F	14-May-03	Added Quality Manager responsibilities for ATEX to 5.5.1. Added ATEX Authorized Person to Org. chart. Added EC compliance to 4.1. Added no EC product concessions to 8.3. Added EN 13980 to Section 2. Management Review includes ATEX, 5.6.2. Added 5.4.2 of EN 13980 to 5.4.2. Added EN 13980 to scope of internal audits, 8.2.2.
G	09-Jan-04	Modified 5.5.1, Quality Manager (b) thru (e) for clarity; 5.6.2 to state QM is AAP and reference to EC certificates; 8.2.4 added routine tests; 8.3 added paragraph on non-conforming ATEX product.
H	28-Apr-05	Added and changed position titles throughout. Removed Operations Manager from revision block. Added Board of Directors to 5.5.1 and redefined titles and responsibilities to match practice. Appendix A, revised management flowchart. Minor modifications for clarity.
I	01-Dec-06	Title page and Section 1. Removed Columbine from scope. Stated Vantage purchased Columbine.
J	15-Apr-08	Added definition of Regulatory Compliance Agencies.
K	15-Jul-09	Sections 2 and 3, ISO 9001:2000 changed to ISO 9001:2008
L	07-Dec-11	Sections 2 and 8.2.2 changed EN 13980:2002 to EN ISO/IEC 80079-34. See CAR 379.
M	04-Mar-13	Throughout – new organizational structure subsequent to acquisition by Hubbell. General Manager replaces President. Quality Manager assumes much of Management Representative responsibilities. Added Safety and Environmental Manager position. Also replaced “ATEX” with “Ex Certification.”
N	2-Jun-14	Updated to include the Design and Development Procedure. Replaced “Marketing Manager” with “Product Manager.” Updated organizational chart. Added Engineering Manager in section 5.5.1.
O	17-Jun-15	Updated Organizational Chart. In section 5.5.1 removed Production and Shop Floor Manager and added Operations Manager

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## 1 Introduction

### General Company Information

The quality management system, quality manual, procedures, etc. are developed and implemented by Vantage Technology to cover operations at its facility located in Englewood, Colorado.

September 1997 marked the birth of Vantage Technology, LLC. The company was established to manufacture electrical connectors for use in hazardous environments. Vantage markets these procedures nationally and internationally.

Vantage completed an asset purchase agreement with Sine Systems \* Pyle Connectors (formerly the Pyle-National Company) through which we acquired several hazardous location product lines. The company has state of the art explosionproof connectors that have been in existence for three decades. We plan on maintaining superiority and improving customer value. We provide a customer support program to include technical sales support, timely and reliable delivery, after sale support, and maintenance of third-party listings.

In 2005 Vantage purchased Columbine Technology. Columbine was founded in 1981 to create high performance electrical interconnect systems for applications that demand absolute reliability in industrial environments. Resource planning, proper tooling, and knowledge of industry procedures allow us to meet customer performance and delivery demands.

On November 2, 2012 Vantage was purchased by Hubbell Incorporated and added to the Hubbell Electrical Systems business segment. Hubbell Incorporated is an international manufacturer of quality electrical and electronic products for a broad range of non-residential and residential construction, industrial and utility applications. Vantage is a business unit of Killark Electric.

## 2 Quality Management System Scope and Application

The company's quality management system documentation is written, implemented and maintained to meet the requirements of ISO 9001:2008 with a scope of registration for:

*The manufacture and distribution of electrical connectors and interconnect systems for hazardous classified and non-hazardous, commercial, and non-commercial applications.*

The quality management system is independently assessed by a third-party Registrar to verify that these requirements are satisfied. A copy of the certificate of compliance provided by the Registrar as a result of this assessment is located in Section 9 of this manual.

The company is also compliant to EN ISO/IEC 80079-34, Potentially Explosive Atmospheres – Application of Quality Systems to support products on EC type-examination certificates. These elements are certified by a notified body.

The company is also compliant with NQA-1:2000, Quality Assurance Requirements for Nuclear Facility Applications, as applicable for the scope of services and products identified above. Where these requirements affect the management system, they are included in the level two procedures and work instructions.

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The company is responsible to various external entities generally defined as Regulatory Compliance Agencies. These include but are not limited to ATEX Notified Bodies, IECEx Certification Bodies and North American NRTL's (Nationally Recognized Testing Laboratories).

### **3 Outline of The Company's Quality Management System**

The company's quality management system documentation ensures the effective operation and control of our business processes. The extent of such documentation depends on the complexity of the processes and their interaction as well as the competence of the personnel who perform the given processes. Our quality management system documentation is designed to meet the requirements of ISO 9001:2008 and to be appropriate to our organization's size and type.

The Quality Manual (level one documentation) contains not only the Quality Policy, but also all policies relating to the requirements of ISO 9001:2008.

Operating procedures (level two documentation) describe how quality management system processes are conducted in compliance with the stated policies and as required by ISO 9001:2008.

Work Instructions (level three documentation) describe in detail how activities affecting quality are performed. The Assembly Work Instructions and drawings as well as any forms used in conjunction with the quality management system are included in third level documentation.

The approval, issue and control of this Quality Manual, the operating procedures, the Quality Policy and all quality system documentation is detailed in the Document and Data Control procedure.

*Associated Documents/Records:*

Quality Manual  
Operating procedures

## **4 Quality Management System Elements**

### **4.1 Purpose of Quality Management system and Quality System Documentation**

The quality management system's purpose is to continually improve the effectiveness and efficiency of the company's performance by considering the needs of interested parties, most notably the needs and expectations of our customers. We strive to continually improve the above processes as well as the quality management system as a whole. By defining quality objectives and using the quality management system to meet those objectives, this improvement is achieved. Through process monitoring, and measurement where appropriate, and the analysis of data collected during such monitoring, the degree to which the quality objectives are met is determined. We continuously analyze and set quality objectives to improve our products, using formal processes in our quest to achieve customer satisfaction, as well as methods and techniques that foster continuous improvement and good business practices.

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The purpose of this manual and the associated procedures is to describe the manner in which the company successfully operates with a reputation for quality and reliability. In this manual we identify the processes that are necessary for the quality management system. The sequence, interaction, and management of these processes are described in this manual together with its supporting procedures, as are the criteria and methods needed to ensure that the operation and control of these processes is effective. Each of these processes is controlled by a policy, which is implemented through a supporting operating procedure. Operating procedures describe not only how such operations are performed, but also how they are performed correctly. This procedural support—coupled with training and detailed instructions, where necessary, ensures that operators know that their processes are under a state of control and are producing satisfactory results. This support also ensures that operators know when and how to react when problems arise.

