

Quality Manual

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REVISION AND REVIEW RECORD

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1. Introduction

This quality manual provides an overview of Tennessee Tool & Engineering Inc. (TTE) quality management system and provides a roadmap to the business processes contained within the system. These processes have been developed and implemented by Management to assure the quality of our products to ensure the success of our organization for our Owners, Customers, Employees, and other Stakeholders.

2. Company Information

Originally founded in 1972 by Larry Palmer, the TTE Precision Machining Division has demonstrated controlled business growth since 1997 and now occupies an approx 30,000 square feet in two co-located facilities in Oak Ridge, TN.

3. Quality Management System Scope

The scope of the quality management systems applies to all services provided by the office located in Oak Ridge, TN. Our quality management system documentation is written, implemented, and maintained to meet the requirements of ISO 9001:2008 with a scope of registration for:

“The machining, fabrication, manufacturing and assembly of products made from castings, extrusions, forgings, bar and sheet.”

As part of our management system processes, TTE does not currently:

- Perform design services (all designs are supplied by our customers), or
- Have processes that cannot be verified by subsequent monitoring or measurement (every product is fully tested in accordance with plans prior to release).

Therefore, the requirements of the following clauses of the ISO standard have been excluded from the management system scope:

7.3, Design and development

7.5.2, Validation of Processes for Production and Service Provision.

4. Our Quality Management System

4.1 Development and Maintenance of the System

TTE's management is fully committed to developing, monitoring, and improving our management system in accordance with the requirements of ISO 9001:2008. As part of the development, implementation, and maintenance of the quality management system, we:

- Identify the processes needed for quality
- Evaluate the processes to determine their sequence and interaction
- Determine the criteria and the methods needed to ensure that both the operation and control of the processes are effective
- Ensure the availability of resources and information necessary to support the operation and monitoring of these processes
- Implement actions necessary to achieve planned arrangements as well as to continually improve the processes.

Our management system has been planned and documented to ensure satisfaction of Customers through the supply of quality products and services. We have the necessary quality policy and quality objectives, this quality manual, the procedures required by the standard and as determined internally to ensure the effective planning, operation, and control of our processes, and finally we maintain records to satisfy the requirements of the standard, our customers and our own business needs.

We do outsource activities and they are controlled through our [Procedure for Purchasing](#).

4.2 Documentation Requirements

We have a quality manual, documented quality policy and objectives, procedures and records required by the standards and ourselves to ensure the effective planning, operation, and control of our processes.

4.2.1 Control of Documents

Document control processes as defined in our [Document and Data Control Procedure](#) ensures that only approved documents are available to all affected personnel, that changes are controlled, that documents are available at points of use, external documents are controlled when used internally, all documents are legible and identifiable, changes and revision status are identified, and obsolete documents are removed from use areas. Documents are reviewed and updated through use and internal audits.

4.2.2 Control of Records

Records are maintained at all appropriate stages as evidence of conformance to the management system and to assist decisions for improvement in accordance with this procedure as well. Records are legible, identifiable, and retrievable. *Specific records requirements are described in individual procedures and work instructions.*

5. Management Responsibility, Commitment, and Customer Focus

5.1 Commitment

Management is committed to the system through the definition of a quality policy and objectives, by communicating the importance of the system and meeting customer, and any legal, requirements to all personnel within the company. Management also demonstrates this commitment through the provision of resources needed to assure the effective implementation and improvement of the management system as ensured through [Procedure for Management Review](#).

5.2 Customer Focus

Through the use of the [Procedure for Contract Review](#) management ensures that customer requirements are determined and fulfilled. We aim to enhance customer satisfaction through this process as well as through Management Review.

5.3 Quality Policy

In addition to our general policies as stated in this Quality Manual and our associated procedures, Management has developed a quality policy statement to provide leadership and direction. This policy is controlled as part of this manual though uncontrolled copies may have been distributed throughout our facilities in an effort to facilitate the communication of these statements to all personnel. Management ensures that the policy statements are communicated to all personnel through formal and informal training. Internal audits assist management in determining that the quality policy and quality related processes have been understood and implemented by all departments and personnel within the company.

“The Management and Employees of Tennessee Tool & Engineering are committed to continuous process improvement while exceeding our Customer’s expectations.”

5.4 Quality Objectives and Planning

5.4.1 Objectives

TTE’s management is committed to continually improve our services, operations, and management methods with the aim of enhancing customer satisfaction and the reliability of our processes. To this end, we establish and document objectives at relevant functions and levels within the company. We ensure that our objectives are measurable and consistent with the quality policy in accordance with our [Procedure for Management Review](#).

