EMS Engineered Materials Solutions, LLC
Quality Management System Manual

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Vision

To be the leading global supplier of Clad Materials, Thermostatic Bimetal, Nickel Alloy Strip, and custom engineered products.

Purpose

The EMS purpose is to deliver highly engineered Industrial Clad Materials, Thermostatic Bimetal, and Nickel Alloy Strip materials that satisfy the technical needs of existing customers and markets, and to provide engineered products that satisfy the needs of new customers, new applications, and emerging markets.

Mission

Through our intense focus on customer satisfaction and our unique knowledge of material technology, our mission is to develop and provide innovative, reliable, cost effective, and technology enabling materials that solve customer problems and satisfy unmet market needs. We will accomplish this by building lasting relationships with our customers, employees, and suppliers around the world.

Values

EMS's primary values are social, economic and environmental responsibility, employee safety and wellness, and equal employment opportunity. These values are demonstrated through corporate governance, workforce cooperation, collaboration, employee involvement, and integrity throughout all business activities.

Strategic Direction

EMS's strategy is to achieve sustained positive profitable growth through a combined focus on:

1. Organic Growth with new customers for existing products, with existing customer through share gain, and by offering higher value added services.
2. New Product Development to satisfy the needs of new customers and emerging markets.
3. Strategic Acquisitions to expand our market footprint and product offering.
4. Continuous investment in our work force and capital assets.
5. Continuous improvement and operational excellence.

General Introduction

This manual provides a description of the quality management system in accordance with the ISO 9001:2015 requirements and serves as a reference for implementing and maintaining the system.

Quality Management Principles

i) Customer focus
ii) Leadership
iii) Engagement of people
iv) Process Approach
v) Improvement
vi) Evidence-based decision making
vii) Relationship Management

Process Approach

EMS has developed and implemented its quality management system using the process approach as described in this manual. To function effectively and efficiently, the EMS organization identifies customer requirements and manages activities and resources for planned inputs to yield effective and value added outputs for product realization as a business process. Outputs from one segment of the process directly provide the inputs to the next segment as the basis for a systematic process approach. A process approach includes ongoing control over the linkages between the individual processes, resources and the interactions between them to assure the realization of business objectives. It also provides a basis for continual improvement of processes based on objective measurement.

Risk Based Thinking

EMS uses risked based thinking to determine factors that could cause its processes and QMS to deviate from planned results, to put in preventive controls to minimize negative effects and to make maximum use of opportunities as they arise

EMS Quality Policy

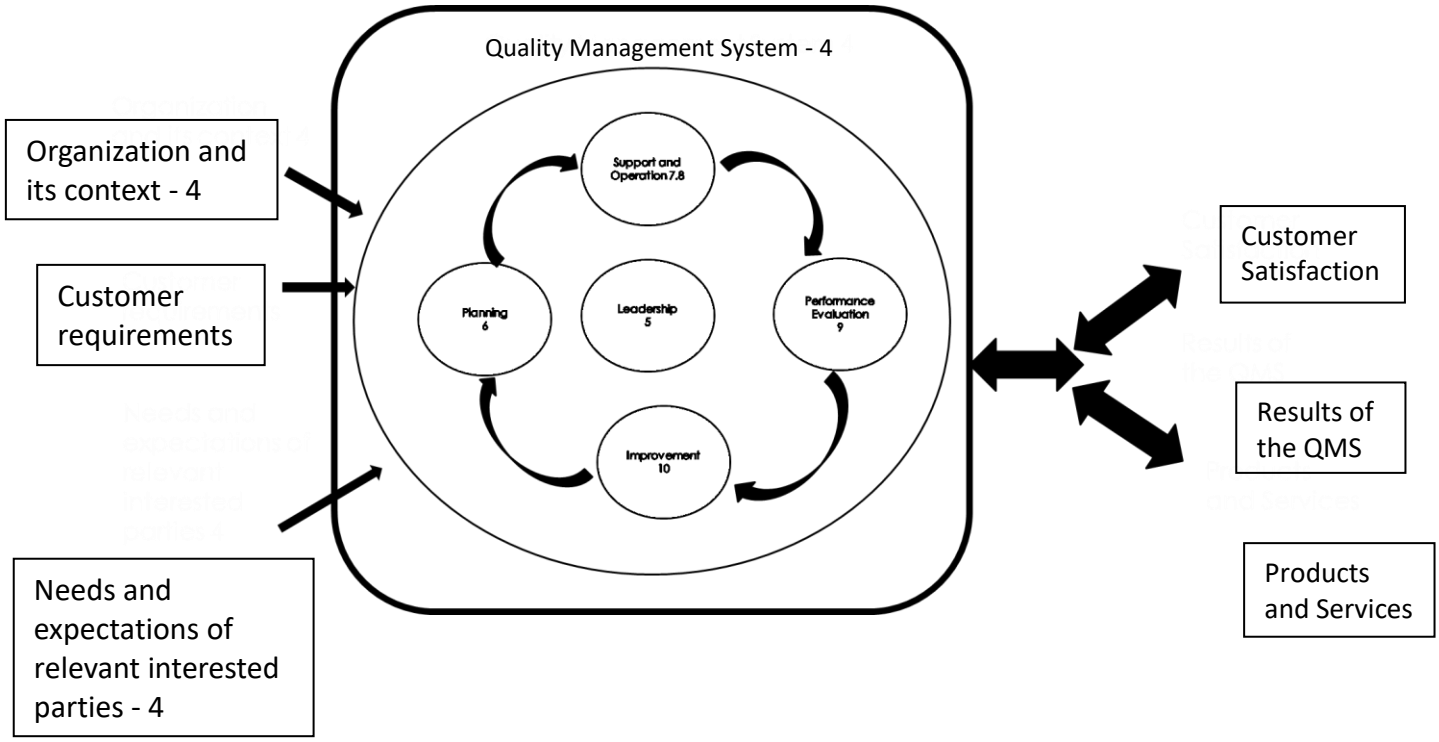
Engineered Materials Solutions, LLC is committed to fully meeting customer and regulatory requirements and continuously improving Product Quality, Service, Total Cost of Ownership, and our Quality Management System. This Policy will be achieved through disciplined process based management and employee participation across the organization towards continual improvement.