Further, the purpose of this quality system is to ensure compliance of applicable products with the type described in the EC-Type Examination certificate.

Control of subcontracted processing is ensured through application of the associated provisions in the Purchasing and Supplier Management procedure.

## **4.2 Document Control**

### **4.2.1 General**

The company has developed all necessary documentation (a quality manual, quality policy, quality objectives, and operating procedures) to ensure the effective planning, operation, and control of its processes. Records are maintained as required of the Record Retention Form.

This Quality Manual contains a description of the scope of the quality management system, including justification for exclusions in Section 2. This manual references procedures that describe the sequence and interaction between the processes of the quality management system.

### **4.2.2 Control of documents**

Our management system and all important information sources are controlled by a formal Document and Data Control procedure, which ensures that outdated or inaccurate information is not used and that appropriate information is available where it is needed. All documentation is reviewed and approved prior to use and changes to documentation are also reviewed, approved, and controlled. Such documents are maintained in such a manner as to ensure that they remain legible, readily identifiable, and retrievable. Any such documents that become obsolete are disposed of or marked to prevent unintended use.

The Quality Manager maintains a master file of all level one and level two documentation, as well as any forms. The most current version of any such document will be maintained in the master file, which will also indicate any further distribution of such documents. The Quality Manager also maintains the electronic originals of such documentation.

In order to maintain control of electronic quality system documents and data that are maintained on a network drive, regular back-ups are performed and anti-virus software is in use.

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The Quality Manager controls documents of external origin such as customer specifications, industry standards, and quality standards as well.

#### 4.2.3 Quality Records

The Company maintains quality records in order to provide evidence of conformance to requirements as well as to provide evidence of the effective operation of the quality management system. Any records defined as quality records are controlled according to the Document and Data Control procedure, with use of a Record Retention Form. Such records are detailed on the Record Retention Form, which indicates the individual responsible for the records, storage locations, indexing methods, and periods of retention. Retention periods are specified to ensure that the records are being maintained to meet specific business, client, regulatory, and quality system requirements.

Quality Records are maintained and filed in a manner that ensures that they are readily available and protected from loss, damage, and deterioration. Hard copy records are periodically reviewed and disposed of in accordance with internal and legal retention requirements. Records are only destroyed with the authorization of the Management Representative.

Where agreed contractually or by regulations, quality records relating to a specific supplier, customer, or product are made available for evaluation by the customer, customer representative, or regulatory agency.

#### *Associated Documents/Records:*

Quality Manual

Document and Data Control Procedure

Records Retention Form

## **5 Management responsibility**

### **5.1 Management commitment**

The company's top management has established a quality policy and a quality management system by which our company performs its operations to ensure customer satisfaction. The quality policy and effectiveness of the quality management system is evaluated at least annually during Management Review Meetings, where quality measurements are analyzed against their established objectives and suggestions for improvement of the system are considered. Further quality planning is also conducted during Management Review Meetings to ensure the continuing availability of the resources necessary to meet the expectations of our customers.

### **5.2 Customer focus**

The company's training requirements dictate that each employee understands the importance of fulfilling customer requirements for both internal and external customers. Customer needs and expectations are processed in such a manner to satisfy customer requirements, in an effort to gain and retain their confidence. To that end, customer requirements are identified, reviewed, and translated into work orders under controlled conditions to ensure that the requirements are fully understood and met.

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Management ensures that any legal requirements applying to our operations and to the quality of our products are identified and met. Where such requirements exist, management has built the requirements into our processes to ensure that they are met. New legal requirements will be considered during Management Review Meetings or more frequently as deemed appropriate by management.

### 5.3 Quality policy

Top management has established the following quality policy, ensuring that it provides a framework for establishing and reviewing quality objectives. The quality policy is controlled according to the Document and Data Control procedure. Top management ensures that the quality policy is communicated and understood by all employees and that the policy is implemented throughout the company.

*Our employees are committed to providing our customers with the safest and most reliable products possible at a level of service which ensures that the correct product is selected for the customer's application, is installed correctly, and is maintained for a long, safe life. We are committed to building lasting relationships with our customers.*

*Our company wide goal is customer satisfaction, continuous improvement, process management, and employee involvement to ensure success for our customers and the company.*

### 5.4 Planning

#### 5.4.1 Quality objectives

Quality objectives have been established that are derived from the Quality Policy. Quality objectives have been established to continually improve the quality management system as a whole as well as each management process, extending to processes involved with meeting product requirements. Quality objectives are measurable, so that they can be analyzed during Management Review to determine the degree to which they are met.

#### 5.4.2 Quality management system planning

In general, our quality plans are consistent with our normal methods of operation covered by existing procedures. These plans ensure that quality objectives set forth in our quality policy and those identified during Management Review Meetings are met. Where customer-specified requirements identify activities that are outside of our standard methods and practices, a separate quality plan will be prepared and issued.

Our quality system shall ensure that Ex Certification controlled product conforms to the type described in the EC-Type Examination certificate. All the elements, requirements and provisions adopted by the company shall be documented in a systematic and orderly manner in the form of written policies, procedures and instructions. The quality system documentation shall permit a consistent interpretation of quality programs, plans, manuals and records.

As part of the regular maintenance of our quality system, proposed modifications to processes and procedures are reviewed during Management Review Meetings to ensure that the requirements of the quality system have been addressed prior to the implementation of any modifications. This review ensures that no new process is implemented without first considering the actions that must be taken to

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ensure that the company remains in compliance with the system as it is documented. Items evaluated and planned actions are documented in the Management Review Meeting minutes.

## **5.5 Responsibility, authority and communication**

### **5.5.1 Responsibility and authority**

The lines of responsibility and reporting for all personnel are documented on the company organization chart, which appears in Appendix A of this document. In order to ensure that personnel understand their authorities and responsibilities associated with the quality system, authorities and responsibilities are further documented in specific procedures.