5.4.2 Planning

Management ensures the integrity of our quality management system is maintained when changes are planned and implemented. We also ensure that appropriate levels of planning are

carried out in order to meet the requirements of our business, the standard, and our quality objectives in accordance with the [Procedure for Management Review](#).

5.5 Responsibility, Authority, and Communication

5.5.1 Responsibility and authority

Management ensures that responsibilities and authorities are defined and communicated within the company. This is done through on the job training and identified within our documented procedures.

5.5.2 Management Representative

In the capacity of the Management Representative, the Director of Quality has the responsibility and authority for:

- Ensuring that the processes needed for the quality management system are established, implemented and maintained
- Reporting to management on the performance of the quality management system and any need for improvement and
- Ensuring the promotion of awareness of customer requirements throughout the organization

5.5.3 Internal Communication

Management uses various methods to ensure that appropriate communication takes place within the organization regarding the effectiveness of the quality management system. Examples are staff meetings, internal memos, e-mails, etc..

5.6 Management Review

On a scheduled basis, management reviews the quality management system, the quality policy, quality objectives, the results of audit, customer feedback, process performance and product conformity, the status of preventive and corrective actions, any actions from previous management reviews, changes to the system, and recommendations for improvement as a minimum to ensure their continuing suitability, adequacy, and effectiveness. This review is documented and includes actions and decisions in accordance with the [Procedure for Management Review](#).

6. Resource Management

6.1 Provision of Resources

Management ensures that resources are provided to implement, maintain, and continually improve the effectiveness of the quality management system and to enhance customer

satisfaction by meeting customer requirements in accordance with the [Procedure for Management Review](#).

6.2 Human Resources

Management is responsible for ensuring that all personnel performing work that affects our quality management system and product quality throughout the realization processes are competent based on the appropriate education, training, skills and experience. Management identifies the competencies required to satisfy the requirements of different positions within the organization, reviews capabilities of personnel, and determines training needs. They document and communicate quality responsibilities and authorities, assist with the provision of training and maintain records of competencies as defined in the [Procedure for Training, Records, and Assessment](#).

6.3 Infrastructure

Management is responsible for ensuring that it has determined, provides, and maintains the infrastructure (e.g., buildings, workspace, and associated utilities, process equipment, supporting services) needed to achieve conformity to product requirements. Management reviews the infrastructure required and provided during management review meetings in accordance with the Procedure for Management Review.

6.4 Work Environment

Management is responsible for ensuring that it has determined, provided, and maintained the work environment needed to achieve conformity to product requirements. Management reviews the work environment required and provided during management review meetings in accordance with the Procedure for Management Review.

7. Product Realization Processes

7.1 Planning of Product Realization

TTE has planned and developed the processes needed for product realization in a manner that is consistent with the requirements of the other processes in the quality management system. When planning product realization, Management identifies Customer requirements, using the [Procedures for Contract Review](#).

- The quality objectives and requirements for the product
- The need to establish processes, documents, and provide resources specific to the product
- The required verification, validation, monitoring, inspection and test activities specific to the product and the criteria for product acceptance

- The records needed to provide evidence that the realization process and resulting product meet requirements.

We also use quality plans to ensure customer requirements are documented, understood, and communicated.

7.2 Customer-Related Processes

The product realization process starts with the processes defined in the Contract Review Procedures where the company determines the overall requirements for the project, provides quotations, and then receives and processes the customer purchase order. Processes for communicating with customers relating to product information, inquiries, contracts or order handling and amendments, and customer feedback, including customer complaints are defined in the following documented processes: Contract Review Procedure and the [Corrective Action and Preventive Action Procedure](#).

7.3 Design and Development

At TTE, we currently are neither designing nor developing products for our customers. We build to print or customer supplied information. Should we undertake design in the future we will develop the necessary processes, procedures, and records.

7.4 Purchasing

We purchase materials and have outside processes performed by approved suppliers. The individuals with purchasing authority select suppliers in a manner that ensures that only reliable suppliers are selected, evaluated against defined criteria, and re-evaluated as they supply goods and services. Individuals that purchase ensure that purchasing requirements are clearly and correctly communicated to the supplier. All materials and parts are verified upon receipt to ensure that they were provided in agreement with the requirements of the purchase. The purchasing and receiving processes are defined in our [Procedure for Purchasing and Receiving Inspection Procedures](#).