EMS Quality Objectives

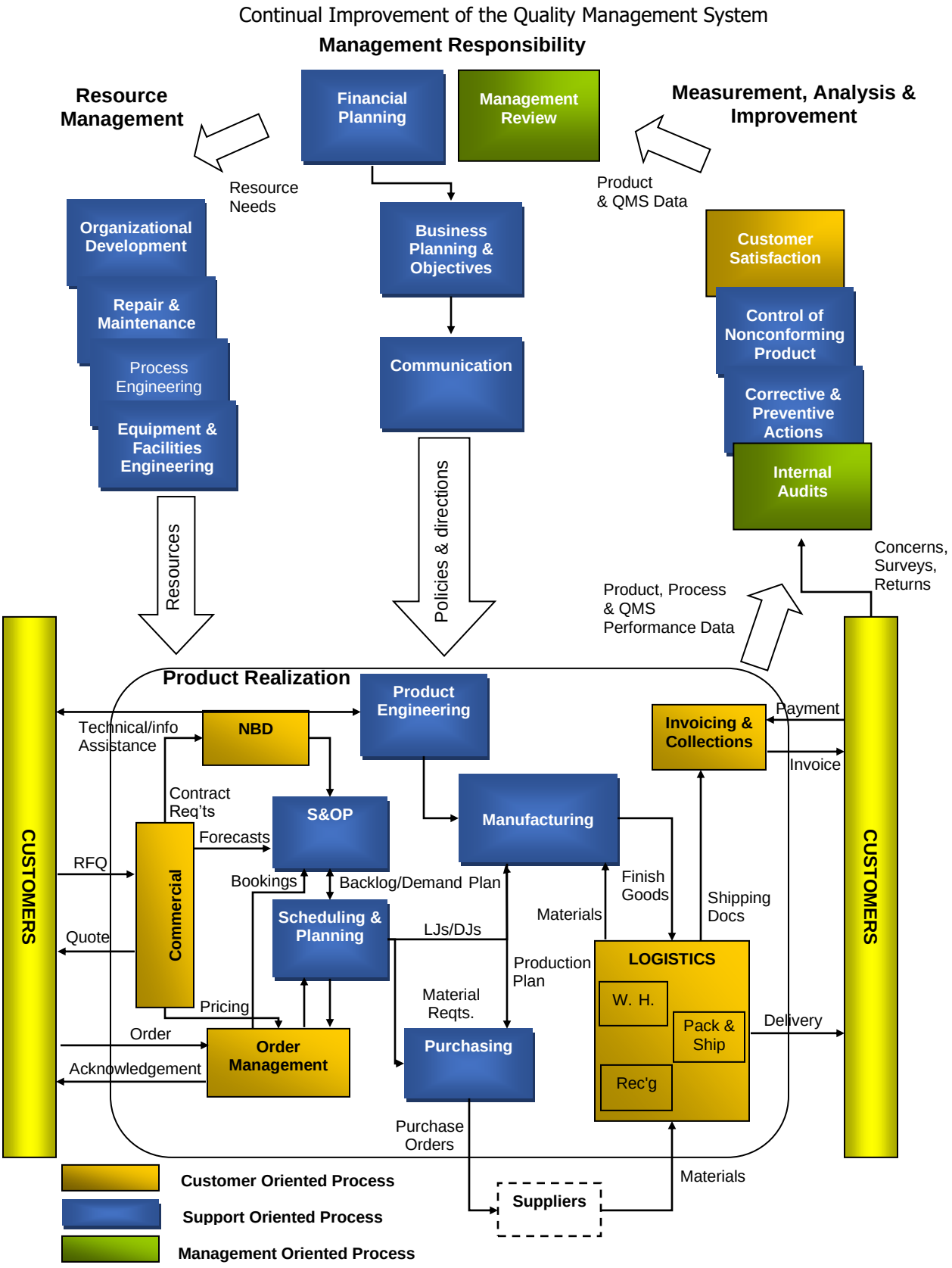
1) Ship 100% on time delivery within one week of promised date
2) Monitor and improve quality yields, and internal and external rejections
3) Zero lost time incidents
4) Value of material returned by customers less than 0.3% of total sales