General authorities and responsibilities are described below:

#### General

All authorities and responsibilities reside with top management and are delegated to functions and/or individual members of staff within their control as appropriate. All personnel who manage, perform and/or verify work are responsible for the quality of products produced by the company. All such personnel are authorized to identify and record problems relating to products, processes, and the quality system as a whole. All staff and personnel have the responsibility to comply with documented procedures and the direction of management. All personnel have the responsibility to assure that processes in which they are working are in a state of control and that the tasks are completed in a responsible manner. All personnel are also responsible for identifying nonconforming product, marking such product as being nonconforming, notifying management, and controlling further processing until the problem has been corrected. To prevent nonconformities, they may also initiate, recommend, or provide solutions through designated channels, such as the Corrective and Preventive Action system.

#### General Manager

The senior operational manager, the General Manager is responsible for realization of company goals, objectives and directives defined by Hubbell Incorporated. The General Manager is also responsible for company compliance with industry, state, local, and federal regulatory requirements; and ensuring that the company has allocated the necessary resources to be in compliance with the quality system. The General Manager allocates resources to assure that employees are trained and that the system is followed as designed and chairs Management Review Meetings. The General Manager may assign chairing of the meeting to the Management Representative. As practical, the General Manager will delegate oversight and dictate support of Vantage operations to Killark Electric Directors.

#### Product Manager

The Product Manager is responsible for prioritizing market targets that may be served by active product lines and implementing strategies to exploit those markets. The Product Manager identifies new marketing support initiatives.

#### Sales Manager

The Sales Manager is responsible for the management of the sales staff and contracted agents. The Sales Manager is responsible for customer related processes and ensuring customer satisfaction.

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### Sales Staff

The Sales Staff is responsible for direct customer sales and service activities. Sales will receive and enter customer orders, accept initial handling of customer feedback, and endeavor to assure customer satisfaction.

### Quality Manager

The Quality Manager is responsible for investigations and responses to customer complaints. In this capacity the Quality Manager oversees or performs the daily functions of these areas, reviews and approves documents that affect these functions, and ensures that employees fulfilling these functions are adequately trained. The Quality Manager is the Ex Certification authorized person and is responsible for:

- a) the effective co-ordination of activities with respect to products intended for use in potentially explosive atmospheres;
- b) liaising with the notified body (CSA International, KEMA) with respect to any proposed change to the design defined in the EC type-examination certificate and the technical documentation;
- c) liaising with the assessing notified body (CSA International, KEMA) with respect to intended substantial updates of the quality system;
- d) the authorization of initial approval and changes to related drawings, where appropriate;
- e) the authorization of concessions; however, it is policy not to allow concessions for product where the concession takes the product outside design as defined in the EC type-examination certificate and technical documentation;
- f) informing customers of any applicable special conditions for safe use and any schedules of limitations.
- g) the prevention of nonconforming product being supplied.

### Operations Manager

The Operations Manager is responsible for all manufacturing operations; inventory control; coordination of production and sales (order entry) scheduling; stores, production and shipping/receiving facilities management. The Operations Manager also supervises day-to-day production activities and Production Technicians. The Operations Manager is a member of Production Management.

### Engineering Manager

The Engineering Manager is responsible for managing the Engineering Staff. The Engineering Manager is responsible for Engineering drawings and Design and Development.

### Safety and Environmental Manager

The Safety and Environmental Manager assures compliance to state, local, and federal regulatory requirements.

### Production Technicians

Production Technicians perform product assembly, inspection, packaging, shipping, staging, and inventory activities.

### Purchasing Manager

The Purchasing Manager is responsible for procurement/receiving planning and activities.

### Internal Auditors

Internal Auditors are responsible for performing independent audits of the quality system to verify that operations are in compliance with documented procedures, and specified quality standards. These individuals are trained and qualified to perform the audits to which they are assigned. They are responsible for preparing for the audits and documenting them in accordance with the Internal Auditing

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procedure. These individuals also identify and record problems related to products, processes, and the quality system and recommend solutions.

### 5.5.2 Management Representative

Irrespective of other duties, the Management Representative has the main responsibility and authority for establishing, implementing, and maintaining the quality system and ensuring that it continues to be compliant with the requirements of ISO 9001. The Management Representative is responsible for evaluating the effectiveness of the quality system and reporting on it to executive management and other attendees at scheduled Management Review Meetings, and for making suggestions to improve the system.

In addition, as part of the continued maintenance of the quality system, the Management Representative is responsible for the approval, coordination, and control of the Corrective and Preventive Action system and the Internal Audit system, including the verification of implemented Corrective and Preventive Actions to ensure that they are effective.

The Management Representative serves as the primary liaison to external parties on matters concerning the quality system. The Management Representative also ensures that employees are aware of the importance of meeting customer requirements and how those requirements relate to their work activities. In the absence of the Management Representative, the General Manager will assume these responsibilities.

### 5.5.3 Internal Communication

Although informal communication is an effective method of transmitting information relating to products and processes, formal mechanisms are in place to document and facilitate such communication. The effectiveness of internal communications and any further formalization of such communications are considered during Management Review Meetings.

The effectiveness of the quality management system processes are communicated to the various levels and functions through use of quality system documentation, training, Internal Audits and subsequent reporting, Document Control, Corrective and Preventive Action systems, and Management Review Meetings. Further communication regarding such production processes and their effectiveness is achieved via staff meetings, memos, etc.

## 5.6 Management Review

### 5.6.1 General

Management Review Meetings are held to assess and evaluate the quality system to ensure its continued effectiveness and suitability in satisfying the requirements of ISO 9001 and our stated quality policy and objectives. Reviews are carried out according to the Management Review procedure as frequently as necessary, but at least annually. Topics discussed during the meeting and resulting action plans are recorded in Management Review Agenda and Minutes, which are maintained as quality records in accordance with the Document and Data Control procedure.

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### 5.6.2 Review input

During Management Review Meetings, top management reviews current performance and improvement opportunities arising from the results of internal audits, customer feedback, process performance/trends, product conformance, the status of corrective and preventive actions, and follow-up actions from previous meetings. Other inputs to the meeting include customer satisfaction survey data. The Ex Certification authorized person, who is also the Quality Manager, will participate in management review of the overall effectiveness of the quality system with respect to product intended for use in potentially explosive atmospheres that are listed on EC-Type Examination certificates held by the company.

The quality policy and quality objectives are also reviewed for their continuing suitability. Data gathered through measurement and monitoring activities is analyzed to determine the effectiveness of the quality management system. Analysis is also applied to data relating to customer satisfaction, conformance to customer requirements, suppliers, and any other relevant sources. Also, communications methodology is reviewed. The Company plans to continually improve the quality management system. This improvement is facilitated not only by management review, but also by establishing and reviewing the quality policy and objectives, internal audit results, the analysis of data and corrective and preventive actions, as well as any other recommendations for improvement. All such processes are managed to achieve improvement.