7.5 Production and Service Provision

7.5.1 Control of production and service provision

We plan and carry out product and services under controlled conditions through the use of:

- prints that describe the characteristics of the raw materials and products,
- availability of work instructions in the form of prints and travelers,
- the use of suitable equipment,
- the availability and use of calibrated equipment as needed,
- the monitoring and measurement of processes as identified, and
- the release of final products for delivery to the customer.

We use Planned Equipment Maintenance, Job Specific Travelers, and various Work Instructions to fulfill these requirements.

7.5.2 Validation of processes for production and service provision

We currently do not have any processes that cannot be verified by subsequent monitoring and measurement. Should we implement such processes in the future, we will ensure that we have properly validated the processes to demonstrate the ability of the processes to achieve planned results. This validation process will include as applicable: the preparation of defined criteria for the review and approval of the processes, approval of equipment and qualification of the processes, approval of equipment and qualification of personnel, use of specific methods and procedures, identification of the requirements for records, revalidation activities.

7.5.3 Identification and traceability

Throughout the manufacturing and inspection processes, parts are identified using extensive use of labeling and product marking in accordance with the [Product Identification and Traceability Procedure](#).

7.5.4 Customer property

Customers may provide us with their property for the purpose of manufacturing and inspection. Using the [Procedure for Contract Review](#), all customer property is:

- Verified at receiving to be complete and correct
- Checked for damage
- Identified using labeling and other appropriate methods and
- Protected and safeguarded to prevent damage, loss, or deterioration.

Problems identified with customer-supplied goods are documented and communicated to the supplier accordance with the procedures identified above.

7.5.5 Preservation of product

We preserve the conformity of our products from receipt, through processing and delivery to the customer. We identify, handle, package, store, and protect the materials, parts, and finished goods in an appropriate manner. Where deemed necessary by management, detailed work instructions have been developed to aid in these processes.

7.6 Control of Monitoring and Measuring Devices

TTE uses monitoring and measuring devices to provide evidence of conformity of the products and services to determined requirements. The equipment, processes, and records are utilized in accordance with the [Procedure for the Control of Inspection, Measuring, and Test Equipment](#).

8. Measurement, Analysis and Improvement

8.1 General

We have planned and implemented the monitoring, measurement, analysis, and improvement processes for our quality management system. We use the related work instructions / processes to demonstrate conformity of our products and services. We use the Procedures for Management Review, Internal Quality Audits, and Corrective and Preventive Action to ensure conformity of the management system, and to continually improve our quality management system. We determine any applicable statistical techniques and the extent of their use following the [Procedure for Statistical Process Control](#).

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

Customer satisfaction is very important to TTE. We use the [Procedures for Management Review](#) as a plan for the collection and analysis of information relating to the customer's perception as to whether the company is meeting the customers' requirements. This information is then reviewed by management and used for planning appropriate actions to provide the best products and service to our customers. Customer dissatisfaction will be processed through the [Procedures for Corrective and Preventive Action](#). In addition, Customer Satisfaction is surveyed by written request and by phone conversation with key Customer contacts.

8.2.2 Internal Audit

Internal audits are used as defined in the [Procedure for Internal Quality Audits](#) as a way of verifying conformance to the defined quality management system and are also used as a means of identifying areas for improvement. The process is controlled by the Management Representative who ensures that all auditors are trained, capable and independent of the operations they are auditing and ensures that audits cover the complete management system of the organization. Subcontracted Auditors may be utilized to conduct internal audits of our QMS, and if utilized they will provide objective evidence they are currently Trained / Lead Auditors.

8.2.3 Monitoring and Measurement of Processes

The processes in our organization define our management system. All processes within the company are monitored using the Procedure for Internal Quality Audits. Where practical, measurable objectives are used to evaluate efficiency and effectiveness of our processes. Where the processes don't facilitate the achievement of our planned results, we use corrective actions as defined in the Procedure for Corrective and Preventive Action to address the situation allowing continual improvement of our processes.

8.2.4 Monitoring and Measurement of Product

All employees are aware of their responsibility for the quality of their own work throughout the manufacturing processes although formal inspection and/or testing activities are also conducted. Evidence of conformity with the acceptance criteria is maintained on the traveler, which also includes the record of the person authorizing the release of the product. Our processes also ensure that no product is released until all planned arrangements have been satisfactorily completed.