Plan-Do-Check-Act (PDCA) Cycle

Representation of the structure of the International Standard in the

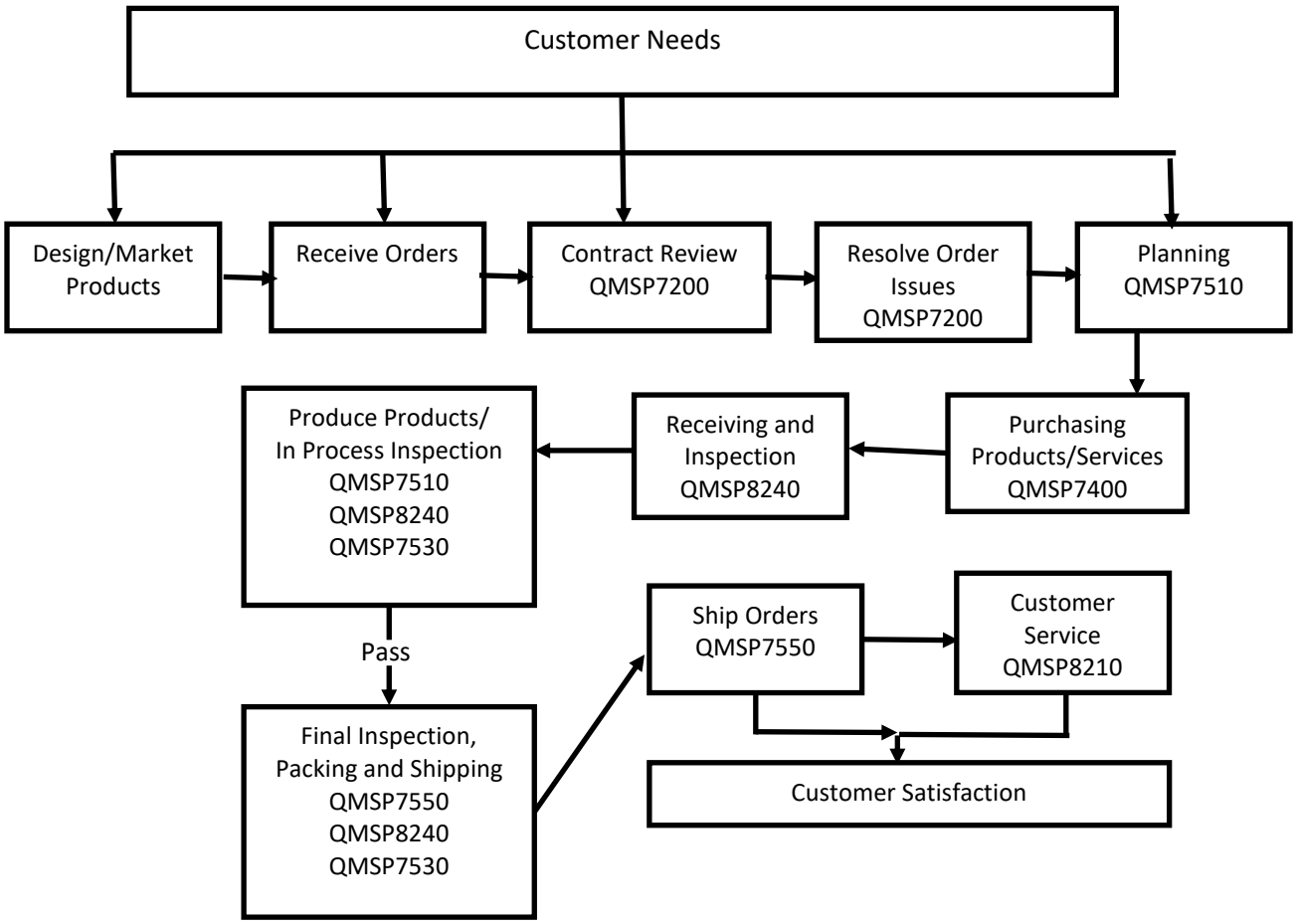


Process Model

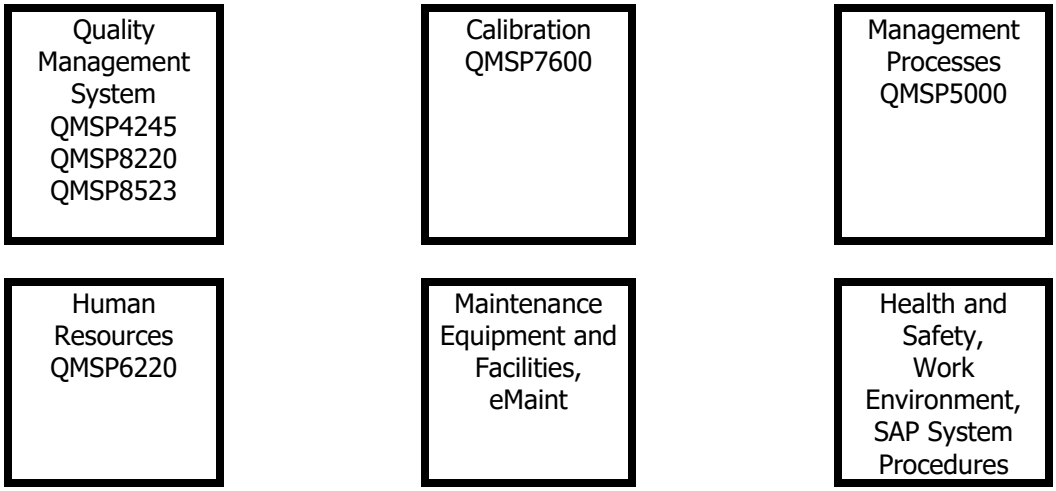


The QMS Process System Flow Chart

Core Processes



Support Processes



Level II Documents

QMSP4245 – Control of Documented Information	QMSP5000 - Management Responsibility
QMSP6220 – Competence, Awareness and Training	QMSP6300 – Change Management Procedure
QMSP7200 – Contract Review	QMSP7400 – Purchasing
QMSP7510 – Control of Production Provisions and Work Instructions	QMSP7530 – Product Identification and Traceability
QMSP7550 – Handling, Storage, Packaging, Preservation and Delivery	QMSP7600-Control of Measuring and Monitoring Devices
QMSP8210 – Customer Satisfaction	QMSP8220 – Internal Quality Audits
QMSP8240 – Inspection and Testing	QMSP8523 – Corrective and Preventive Action
QMSP8600 – Continuous Improvement	

1.0 Scope

This quality manual serves as the guiding document towards the capabilities of the EMS Business Processes for the manufacture of Bi-Metal Strip and Parts, Nickel Alloy Strip, and Clad Materials. Applicability commences with the receipt of customer sample or production orders and concludes with customer acceptance and consumption of the product within a reasonable time period.

1.1 Quality Management System Compliance

The purpose of this Quality Manual is to define and describe the Engineered Materials Solutions, LLC (EMS) Quality Management System, the management authority and responsibility involved in the operation of the system, and to provide policy for all activities comprising and using the quality management system. This is communicated and understood at all levels of the organization. This quality manual presents the quality management system to our customers and other external parties, informing them of the specific controls implemented by the business to assure quality of supplied products.

The quality management system is relevant to the nature of our organization and products, and provides guidance to consistently meet customer and regulatory requirements. Customer satisfaction is achieved through this process as is continual improvement of this process.

2. Normative Reference Documents

2.1 Reference Standards

- 2.1.1 ISO 9000:2015: Quality Management Systems – Fundamentals and Vocabulary
- 2.1.2 ISO 9001:2015: Quality Management Systems – Requirements
- 2.1.3 ISO 9004:2015: Managing for the sustained success of an organization – A quality management approach

3. Terms and Definitions

3.1 For the purposes of this document the terms and definitions given in ISO9000:2015 apply.

4. Context of the Organization

4.1 Internal and External Issues relevant to EMS purpose and strategic direction

4.1.1 Organization's intended results of its Quality Management System

4.1.1.1 The Quality Management System provides management authority, responsibility and leadership to enhance customer satisfaction through the effective application of the system, including processes for improvement of the system, evaluation of risk, change management and the assurance of conformity to customer and applicable statutory and regulatory requirements.

4.1.1.2 Policies for all activities comprising the Quality Management System are available and are communicated to all levels of the organization. This documentation represents the quality management system to our customers and to other external parties, informing them of the specific actions and controls implemented by the business to assure quality of supplied products.

4.1.1.3 The quality management system is integral to the nature of our organization to assist us in consistently meeting customer requirements. Customer satisfaction is achieved through the Quality Management System with an emphasis on a Plan-Do-Check-Act methodology to assure continuous improvements in the content and effectiveness of the system.

4.1.2 Specific to our organization:

4.1.2.1 Improve operational efficiencies through:

4.1.2.1.0 Expansion of Lean Manufacturing principles

4.1.2.1.1 Improved Planning & Scheduling

4.1.2.1.2 Work Force Flexibility (Operator Training & Cross Training)

4.1.2.1.3 Internal Quality Improvements (Material Quality Reports, MQRs)

4.1.2.1.4 Productivity Improvements

4.1.2.1.5 Equipment Reliability/Preventative and Predictive Maintenance

4.1.2.2 Increase Customer Satisfaction through

4.1.2.2.0 Improved On Time Delivery to Promised Delivery Dates

4.1.2.2.1 Reduction in External Quality issues (Customer Concern Notices, CCNs)

4.1.2.3 Increase sales from NBD/NPD – "Innovation Rate"

4.1.2.4 Improve Workplace Environment and Employee Safety

4.2 Understanding the needs and expectations of interested parties

INTERESTED PARTIES	REQUIREMENTS	METRIC
Executive Board	Acceptable financial performance, legal compliance, sustainable, corporate and social responsibility	Sales; Value Added sales; Earnings Before Interest, Tax and Depreciation; Production Efficiency; Return Material Authorizations (%/Sales); Yields; Quality; Bank Covenants
Local residents	Local employment, environmentally compliant, emergency preparedness	Environmental Protection Agency; Department of Environmental Protection
Regulators	Legal compliance, prompt responses to investigations and inquiries	Occupational Safety and Health Administration, MA Department of Environmental Protection (MA DEP), Environmental Protection Agency (EPA), MA Department of Public Safety (MA DPS), the City of Attleboro
Customers	Total cost of ownership, high quality, expectations for innovation, on time deliveries, responses to inquiries	On Time Delivery; Quality; Services; Customer Satisfaction Index (CSI)
Competitors	Evaluate competitive environment	
Employees	Employment stability, good employee working relationships, statutory training, safe work environments	Turnover; Injury Rates; Employee Safety Training Completed
External suppliers and subcontractors	Agreed upon contracts, work definitions and specifications, change management standards	Vendor Score Cards; Approved Supplier List

4.3 The scope of the quality management system

Engineered Materials Solutions has determined the boundaries and the applicability of the Quality Management System and how it relates to our Business.