Management Review also includes quality system planning to ensure that changes in our processes are evaluated and that quality system requirements are addressed prior to their implementation. In addition, the Management Review Meetings serve as a vehicle whereby we may evaluate potential problems and take actions to prevent their occurrences.

### 5.6.3 Review output

Outputs from Management Review Meetings include action items regarding the improvement of the quality management system, improvement of the product in relation to customer requirements, and the identification of any needed resources to ensure the continuing satisfaction of our customers.

#### *Associated documents/records:*

Quality Policy  
Management Review Meetings procedure  
Management Review Agenda and Minutes  
Document and Data Control procedure

## **6 Resource management**

### **6.1 Provision of resources**

Processes affecting the quality of our products and the success of the business have been identified and are described in this manual. Management ensures that resource requirements are identified and that adequate resources and trained personnel are provided. Any employees may also identify resource needs by which such resource needs are also fulfilled.

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Resources needed to implement and improve quality management system processes, including enhancing customer satisfaction by meeting their requirements, are identified during Management Review Meetings as described above.

## **6.2 Human Resources**

### **6.2.1 General**

All personnel who affect the quality of our products are qualified to perform specific tasks on the basis of the appropriate education, training, skill, and experience as evidenced by Training Records. Training needs are determined and fulfilled according to the Training procedure. All personnel, from inquiry to delivery, receive appropriate training to ensure that they are aware of their duties, responsibilities, and level of authority, and to ensure that the working practices specified in quality system documentation are implemented and followed.

### **6.2.2 Competence, awareness and training**

All employees undergo ISO Awareness Training, where the company's commitment to and policy for quality is communicated, as is the importance of meeting customer requirements, the importance of their respective positions, and how they contribute to the achievement of the quality objectives. ISO Awareness Training is provided to new employees during orientation. Subsequent training needs are identified by management and are recorded on each employee's Training Record. The provision of such training is also recorded on the employee's Training Record after the provided training has been evaluated and determined to be effective.

Top management ensures that staffing and skill levels within the organization are appropriate to ensure the optimal efficiency and effectiveness of our operations. As part of quality planning, attendees of Management Review Meetings identify company-wide training needs in light of any new business developments or new technologies to be incorporated.

## **6.3 Infrastructure**

Management ensures that our facilities are maintained appropriately to achieve conformity of the product, including workspaces, equipment, software, and any supporting services related to facilities maintenance. Such considerations are discussed during Management Review Meetings.

## **6.4 Work environment**

Management ensures that the appropriate human and physical factors of the work environment are considered and provided. Consideration of such factors includes health and safety conditions, work methods, handling methods, and ambient working conditions. Such considerations are also entertained during Management Review Meetings.

### *Associated documents:*

Quality Policy  
Management Review Meetings procedure  
Management Review Agenda and Minutes  
Training procedure  
Training Records

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## **7 Product realization**

### **7.1 Planning of product realization**

In general, the company's realization process planning is consistent with our normal methods of operation covered by existing procedures. In planning the processes for realization of products falling outside our normal methods, the following is considered:

- Quality objectives for products, projects or contracts, as applicable,
- The need for process documentation, e.g., a separate quality plan, and any necessary resources specific to the product,
- The required verification, validation monitoring, inspection and test activities specific to the product and the criteria for acceptance, and
- Any records necessary to provide confidence of conformity of the processes and resulting product.

### **7.2 Customer –related processes**

#### **7.2.1 Determination of requirements related to the product**

Customer requirements are determined by Sales and/or Customer Service personnel during the inquiry, quotation, and order acceptance stages of customer contact. Personnel determine customer requirements as described below, including product requirements specified by the customer, including availability, delivery and post-delivery activities, product requirements that are not specified by the customer but are necessary for the intended use, and any obligations related to the product, including regulatory requirements.

#### **7.2.2 Review of requirements related to the product**

Prior to submission of a quotation or acceptance of an order, the Sales and Order Entry procedure requires that formal reviews take place to ensure that the customer's requirements for the product have been clearly defined and documented. Such reviews also ensure that the company has the ability to meet those requirements. If a received order or contract differs from the associated quotation, the differences are resolved before accepting and processing the order.

When customers submit change orders regarding the product or their order, the changes are received and reviewed against the original order. Any changes that require amendments to process or product documentation will result in revising the affected documents and notifying all affected personnel according to the appropriate procedures.

#### **7.2.3 Customer communication**

Any other communications by customers will be routed to Sales personnel who will respond appropriately according to the Sales and Order Processing procedure and/or the Corrective and Preventive Action procedure. Where appropriate, Sales personnel may authorize other personnel to serve as liaison to the customer for technical questions or other specific reasons. Sales personnel will also solicit customer feedback through appropriate means.

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## 7.3 Design and development

### 7.3.1 Design and development planning

The company's design and development planning processes are controlled according to the Design and Development Procedure. The Design Project Plan Checklist will control and record the design and development stages, the review, verification and validation that are appropriate to each design and development stage and the responsibilities and authorities for design and development. The Project Team Leader will manage personnel and resources critical to the design and development project to assure effective communication and performance of assignments. The Project Team Leader will engage top management as necessary.

### 7.3.2 Design and development inputs

The development inputs will be recorded on the Design Project Plan Checklist. These inputs will include consideration of established functional, performance and safety requirements and the company's obligations to all statutory and regulatory bodies. The team will include applicable criteria and characteristics from existing designs in their assessment. A feasibility study will be conducted by the Engineering Manager if deemed necessary. At this point a review will be completed and, if acceptable, the Engineering Manager, Production Manager and Project Team leader will sign off on the inputs and feasibility study.

### 7.3.3 Design and development outputs

The team will determine design outputs that meet the input requirements. The outputs will be established in a manner that will facilitate Purchasing and Production activities and the eventual step of design verification. Design verification requires acceptance criteria. The criteria will include all design features that are essential to safety. The development outputs will be recorded on the Design Project Plan Checklist. Once the outputs have been documented and accepted the Production Manager, Purchasing Manager, Engineering Manager and Project Team Leader will sign off on the outputs.

### 7.3.4 Design and development review

Design reviews will be conducted after inputs have been identified, after outputs have been determined, after design verification has been completed and after validation. The reviews will determine if the design project is progressing as planned and that the design requirements are being met. Any problems identified during the review will be recorded and addressed. The Project Team Leader may decide to engage support from top management. Signatures on the Design Project Plan Checklist will provide evidence that these reviews have been conducted.