8.3 Control of Nonconforming Product

From receipt of raw materials or component parts, throughout the manufacturing and inspection processes material that is determined to be nonconforming will be handled in accordance with the [Procedure for the Control of Nonconforming Product](#).

8.4 Analysis of Data

We analyze data collected with regards to our management system during Management Review. Through this process we ensure the effectiveness of the system and identify where improvement may be made. Data includes at a minimum customer satisfaction, product requirements, supplier review, and information on processes and products that may include any required preventive action.

8.5 Improvement

8.5.1 Continual Improvement

Improvement of our processes, products, and quality system is an in-built activity at TTE. The focus on setting objectives and measuring our progress towards the achievement of the objectives facilitates our effective and continual improvement. It is also accomplished through the implementation of the quality policy and the corrective action request system, which addresses improvement and preventive action opportunities as well. The Procedures for Management Review and Corrective and Preventive Action describes these processes.

8.5.2 Corrective Action

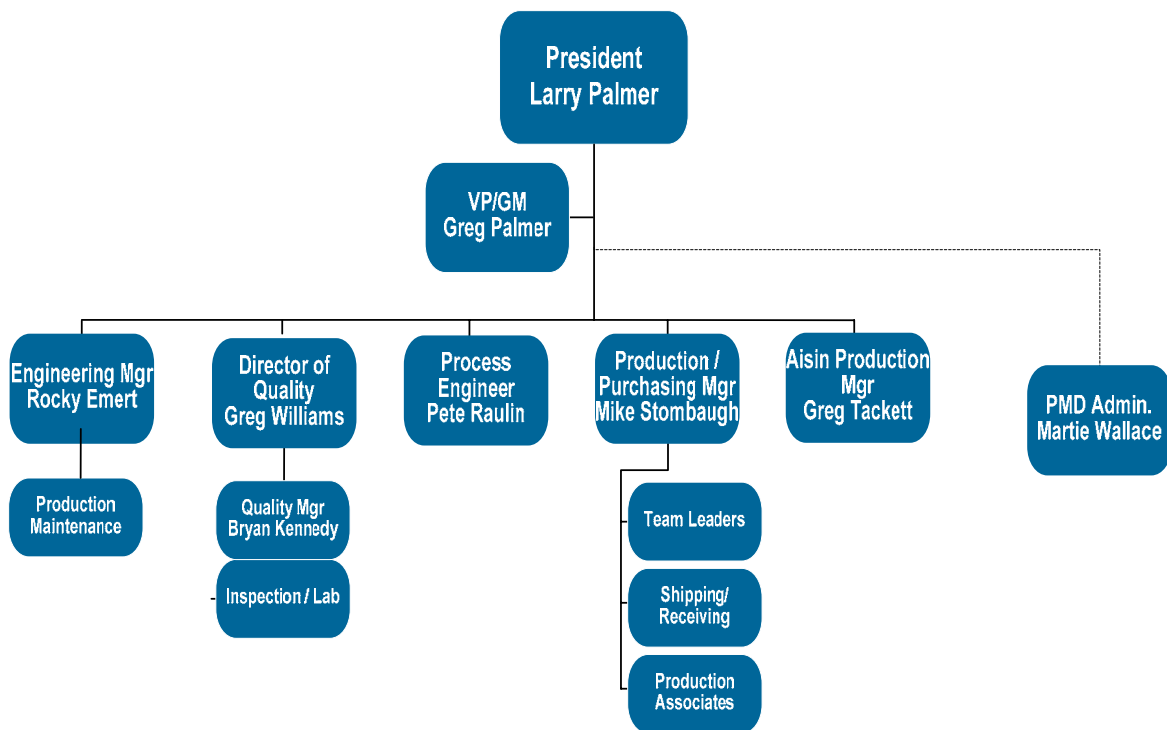
We have established processes to address and resolve problems in an efficient and effective manner and to allow us to take advantage of opportunities for improvement. These processes cover corrective action for actual problems and will be processed and documented in accordance with the Procedure for Corrective and Preventive Action. Customer complaints are recorded and processed in accordance with the Corrective Action Procedure.