Engineered Materials Solutions is committed to applying all applicable requirements of the International Standard to the intent and scope of our Quality Management System. The scope of the Quality Management System applies to all of the manufacturing and support functions at:

Engineered Materials Solutions, LLC (Headquarters)
39 Perry Avenue
Attleboro, MA USA

Engineered Materials Solutions, LLC (EMSH)
600 Valley Road
Hamburg, PA USA

Products and services of the organization:

- Thermostatic Bimetal Strip, Stamped Parts, Spiral Coils, and Assemblies
- Clad Materials, stamped parts and assemblies
- Nickel Alloy Strip

Applicability:

All clause requirements are applicable to the above scope.

Engineered Materials Solutions-Hamburg facility manufactures clad strip and parts to customer requirements, section 8.3 Design and development for products and services does not apply to our location.

4.4 The Quality Management System and its Processes

4.4.1 The quality management system at Engineered Materials Solutions, LLC (EMS) has been established, documented, implemented, and maintained with the purpose of satisfying customers and continually improving processes and products.

4.4.2 To implement the quality management system, EMS:

4.4.3 Identifies the inputs needed for the quality management system and the outputs expected from these processes.

4.4.4 Determines the sequence and interaction of these processes;

4.4.5 Determines criteria and methods needed to ensure the effective operation and control of these processes;

4.4.6 Ensures the availability of resources and information necessary to support the operation and monitoring of these processes;

4.4.7 Assigns the responsibility and authority for these processes;

4.4.8 Monitors, measures and analyzes these processes to assess their inherent risks and opportunities;

4.4.9 Evaluates these processes and takes necessary action ensure they achieve the desired results;

4.4.10 Takes necessary action to improve these processes and the quality management system.

4.5 Organization of the Quality Management System

4.5.1 EMS manages all processes in accordance with the requirements of ISO 9001:2015. When EMS outsources any processes that affect product conformity with requirements, they are controlled as identified within the Quality Management System.

4.6 Quality Management System Metrics: Quality and Business Performance metrics are described within annual EMS Business objectives that are generated separate from the quality manual. They include but are not limited to the following metrics:

4.6.1 Evaluation of Customer Satisfaction

4.6.2 Quality Yield Performance

4.6.3 Supplier Performance

4.6.4 Trends in Non-Conforming Products and Quality Losses

4.6.5 Financial Performance

4.6.6 Manufacturing Efficiency
4.6.7 Safety Performance
4.6.8 Quality System Analysis

4.7 Quality Management System Overview:
The EMS Quality Management System is a documentation system that includes the EMS Quality Manual, that describes the general structure and philosophy of the EMS Quality System, the EMS Quality Policy, Quality Management System Procedures that define management responsibility and basic functional area requirements, and Work Instructions (SOP's, Sip's, WI's, QSB's) that detail how the organizational processes are defined and deployed and Forms that are used to record results.

4.8 Quality Management System Documentation Requirements: EMS has defined the documentation, including the quality policy and quality objectives, needed to establish, implement, and maintain the quality management system and to support an effective and efficient operation and the interaction of processes. The Quality Management System documentation includes:

4.8.1 Level 1 – Quality Manual: defines the outline structure of the quality system.

4.8.2 Level 2 – Quality Management System Procedures (QMSP): define the operations, procedures and responsibilities that form the basis of the quality system.

4.8.3 Level 3 – Work instructions: Include but are not limited to Standard Operating Procedures (SOP's), Standard Inspection Procedures (SIP's), Material Specifications, Route Cards and Work Instructions (WI – for EMSH) that serve to detail process requirements across the business in order to meet EMS and Customer requirements.

4.8.4 Level 4 – Records: provide evidence that the quality system requirements are carried out suitably and effectively. Typically available but not limited to Materials and Product. Database's on line such as Oracle, Everest, Excel, etc. and may include hard copy where required.

4.9 Quality Planning

4.9.1 Quality planning is the responsibility of EMS organization managers, who define and document the specified requirements for products, projects, or contracts as follows:

4.9.1.1 Preparation of quality plans and procedures.

4.9.1.2 Identification and preparation of quality records.

4.9.1.3 Documenting means for identifying customer requirements, both objective and subjective, and for translating those customer requirements into the production and delivery of product.

4.9.1.4 Identification of suitable verification points at appropriate stages in the realization of the product.

4.9.1.5 Ensuring that measurement, testing, and control equipment for assessing quality utilize recognized procedures and meet

documented external standards, as appropriate to the processes in question.

4.9.1.6 Methods for evaluating process capability that allows development of processes for meeting anticipated capability requirements.

4.10 Document and Data Control: EMS maintains documented procedures to control documents and data that relate to the Quality Management System. Customer drawings and documents of external origin are also kept under revision control.

4.11 Documents and Data Approval and Issue

4.11.1 All document reviews, approvals, and issues are performed by the functions that are responsible for their origination, revision, or maintenance. The Process Owners responsible for specific quality related documents follow an online web based index, clearly denoting the current revision level and issue date. All current issues of the appropriate documents are accessible at user locations through the internal web page.

4.11.2 Obsolete documents are promptly removed from circulation. Reference documents are properly marked and archived. Hard copies are considered to be uncontrolled and revisions should be checked to the online listing for current revision.

4.12 Engineering Specifications: Procedures assure timely review, distribution, and implementation of customer engineering standards/specifications and changes. A record of such changes includes the date when the change was made and implemented in production. The document control system includes the date that appropriate documents are updated.

4.13 Document and Data Changes: Changes to documents and data are reviewed and approved by the same functions that performed the original review and approval. The same review and approval process is used for changes as on the original documents. Nature of the change is identified in the online database.

Internal Issues	**Risk/Opportunity**	**Where addressed?**	**Actions**	**Evaluation of effectiveness of Actions**
Equipment upgrades and the high cost of new equipment	Risk/Opportunity	Capital planning	Add capital project reviews, budget, timing	At Management Review
Availability and stability of reliable, qualified, knowledgeable, motivated and competent workforce	Risk/Opportunity	Competence, Awareness and Training Document, QMSP6220	Career fairs, success rate for new hires, retention rate, next year staffing plans	At Management Review
Growth of business (Long product development/approval times, Growth into	Risk	New Business Development procedures	Product Development process, number of active programs, New	Innovation rate

Internal Issues	Risk/Opportunity	Where addressed?	Actions	Evaluation of effectiveness of Actions
higher value added processes and operations (substrates))			Business Opportunity reviews	
Workplace environment	Opportunity	Internal audits	Audit results sent to Supervisors	Completion of actions from previous audits
Equipment operational hazards/guarding	Risk/Opportunity	Performance goals	Safety training, number of guards installed, injury rates	Reviewed monthly at Safety Council meeting and Supervisor meeting, and quarterly at Business meeting
Information Systems	Risk/Opportunity	Business Continuation Plans (BCP)	Creation and maintenance of BCP	Periodic review and update of BCP
Equipment Reliability	Risk/Opportunity	Weekly Operations meetings	Preventative Maintenance program	Equipment uptime and productivity