### 7.3.5 Design and development verification

Design verification will be completed to ensure the outputs match the input requirements. The verification will be recorded on the Design Project Plan Checklist and will be signed off by the Project Team Leader.

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### 7.3.6 Design and development validation

Design validation will be completed to ensure that the resulting product is capable of meeting the requirements. If practical, this will occur prior to product delivery. The validation results will be recorded on the Design Project Plan Checklist and will be signed off by the Project Team Leader and Engineering Manager.

### 7.3.7 Control of design and development changes

All design and development changes shall go through review, verification and validation, as appropriate. In the event product has been delivered, the effect of the changes on existing product will be evaluated and if necessary corrective action taken. The design and development changes will be recorded on the Design Project Plan Checklist.

## 7.4 Purchasing

### 7.4.1 Purchasing process

The company's purchasing processes, including supplier evaluation and selection, are controlled according to the Purchasing and Supplier Management procedure, which ensures that purchased product conforms to the applicable requirements. The type and extent of control exerted over such suppliers and their product, or service, depends on the products' impact on the realization process and/or the quality of the final product. Criteria for selection, evaluation and re-evaluation of suppliers are described in the Purchasing and Supplier Management procedure.

### 7.4.2 Purchasing information

Every employee is authorized to identify resource or purchasing requirements. As appropriate, a Purchase Order is initiated to procure the needed items. The Purchase Order details all necessary information and pertinent specifications including, where applicable, the requirements for qualification of the product, or any quality management system requirements. All purchasing documents are reviewed by Purchasing personnel for accuracy and completeness prior to release.

### 7.4.3 Verification of purchased product

Purchased products are verified upon receipt according to the Receiving and Receiving Inspection procedure. When requested, all purchased products are to be supplied with appropriate product certification. If our customers should decide to verify products at our suppliers' premises prior to delivery, the arrangements, verification and release of such products will be determined by Purchasing personnel, and will be recorded on or referenced by the Purchase Order.

## 7.5 Production and service provision

### 7.5.1 Control of production and service provision

Production operations are planned and controlled by production management, who are responsible for providing suitable production equipment and a suitable working environment. Production equipment is appropriately maintained, as are the records of such maintenance.

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The Shop Manager is responsible for providing appropriate information to Production Technicians that specifies product characteristics, processing requirements, and verification criteria, as appropriate. Production management also ensures that work instructions are available to Production Technicians as necessary to ensure product conformity. Production operations are conducted in accordance with the Shop Floor Production procedure.

Production management determines the appropriate monitoring and measuring activities relating to the product and to the process. Product monitoring ensures that the requirements for the product are met at each stage of manufacture, while process monitoring confirms the continuing ability of each process to satisfy its intended purpose. Production Technicians monitor and measure their working processes accordingly to ensure that their processes remain under control and continue to produce conforming product. Any data required for process or product measuring and monitoring is collected and recorded accordingly.

The Assembly Work Instruction and any accompanying drawings include or reference the acceptance criteria, including any required measurements, for each realization stage. Production management ensures that appropriate measuring and monitoring devices are available to Production Technicians as necessary to verify the product against those criteria. Production Technicians inspect product as required, ensuring that product conforms to the appropriate requirements before releasing it to subsequent processing stages. At the end of product realization, product release to the customer does not proceed until all activities referenced by the work instructions have been satisfactorily completed, unless otherwise approved by the customer.

When nonconforming product is encountered during production and inspection, the Shop Floor Production procedure prescribes the proper course of action for the person discovering the nonconformity. Nonconforming product is corrected when practical and is re-inspected against the criteria against which it originally failed. Nonconforming product is not sent to customers, unless the customer approves otherwise through a concession negotiated by Sales Manager or the Quality Manager.

Any post-delivery agreements will be honored in accordance with company policy. Alternative agreements may be negotiated, reviewed, and approved during contract review activities.

#### 7.5.2 Validation of processes for production and service provision

Production processes are qualified by a history of successful use. Should new or changed production processes become part of the quality management system, such processes will be qualified by top management prior to their implementation. Such planning will be conducted in accordance with the Management Review procedure.

We employ processes where the resulting output cannot be verified by subsequent measurement or monitoring. As additional processes are included in the realization processes, they will be validated prior to use to demonstrate the process's ability to meet the requirements. Such validation will involve qualifying the process, equipment and personnel, as well as defining the work methods, procedures, required records for the process and its re-validation.

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### 7.5.3 Identification and Traceability

Where applicable, all received materials are identified by packing documents, tags and/or stamps. Once received items are accepted in accordance with the Receiving procedure, they are moved to the appropriate storage location or recipient as appropriate, ensuring that product identification is maintained.

Identification of product throughout production is ensured through segregation, physical appearance, location in production, accompanying work instructions and labeling, markings, stamps, etc. The Production procedure further describes product identification techniques. A product's inspection status can also be determined by its physical appearance, its location in production, marks, or tags. Product is uniquely identified where traceability is a requirement. Such unique identification is affixed to the product and recorded on its accompanying paperwork.

### 7.5.4 Customer property

Some customers will supply us with materials to be incorporated into their products. Such items will be handled with care while under our control. Such customer-supplied materials are received in a manner similar to any other materials purchased by the company that are to be incorporated into products sold. Such materials are verified to ensure that they are in good condition upon receipt and are handled and stored to protect them from damage and deterioration.

Should customer-supplied materials be lost, damaged, or determined unfit for use, the Quality Manager will immediately notify the customer in writing. This notification, which may be a letter and/or a completed Corrective Action form, will then be maintained as a quality record in accordance with the Document and Data Control procedure.

### 7.5.5 Preservation of product

All materials and products under our control are stored and handled in such a way as to preserve conformity of the product, including any constituent parts. Such protection is also extended to product being delivered, which is packaged appropriately to preserve conformity during delivery. At all times employees handle items in such a manner as to ensure their own safety and the safety of others. All employees involved in the handling of products take care to handle and store them in such a manner as to prevent damage and deterioration and to maintain product identification. Appropriate handling and transport equipment is used at all times.

## 7.6 Control of measuring and monitoring devices

Measuring and monitoring devices that are used to demonstrate the conformance of a product to specified requirements are controlled according to the Calibration procedure. Each such device will have a corresponding Calibration Record that maintains the device's calibration data and history.