8.5.3 Preventive Action

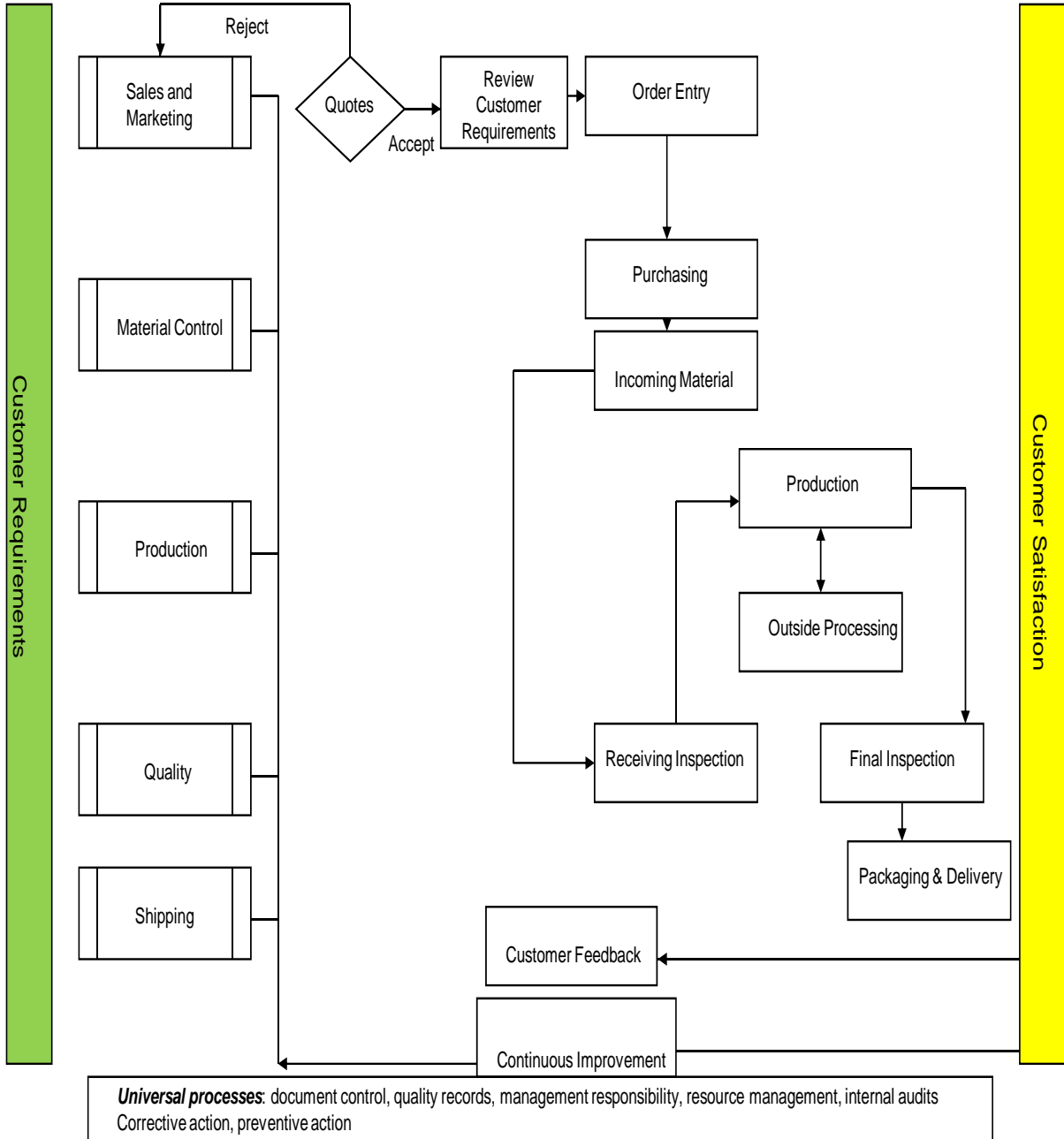
In addition to taking actions to address existing problems, we also evaluate and take actions to prevent potential problems from occurring and to address improvement actions to add value to our products, processes, and business as a whole in accordance with the Procedure for Preventive Action.

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QA Manual Appendix A, Organizational Chart



QA Manual Appendix B Sequence and Interaction of Processes



**QA Manual Appendix C ISO
Certificate**



CERTIFICATE



UL DQS Inc.
Management Systems Solutions

hereby certifies that the company

Tennessee Tool & Engineering Inc.

741 Emory Valley Rd.
Oak Ridge, TN 37830
USA

has implemented and maintains a **Quality Management System**.

Scope:
The machining, fabrication, manufacturing and assembly of products made from castings, extrusions, forgings, bar and sheet

Through an audit, documented in a report, it was verified that the management system fulfills the requirements of the following standard:

ISO 9001 : 2008

Certificate Registration No. 10002895 QM08
Date of Certification 2009-05-11
Valid until 2012-05-10



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