External Issues	Risk/Opportunity	Where addressed?	Actions	Evaluation of effectiveness of Actions
Competition for mature products	Risk/Opportunity	Product Development Guidelines, SOPX0078	Measure market share, identify threats, customer satisfaction survey, external quality	Percent market share, Business revenue levels, review of customer metrics at Management Review
Raw material supplier availability and quality	Risk	Purchasing procedures	Supplier scorecards, # back up suppliers for key materials	Annual review of Approved Supplier List and at Management Review
Safety and Environmental regulations	Risk	Value statement and performance goals	Permit reviews, regulatory reporting, results of external audits (MA DEP, PA DEP), changes to safety regulations	Regulatory actions for audit deficiencies, safety regulation changes reviewed at Safety Council meetings
Alternate technologies for mature products	Risk/Opportunity	New business development	Product Development	New Business Opportunity review

External Issues	Risk/Opportunity	Where addressed?	Actions	Evaluation of effectiveness of Actions
			process, # active programs, review New Business Opportunities	decisions

4.14 Quality Management system and its processes

Engineered Materials Solutions has established, documented and implemented our Quality Management System in accordance with the requirements of ISO 9001:2015. The Quality Management System is maintained and continually improved through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive action and management review. Engineered Materials Solutions utilizes Quality System Procedures (QMSP) to provide our employees and external providers (Suppliers), with detailed instructions, flowcharts and requirements. The documents support the achievement of quality compliance for each of the process steps. We retain Forms and Standard Operating Procedures (SOP's) which provide documented information substantiating the process inputs and outputs have been accomplished as planned.

Leadership

5.0 Leadership

5.1 Leadership and commitment

5.1.1 Top Management

5.1.1.1 Accountable for the quality management system effectiveness

5.1.1.2 Establishes quality policy and quality objectives compatible with the context and it strategic direction of EMS

5.1.1.3 Ensures the integration of the Quality Management System into the business practices

5.1.1.4 Promotes the process approach and risk based thinking

5.1.1.5 Provides resources for the Quality Management System

5.1.1.6 Communicates the importance of the Quality Management System and conformance to the Quality Management System requirements to all employees

5.1.1.7 Ensures that the Quality Management System achieves the intended results

5.1.1.8 Engages, directs and supports persons to contribute to the Quality Management System

5.1.1.9 Promotes improvement

5.1.1.10 Supports relevant management roles to demonstrate leadership

5.1.2 Customer Focus

5.1.2.1 Engineered Materials Solutions makes every effort to understand our customer needs and expectations and regulatory requirements and works to consistently meet those requirements

5.1.2.2 Top management assesses the risks and opportunities that affect conformity to requirements

5.1.2.3 Engineered Materials Solutions focuses on enhancing customer satisfaction

5.2 Policy

5.2.1 Quality Policy

5.2.1.1 EMS management has created and disseminated a Quality Policy to provide the organization with an understanding of management's commitment to Quality. The quality policy is:

5.2.1.2 Appropriate to the purpose and context of the organization and supports its strategic direction

5.2.1.3 Provides a framework for quality objectives

5.2.1.4 Includes a commitment to satisfy applicable requirements

5.2.1.5 Includes a commitment to continual improvement of the quality management system

5.2.2 Communicating the Quality Policy

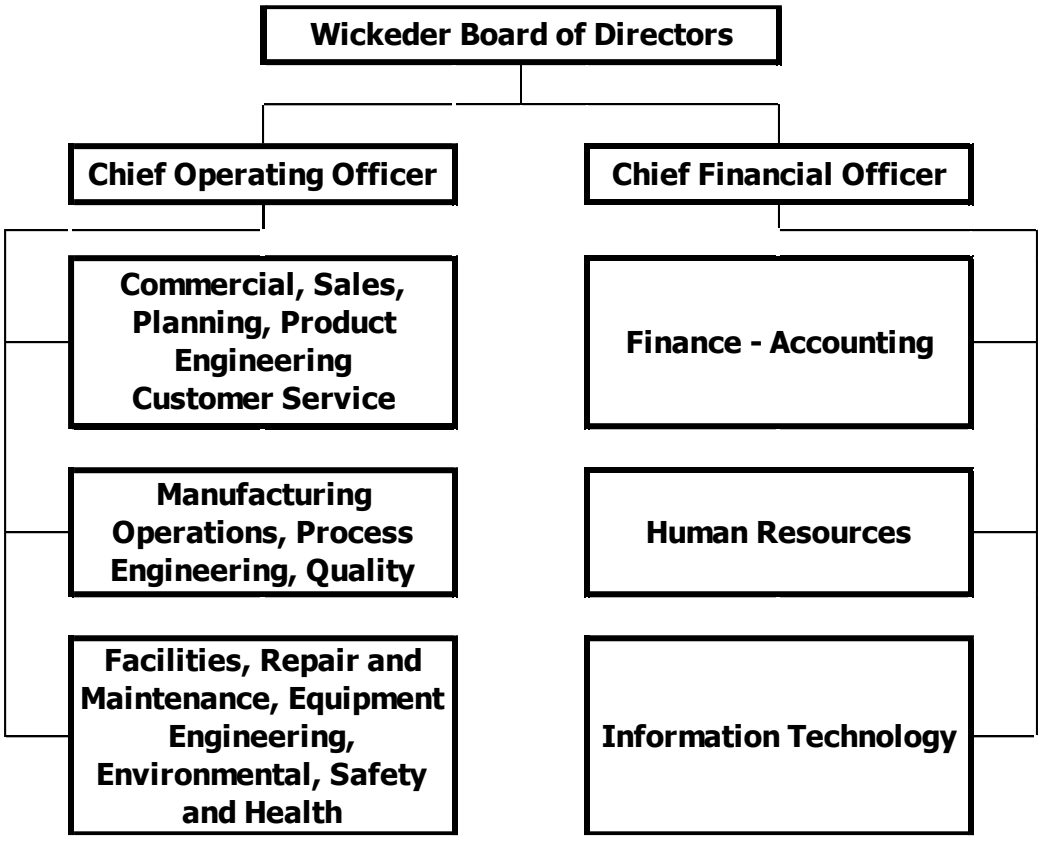
5.2.2.1 The Quality Policy is documented in this manual, on our intranet, and is posted at strategic locations throughout the plant

5.2.2.2 New employees are introduced to the Quality Policy during orientation training

5.2.2.3 Upper management communicates the Quality Policy and any changes to the policy to employees at the quarterly meetings and/or through notifications on the EMS intranet

5.3 Organizational Roles, Responsibilities and Authorities

5.3.1 Top management has designated the roles as follows:


Wickeder Board of Directors
Chief Operating Officer
Chief Financial Officer
Commercial, Sales, Planning, Product Engineering Customer Service
Finance - Accounting
Manufacturing Operations, Process Engineering, Quality
Human Resources
Facilities, Repair and Maintenance, Equipment Engineering, Environmental, Safety and Health
Information Technology