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All personnel who use measuring and monitoring devices are trained in their selection and use as well as their proper handling and storage, and personnel understand that they are not to adjust these instruments. Work instructions and associated drawings prescribe which measurements are to be made, as well as the associated tolerances. If measuring and monitoring devices are not specified by the work instructions, personnel responsible for determining conformity will select and use measuring and monitoring equipment with the appropriate capability for the measurement requirements.

Measuring and monitoring devices are subject to regular intervals of calibration with traceability to a national or international standard. Where no such standard exists, the basis for calibration will be recorded in the device's Calibration Record. Such calibration activities are recorded in Calibration Records. Software is not currently used for measuring and monitoring is validated prior to use.

When measuring and monitoring devices are found to be out of calibration, the Shop Manager and the Quality Manager are notified. They will re-assesses the previous results of measurements made by such devices and notify all parties concerned. The Quality Manager ensures that Corrective Action is initiated in such cases.

*Associated documents/records:*

- Sales and Order Processing procedure
- Purchasing and Supplier Management procedure
- Receiving and Receiving Inspection procedure
- Shop Floor Production procedure
- Design and Development procedure
- Equipment Calibration and Maintenance procedure
- Calibration Records
- Maintenance Records
- Design Project Plan Checklist Customer Requested
- Design Project Plan Checklist Internal

## **8 Measurement, analysis and improvement**

### **8.1 General**

Planning for monitoring, measurement, analysis and improvement activities occurs at two levels:

The product level—ensuring and demonstrating conformity of the product. Production Management is responsible for determining the appropriate production processes and measuring and monitoring activities used during production and inspection in daily operations and the records thereof. Such activities are reviewed during Management Review meetings, where customer satisfaction is analyzed to determine where improvements at the product level can be made.

And second, the system level—ensuring and demonstrating conformity of the quality management system to the requirements of ISO 9001 and to our own established procedures and policies as well as the achievement of objectives. Such planning at the system level includes scheduling Internal Audits and measuring customer satisfaction. It also addresses the continual improvement of the quality management system's effectiveness and opportunities for preventive action. Top management evaluates the effectiveness of measuring and monitoring activities during Management Review Meetings, where further application of such activities is also considered, including the use of statistical techniques. Any such

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activities identified are implemented according to the resulting action item plan, which is recorded in the Management Review Meetings Agenda and Minutes. This level of planning is focused upon the measurement of processes, determination of system conformity and upon achieving improvement to the quality management system.

## **8.2 Monitoring and measurement**

### **8.2.1 Customer satisfaction**

Customer satisfaction is considered during Management Review Meetings. Customer satisfaction data is collected and reported using customer feedback data and various satisfaction results. Such data is summarized into reports that are presented to top management for analysis. Top management ensures that data regarding product and process conformance, supplier performance, and customer satisfaction is collected, recorded and analyzed. Although measurements of such performance indicators may be collected as it becomes available, such data is analyzed annually during Management Review Meetings. Customer satisfaction data is a vital tool in driving improvement of the quality management system.

### **8.2.2 Internal Audits**

The company conducts periodic Internal Audits to determine whether or not the quality management system conforms to the requirements of ISO 9001, our internal procedures, and whether or not the system has been effectively implemented and maintained. The audit programme also addresses the effectiveness of the quality system as described in EN ISO/IEC 80079-34 to ensure that applicable products conform to EC-Type Examination certificates. Such audits are in accordance with the Internal Audit procedure. The procedure defines the requirements for internal auditors, for conducting audits, and for recording the results and reporting them to management.

The Quality Manager is responsible for scheduling and managing regular internal quality audits. Every area of the company that affects product quality will be scheduled for internal audits, according to the status and importance of the activities being audited taking into consideration the results from previous audits.

Audits are performed by trained Internal Auditors who are independent of the area being audited. Findings are recorded on Corrective Action Request forms, which are submitted to the Quality Manager. The Quality Manager ensures that management of the area takes timely corrective action. Once the action is completed, the Quality Manager or designated representative, verifies the effective implementation of Corrective and Preventive Actions during subsequent audits or special follow-up audits. Audit findings and results are reviewed at Management Review Meetings.

### **8.2.3 Monitoring and measurement of processes**

Where applicable, the company has implemented the necessary methods to ensure that our products and services meet the planned results. When the results of the events are not achieved corrective action shall be documented on the applicable Corrective Action Request and actions taken as deemed necessary. Internal audits and management review will be some of the methods used to monitor the processes.

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#### 8.2.4 Monitoring and measurement product

According to the associated production procedures, work instructions constitute the quality and inspection plan for each order. Such plans dictate where in the process inspections are to take place as well as the acceptance criteria associated with the inspections. Routine tests required for product on EC type-examination certificates are performed in accordance with the Shop Floor Production Procedure. Records of production and inspection activities required by such quality plans remain with documents throughout production and shipping, after which they are maintained according to the Record Retention Form. These indicate the Production Technician authorizing the release of product to subsequent operations or to Finished Goods Inventory. These documents also demonstrate conformity with the acceptance criteria. Product is not released to the customer until all planned arrangements have been satisfactorily completed unless otherwise approved by the customer.

### 8.3 Control of Nonconforming Product

All products found to be nonconforming to specified requirements are identified by marking the nonconformity and/or segregating the product while awaiting disposition.

Nonconformities discovered during receiving or receiving inspection are treated according to the nonconforming product procedure contained in the Receiving and Receiving Inspection procedure. Nonconformities discovered during production or inspections are treated according to the nonconforming product procedure contained in the Shop Floor Production procedure.

All employees are authorized to mark, tag and/or segregate nonconforming product to prevent unintended use while disposition is being determined, and to control further processing until the unsatisfactory condition has been corrected. Disposition will be determined and recorded as described in the associated procedure. Corrective and Preventive Actions will be initiated as deemed appropriate.

Non-conforming EC type-examination products supplied to a customer will be reported to the Ex Certification Authorized person who will take action appropriate to the degree of risk. These nonconformities are treated according to the nonconforming product procedure contained in the Shop Floor Production procedure. Concessions will not be allowed for product on EC-Type Examination certificates.

Nonconforming product is corrected, when practical, and is re-inspected against the criteria against which it originally failed. Products that do not conform to specified requirements may be offered to customers for concession. Such concessions are negotiated by Sales personnel or the GM, who ensure that the actual condition of the products are documented and communicated to the customer. If nonconforming product is detected only after delivery or use has started, the Sales personnel and/or the Management Representative will ensure that all affected parties are aware of the nonconformity, as appropriate.

### 8.4 Analysis of data

Data demonstrating the suitability and effectiveness of the quality management system as well as that used to evaluate where continual improvement of the quality management system can be made is presented and analyzed during Management Review meetings. Data presented during the meeting includes data resulting from monitoring and measuring product, process and customer satisfaction and other relevant sources.

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Information resulting from these analyses includes customer satisfaction levels, conformity of product to requirements, characteristics and trends of processes and products including opportunities for preventive action, and supplier performance.

## 8.5 Improvement

### 8.5.1 Continual improvement

We will continually improve the effectiveness of the quality management system through use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and management review.

### 8.5.2 Corrective Action

Corrective Actions are undertaken to eliminate the causes of nonconformities in order to prevent their recurrence. Actions taken are appropriate to the impact of the problems encountered. Corrective Actions may be initiated by anyone in the company according to the Corrective and Preventive Actions procedure. Such actions will be recorded and processed using a Corrective Action Request form. Any resulting changes to processes and procedures will be reflected in the appropriate documents.

Corrective Actions may arise from a variety of sources, including Management Review Meetings, Internal Audits, Customer Complaints, and any identification of nonconformity. The Management Representative will review all requests for Corrective Actions to determine the feasibility of the requested actions and to assign responsibilities for determining the problem's root cause and evaluating the appropriate actions to ensure that the nonconformity does not recur. Corrective action will be determined and implemented accordingly and the results will be recorded on the Corrective Action Request form.

Upon completion of a Corrective Action, the person responsible for the action will record its completion on the Corrective Action Request form, then will send the form to the Management Representative, who will review the Corrective and Preventive Actions and determine the appropriate verification required. Such verification is carried out and recorded on the Corrective Action Request form.

### 8.5.3 Preventive Action

Proposals for Preventive Actions may arise in the same manner as those for Corrective Actions, although Preventive Actions are undertaken to eliminate causes of *potential* nonconformities. Such proposals will be processed in a similar manner as Corrective Actions. Also, whenever corrective actions are implemented, consideration is always given to determine steps needed to initiate preventive action to prevent potential nonconformities in similar situations. Preventive actions may be initiated independently of a corrective action in order to prevent potential nonconformities. Preventive actions and their verification will be recorded on Corrective Action Request forms as described above.

Data regarding the status of Corrective and Preventive actions is reviewed during Management Review Meetings to make sure that the quality of our products is adequate and that improvements are implemented where needed. During the meeting, Preventive Actions may be determined and implemented to ensure that potential problems are prevented. Records of such actions to be taken are recorded in the Management Review Meeting Agenda and Minutes and/or in Corrective Action Request forms.

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*Associated documents/records:*

Management Review Agenda and Minutes  
Corrective and Preventive Action Procedure  
Customer Satisfaction Procedure  
Document and Data Control Procedure  
Equipment Calibration and Maintenance Procedure  
Internal Auditing Procedure  
Management Review Procedure  
Purchasing and Supplier Management Procedure  
Receiving and Receiving Inspection Procedure  
Returned Goods Procedure  
Sales and Order Processing Procedure  
Shop Floor Production Procedure  
Training Procedure

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## 9 Certificate of Registration




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# DNV BUSINESS ASSURANCE MANAGEMENT SYSTEM CERTIFICATE

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Certificate No. CERT-03456-2004-AQ-HOU-ANAB

*This is to certify that*

**Vantage Technology LLC**

*at*

4675 South Windermere Street, Englewood, CO, 80110 USA

*has been found to conform to the Management System Standard:*

**ISO 9001:2008**

*This Certificate is valid for the following product or service ranges:*

**The Manufacture And Distribution Of Electrical Connectors And Interconnect Systems For Hazardous Classified And Non-Hazardous, Commercial And Non-Commercial Applications.**