Role	Responsibility	Authority
Ensuring the QMS conforms to the requirements of the International Standard	Quality Representative Value Stream Managers	COO
Ensuring processes are delivering their intended outputs	Engineering Operations Quality	Engineering
Reporting on the performance of the QMS and opportunities for Improvement	Quality Representative Value Stream Managers Engineering Operations	Value Stream Managers
Promotion of customer focus throughout the organization	Value Stream Managers Customer Service Engineering Quality Operations	COO
Ensuring the integrity to the QMS is maintained when changes are planned and implemented	Quality Representative Value Stream Managers Engineering Operations	Quality Representative

5.3.2 Top Management supports the development and requisite maintenance for a Quality System. They are committed to the development and implementation of the quality management system. This is achieved by:

5.3.2.1 Communicating to employees the importance of meeting customer as well as statutory and regulatory requirements. Several channels of communication are used, including, but not limited to training, newsletters, employee meetings, postings on bulletin boards, intranet announcements, etc.;

5.3.2.2 Establishing our quality policy and quality objectives;

5.3.2.3 Conducting management reviews;

5.3.2.4 Ensuring the availability of necessary resources

5.3.2.5 Communicating the effectiveness of the Quality Management System.

5.3.3 Top management has assigned the responsibilities and authorities to ensure

5.3.3.1 The Quality Management Systems conforms to the requirements of ISO 9001:2015.

5.3.3.2 The Quality Management System processes are delivering the intended results

5.3.3.3 That reports are made on performance and opportunities for improvement

5.3.3.4 Promoting customer focus throughout the organization.

5.3.3.5 Ensures the integrity of the Quality Management System is maintained when changes are planned and implemented.

5.3.3.6 Reviews the performance metrics of the operations and proposes changes as needed.

5.3.4 Quality and Business Performance metrics are described within annual EMS Business objectives that are generated separate from the quality manual. Included amongst performance metrics are:

5.3.4.1 Evaluation of Customer Satisfaction
5.3.4.2 Quality Yield Performance
5.3.4.3 Supplier Performance
5.3.4.4 Trends in Non-Conforming Products and Quality Losses
5.3.4.5 Financial Performance
5.3.4.6 Manufacturing Efficiency
5.3.4.7 Safety Performance

Planning

6.0 Planning

6.1 Actions to address risk and opportunities

6.1.1 Planning for Quality Management System considers the internal and external issues relevant to EMS purpose and strategic direction, and the needs and expectations of interested parties to:

6.1.1.1 Give assurance that the quality management system can achieve its intended results
6.1.1.2 Enhance desirable effects
6.1.1.3 Prevent or reduce undesired effects
6.1.1.4 Achieve improvement

6.1.2 Actions are planned to address these risks and opportunities and how to:

6.1.2.1 Integrate and implement the actions into the Quality Management System, and
6.1.2.2 Evaluate the effectiveness of these actions

6.2 Quality objectives and planning to achieve them

6.2.1 Top Management approves the quality objectives to ensure they are measurable and consistent with the quality policy and that they include the commitment to continual improvement. These quality objectives are established at relevant functions and levels, and include those needed to meet customer requirements for the products and business objectives.

6.2.2 Quality objectives are reviewed at Management Review meetings. Objectives are assigned at the Management Review meetings and/or at annual performance reviews.

6.2.3 Quality objectives include:

6.2.3.1 Customer satisfaction index
6.2.3.2 On time delivery rate
6.2.3.3 Internal rejection (MQR) rates
6.2.3.4 External rejection (RMA) rates
6.2.3.5 Number of Customer concerns
6.2.3.6 Product family process yields

6.3 Planning of changes

6.3.1 The planning of changes to the quality management system is carried out to meet the EMS objectives while considering internal and external issues relevant to EMS's purpose and strategic direction.

6.3.2 Planned changes will be conducted in accordance with QMSP6300

6.3.3 The Management Representative ensures that change is conducted in a controlled manner and that the integrity of the quality management system and its objectives are maintained when changes are planned, evaluated and implemented.

Support

7.0 Support

7.1 Resources

7.1.1 In actively focusing on the quality management system, EMS regularly reviews resource needs depending on manufacturing workload, strategic direction, and other factors. Top management provides the required resources needed to improve the effectiveness of processes and increase customer acceptance and satisfaction.

7.1.2 People

7.1.2.1 The management team will assure that enough people are available to effectively implement the EMS quality management system and to control its operations and processes. A review of the resource levels is conducted at the management reviews.

7.1.3 Infrastructure

7.1.3.1 The management and the Management Review Team jointly determine, provide, and maintain a suitable infrastructure as needed to meet all the Quality System and product conformity requirements. This includes attention to: buildings, workspace and associates utilities, process equipment and associated software, and support services such as storage, transport, communication, and information systems.

7.1.4 Environment for the operation of processes

7.1.4.1 The work environment is organized, managed and maintained in a manner suitable for effective performance of operational activities to achieve customer requirements. The work environment also conforms to current Environmental, Health and Safety regulations.

7.1.5 Monitoring and measuring resources

7.1.5.1 Procedures to control the monitoring and measuring equipment's capability are consistent with the monitoring and measuring equipment supplier requirements. Records of all maintenance activities are evaluated upon completion of the work, and are retained.

7.1.5.2 Monitoring and measuring equipment shall:

7.1.5.2.0 Be calibrated and adjusted periodically or prior to use, against devices traceable to international or national

standards; where no such standards exist, the basis used for calibration or verification is recorded;

7.1.5.2.1 Be adjusted or re-adjusted as necessary;

7.1.5.2.2 Be identified to enable calibration status to be determined;

7.1.5.2.3 Be safeguarded from adjustments that would invalidate the measurement result;

7.1.5.2.4 Be protected from damage and deterioration during handling, maintenance and storage;

7.1.5.2.5 Have the results of calibration recorded per procedure QMSP7600

7.1.5.2.6 Have the validity of previous results re-assessed if they are subsequently found to be out of calibration, and corrective action taken.

7.1.5.2.7 Have safety criteria for the monitoring and measuring equipment followed

7.1.5.2.8 Technical data pertaining to Measuring Equipment is made available to customers for verification when required.

7.1.5.3 When required, measurement of Materials and Products referenced in the customer approved control plan, statistical studies are conducted in accordance with the Measurement System Analysis (MSA) reference manual to analyze possible variation present in the results. Evidence of these studies is maintained.

7.1.5.4 Calibration of Inspection Measurement &Test Equipment is conducted externally by qualified organizations or internally by qualified personnel. When calibration is subcontracted to outside sources, it is ensured that they are accredited to or meet the intent of the ISO 17025 or equivalent. Original Equipment Manufacturers are used when an accredited laboratory does not exist.

7.1.5.5 When calibration is performed in house, documented procedures are used, which require details of the equipment type, unique identification, location, frequency of checks, check methods, acceptance criteria and action to be taken when results are unsatisfactory. Calibration status is identified with a suitable sticker. When the use of a sticker is not practical, other suitable means are used. Calibration records for Measuring Equipment are maintained. When Measuring Equipment is found to be out of calibration, the validity of previous inspection and test results are assessed and documented Calibration, inspection and testing are performed in suitable environmental conditions. Suitable handling, preservation and storage methods are maintained. Measuring Equipment is safeguarded from unauthorized adjustments that would invalidate the calibration setting, where applicable.

7.1.5.6 Records of calibration/verification activity for all gages/instruments including employee - owned gages that impact product quality include revisions following engineering changes,

any out of specification readings as received for calibration, statement of conformance to specification after calibration, and notification to the customer if suspect material may have been shipped.

7.1.6 Organizational knowledge

7.1.6.1 Organizational knowledge is documented, maintained, and is available in Level 3 documents, which include, but are not limited to, Standard Operating Procedures (SOP's), Standard Inspection Procedures (SIP's), Material Specifications, Route Cards and Work Instructions (WI – for EMSH). These documents detail process requirements across the business in order to assure conformity of products and services.

7.2 Competence

7.2.1 All the staff is evaluated and trained in order to be qualified for defined roles.

7.2.2 Personnel performing work affecting conformity to product requirements are competent on the basis of applicable education, training, skills and experience.

7.2.3 Human Resources oversee and manage the process to:

7.2.3.1 Identify and define, using job descriptions, the knowledge and skills needed for all staff performing activities affecting quality.

7.2.3.2 Assures necessary training is conducted when required.

7.2.3.3 Evaluate the effectiveness of training activities.

7.2.3.4 Assure staff awareness of the relevance and importance of their activities and how their involvement contributes to the achievement of the quality objectives.

7.2.4 Maintains the appropriate records of education, training, skills, and experience of the staff.

7.3 Awareness

7.3.1 Employees performing work at EMS are aware of the quality policy, quality objectives, their contribution to the effectiveness of the Quality Management system, and the implications of not conforming to the Quality Management System.

7.4 Communication

7.4.1 Top Management has identified appropriate communication vehicles and processes (memos, newsletters, meetings, web site, oral communications, e mail, bulletin boards, etc.) to ensure communication takes place regarding the quality management system and its effectiveness.

7.4.2 Information communicated to employees includes, but is not limited to, on time delivery results, internal and external rejections, number of customer concerns and product family process yields.

7.4.3 This information is presented by the COO or designee to all employees at the quarterly business meetings, and is posted on bulletin boards.

7.5 Documented Information

7.5.1 EMS has defined the documentation, including the quality policy and quality objectives, needed to establish, implement, and maintain the quality management system and to support an effective and efficient

operation and the interaction of processes. The Quality Management System documentation includes the Quality Manual, Quality Management System Procedures (QMSP), work instructions, and records.

7.5.2 New and updated documents include title, date, author, and/or reference number. The format and media (paper, electronic, etc.) chosen for the documented information are appropriate to its intended use. Documents are reviewed and approved for suitability.

7.5.3 Control of documented information

7.5.3.1 Documented information is controlled as described in QMSP4245.

Operation

8.0 Operation

8.1 Operational planning and control

8.1.1 EMS plans for and implements the controls needed to meet customer requirements, and to consider risks and opportunities.

8.1.2 Actions taken include:

8.1.2.1 Determining requirements for products and services

8.1.2.2 Establishing criteria for the processes

8.1.2.3 Establishing criteria for acceptance of products and services

8.1.2.4 Determining the resources needed to achieve conformity

8.1.2.5 Ensuring control of the processes for the established criteria

8.1.2.6 Determining what documented evidence is necessary

8.1.3 Any changes to the processes will be conducted in accordance with QMSP6300, with consideration for risks and opportunities.

8.1.4 Any outsourced process will be controlled in accordance with QMSP7400.

8.2 Requirements for products and services

8.2.1 Customer communication

8.2.1.1 Communications during the marketing, sales, proposal and contract definition period shall be managed by the Sales Team. Communication during the contract and job execution is managed by the Product manager in charge. In addition Outside Sales Personnel maintain Customer communications. Customer return information, key issues and customer complaint information are fed back to the organization through Sales Trip Reports and through customer complaint management system that is entered in the Everest Quality system. Customer communications requirements are detailed within QMSP7200 - Contract Review Procedure and QMSP8210 – Customer Satisfaction Procedure.

8.2.1.2 To assure customer requirements are correctly and completely recognized and understood, EMS evaluates the marketing, financial and technical requirements.

8.2.2 Determining the requirements for products and services

8.2.2.1 The requirements, including those for delivery and after delivery support, are adequately defined and documented;

8.2.2.2 Requirements not specified by the customer but known to be necessary are clearly defined;

8.2.2.3 All statutory and regulatory requirements applicable to the product are defined;

8.2.2.4 EMS confirms that it has the capability to meet the contract and product requirements;

8.2.3 Review of the requirements for products and services

8.2.3.1 EMS reviews customer requirements and retains documented information per QMSP7200 Contract Review. This contract review is performed before the commitment to supply the product to the customer (i.e. a proposal, quote, offer, etc.). The review team evaluates the marketing, financial and technical requirements to ensure that:

8.2.3.1.0 The requirements are adequately defined and documented;

8.2.3.1.1 The customer order requirements are confirmed prior to acceptance of the order, even when no written statement is available for an order that is received by oral means;

8.2.3.1.2 Any differences between the contract or order requirements and those already in progress are resolved;

8.2.4 Changes to the requirements for products and services

8.2.4.1 Customer requests for changes to orders and/or products are recorded, and updated information is forwarded to the relevant persons affected by the change

8.3 Design and development of products and services

8.3.1 General

8.3.1.1 Product development programs are defined and approved by the management team

8.3.1.2 The management team conducts design reviews at planned intervals to assure the design's ability to meet the customer requirements, the product fit within the business strategy, and to identify design problems and potential actions to be taken early in the process.

8.3.2 Design and development planning

8.3.2.1 Design activities are identified and planned; qualified personnel are assigned to a cross-functional design team who are then empowered to bring the product through the New Product Development Process.

8.3.2.2 Project Managers plan, organize, and manage resources, including interfaces between teams and other departments in the organization, as necessary to meet the plan requirements.

8.3.2.3 Planning output is updated, as appropriate, as the product design and development evolves.

8.3.2.4 Records of these activities are maintained and, as necessary, distributed.

8.3.3 Design and development inputs

8.3.3.1 Inputs relating to product requirements are defined and documented. These inputs include functional and performance requirements, applicable regulatory and legal requirements, applicable information derived from previous similar designs, standards of practice that the organization has committed to implement, and any other requirements essential for design and development. Engineering reviews these inputs for adequacy. The management team resolves incomplete, ambiguous, or conflicting requirements.

8.3.4 Design and Development Controls

8.3.4.1 The New Product Development Steering Committee, prior to release to subsequent stages, approves the design and development outputs.

8.3.4.2 At appropriate stages of design and development, design verification shall be performed to ensure that the design stage output meets the design stage input requirements. The design verification documents shall be recorded and managed in accordance with the new product development process.