*Initial Certification date:*

**September 28, 2001**

*Place and date:*

**Houston, Texas, June 19, 2013**

*This Certificate is valid until:*

**August 04, 2016**

*for the Accredited Unit:*

**DET NORSKE VERITAS  
CERTIFICATION INC., HOUSTON TEXAS**

*The audit has been performed under the supervision of*

**Bob Faust  
Lead Auditor**

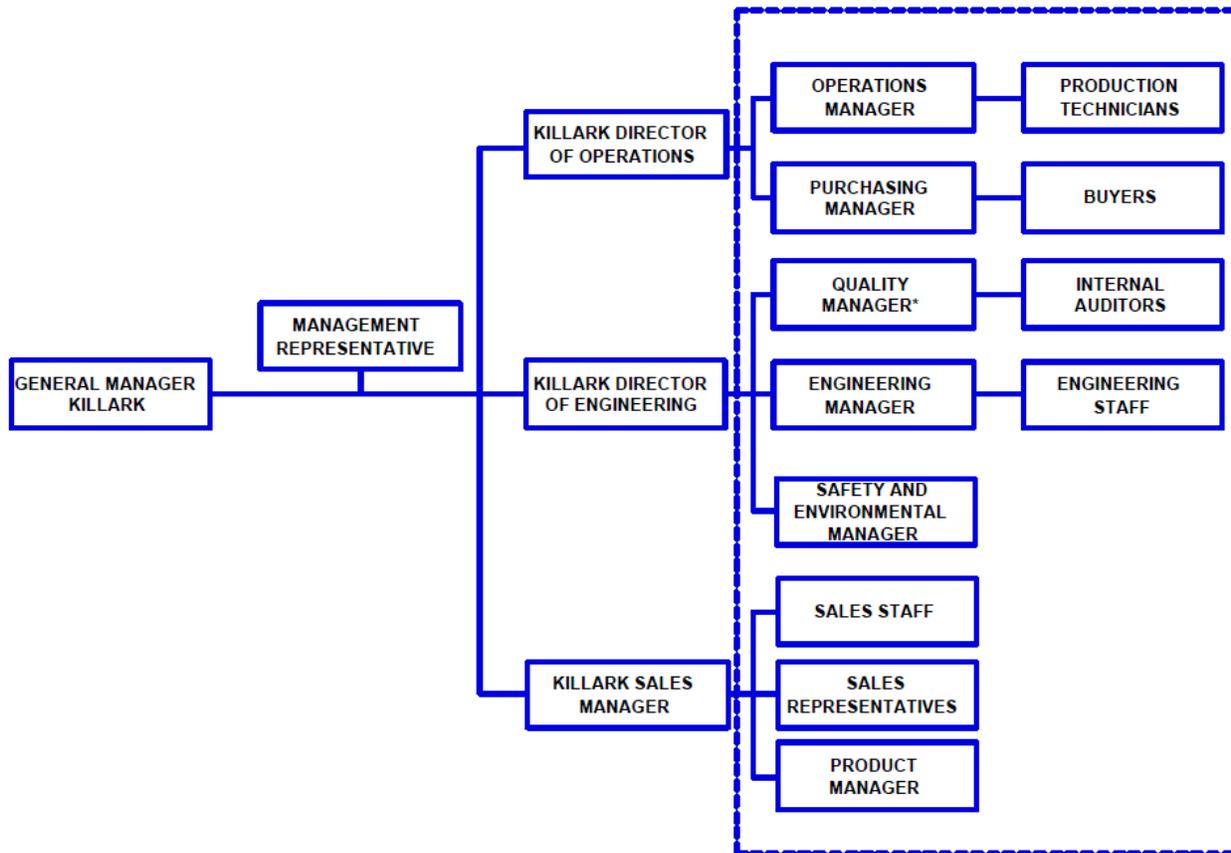



**John Stefan  
Management Representative**

Lack of fulfilment of conditions as set out in the Certification Agreement may render this Certificate invalid.

ACCREDITED UNIT: DET NORSKE VERITAS CERTIFICATION, INC. 1400 RAVELLO DRIVE, 77449, KATY, TX, USA, TEL: 281-396-1000, [WWW.DNVCERT.COM](http://WWW.DNVCERT.COM)

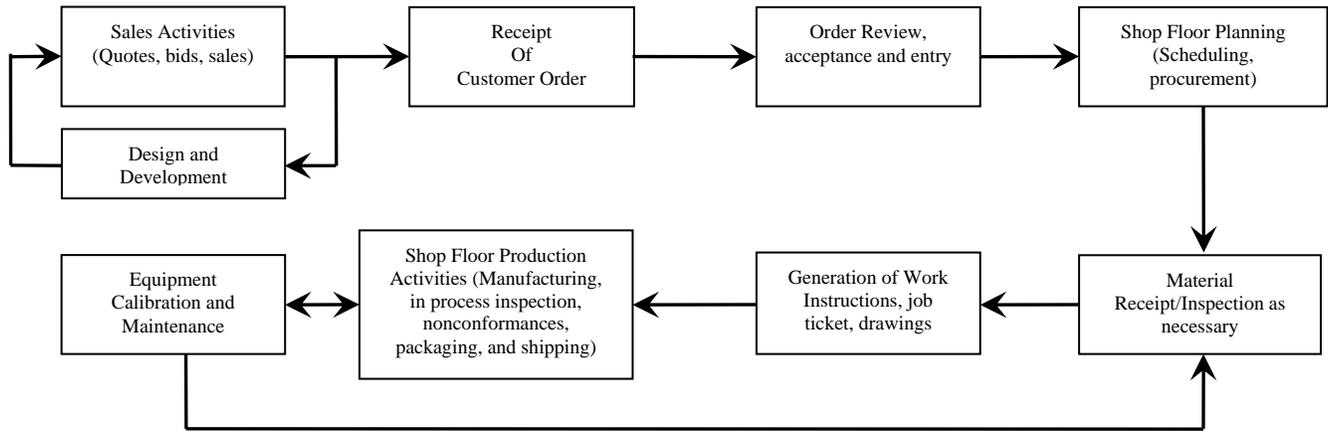
### Appendix A. Management Flow Chart



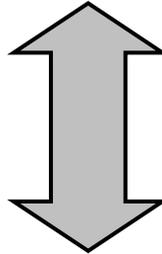
\* The Quality Manager is the Ex Certification Authorized Person.

Employees enclosed in the dashed box are onsite employees

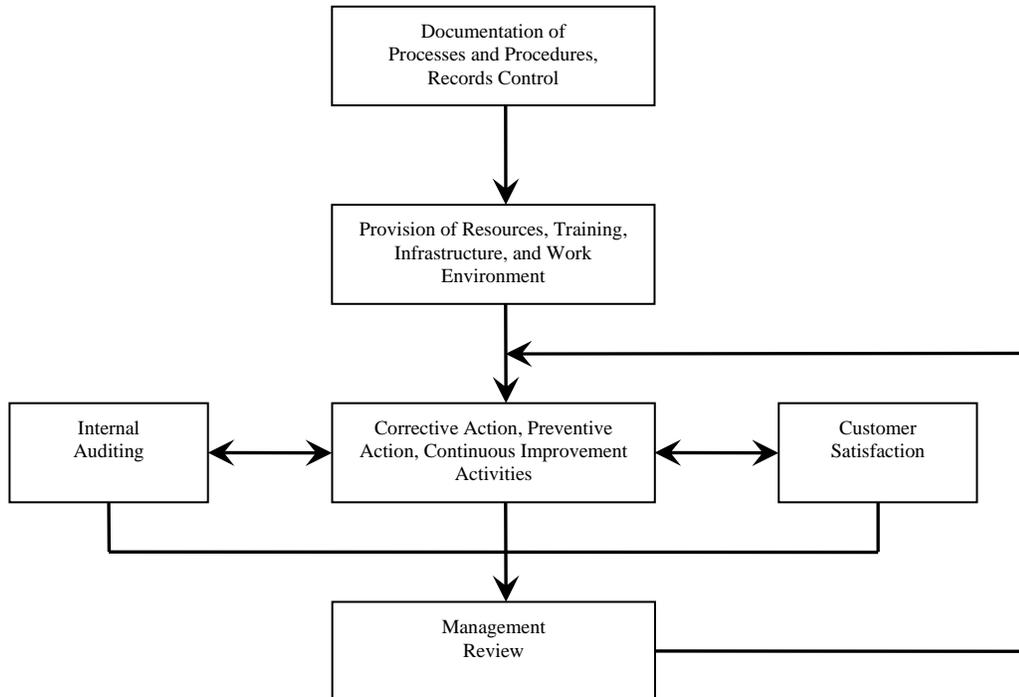
**Appendix B. Sequence and Interaction of Quality Management System (QMS) Process Flowchart**



***Product Realization Process***



***Quality System Process***



*Note: At any point in any process corrective action, preventive action, and/or continuous improvement activities may occur.*