8.3.4.3 The design validation of product sold to the customers is normally performed through a series of internal and external tests where all critical product specifications are evaluated internally as well as through Customer Processing and End Product testing.

8.3.5 Design and development outputs

8.3.5.1 The outputs of the design and development process are documented by Product Engineering.

8.3.5.2 Documented outputs confirms that we meet the design and development input requirements, are adequate for subsequent processing, include or reference monitoring or measurement requirements and acceptance criteria as needed, provide appropriate information for production and service operations, contain or reference product acceptance criteria, and define the characteristics of the product that are essential to its safe and proper use.

8.3.6 Design and development changes

8.3.6.1 Design and development changes and documents produced during the design period are managed by Product Engineering to evaluate the effect of the changes on parts and systems ability to meet their design requirements.

8.3.6.2 Documentation of changes are retained and include:

8.3.6.2.0 Design and development changes

8.3.6.2.1 Results of reviews

8.3.6.2.2 Authorization for the changes

8.3.6.2.3 Actions taken to prevent adverse impact

8.4 Control of externally provided processes, products and services

8.4.1 Purchasing processes have been established to ensure that externally provided processes, products and services conform to requirements.

8.4.1.1 Suppliers are evaluated, approved and selected based on their ability to supply product in accordance with our requirements;

8.4.2 Purchasing defines the type and extent of control to be exercised depending upon the type of product, the impact of purchased product on the quality of final product, and previously demonstrated capability and performance of suppliers.

8.4.2.1 The results of evaluations and necessary actions are maintained per QMSP7400

8.4.3 Information for external providers

8.4.3.1 Purchasing documents include data describing the products and services, specifications, drawings, and other requirements.

8.4.3.2 Purchasing documents contain information describing the product to be purchased, including where appropriate:

8.4.3.3 Requirements for approval of product, procedures, specifications, drawings processes, equipment, and personnel

8.4.3.4 Quality management system requirements

8.4.4 Purchasing documents are reviewed and approved prior to release to insure that supplied materials, equipment, and services conform to contract, policies and procedures.

8.5 Production and service provision

8.5.1 Control of Production and service provision

8.5.1.1 Manufacturing processes are carried out under controlled conditions using documented procedures and suitable equipment in a suitable working environment.

8.5.1.2 Documented process monitoring and operator instructions, available at work stations, are provided for all employees having responsibility for process operations.

8.5.1.3 Process monitoring and operator instructions typically take the form of process sheets/route cards, standard operating procedures, and other documents contained in the quality system. As appropriate, these instructions contain operation name and number keyed to a process flow chart, part name and number, current engineering revision/date, required equipment and tooling, material identification, designated special characteristics, SPC requirements, relevant standards, revision level and approval, inspection/test instructions, disposition instructions, corrective action instructions, visual aids, tool change intervals and set-up instructions.

8.5.1.4 EMS controls production provisions under controlled conditions. Controlled conditions include, as appropriate:

8.5.1.4.0 The availability of information that describes the key characteristics of the product;

8.5.1.4.1 Where necessary, the availability of work instructions, as necessary;

8.5.1.4.2 The use of suitable equipment;

8.5.1.4.3 The availability and use of monitoring and measuring equipment;

8.5.1.4.4 The implementation of monitoring and measurement;
8.5.1.4.5 The implementation of product release, delivery and post-delivery activities.
8.5.1.4.6 Published standards, laws, codes, and regulations are adhered to, in order to ensure product compliance. Process and equipment approval, and the control and monitoring of critical process parameters by qualified personnel are identified in the operational work instructions and process sheets/route cards.
8.5.1.4.7 Workmanship criteria are defined and documented in Level III work instructions. Suitable maintenance on equipment is scheduled to ensure continued process capability.

8.5.1.5 EMS identifies the measurements to be made as well as the monitoring and measurement equipment required to assure product conformity to specified requirements.

8.5.2 Identification and traceability

8.5.2.1 EMS maintains documented procedures for the identification, traceability, and control of material from receipt, through processing and delivery of finished products. For traceability, coil number, lot number and packet/skid number identify material and products processed. EMS establishes and maintains documented procedures for unique identification for individual product or batches, as a specified requirement for traceability. EMS controls and records the unique identification of the product to provide traceability to raw material lots.

8.5.3 Material Management will identify, verify, protect and safeguard customer property provided for use or incorporation into the product, including intellectual property given in confidence. Items that are lost, damaged, or otherwise unsuitable for use are to be recorded and reported to the customer. Verification by EMS does not absolve the customer of the responsibility to provide acceptable product.

8.5.3.1 Customer Owned Tooling

8.5.3.2 Customer owned tools and equipment are permanently marked for visual identification of ownership.

8.5.4 Preservation

8.5.4.1 EMS maintains output products prior to delivery to customers to assure the products meet customer requirements.

8.5.4.1.0 Preservation of products includes:

8.5.4.1.0.1 Packaging to maintain material integrity and protection from adverse impact during storage

8.5.4.1.0.2 Retention of material identification

8.5.5 The requirements for post-delivery activities are considered and actions are taken to assure that they are met. Consideration is given to:

8.5.5.1 Statutory and regulatory requirements

8.5.5.2 Potential undesired consequences associated with our products
8.5.5.3 The nature, use and intended lifetime of our products
8.5.5.4 Customer requirements and feedback

8.5.6 Control of Changes
8.5.6.1 Changes are controlled to the extent necessary to assure continuing conformity with requirements
8.5.6.2 Documented information is retained describing the results of the review of changes, the person authorizing the change, and necessary actions arising from the review.

8.6 Release of Products and Services
8.6.1 EMS has defined arrangements for these processes that include the following, as applicable:
8.6.1.1 Defined criteria for review and approval of the processes
8.6.1.2 Approval of equipment and qualification of personnel
8.6.1.3 Use of specific methods and procedures
8.6.1.4 Evidence of conformance with acceptance criteria
8.6.1.5 Traceability to the person(s) authorizing the release

8.7 Control of non-conforming Outputs
8.7.1 EMS applies the process QMSP8523 to effectively manage the review and disposition of nonconforming product.
8.7.1.1 Ensures that the product not conforming to specified requirements is prevented from unintentional use or installation.
8.7.1.2 Provides for identification, documentation, and evaluation of non-conforming product.
8.7.1.3 Provides for segregation (when practical) of non-conforming products.
8.7.1.4 Controls non-conforming product and notifies the functions affected.
8.7.1.5 Review and disposition of nonconforming products
8.7.1.6 The responsibilities and authorities for review and disposition of a non-conforming product have been defined and the product may consequently be:
8.7.1.6.0 Re-worked to satisfy the specified requirements
8.7.1.6.1 Accepted as is, by customer authorization and / or concession
8.7.1.6.2 Re-classified for different or less stringent uses
8.7.1.6.3 Scrapped and replaced
8.7.1.7 When contractually requested, the customer shall be notified regarding the repair and use of non-conforming product, in order to confirm Customer approval. The re-worked product is re-inspected according to the client contract or per internal specifications.

8.7.2 Documented records for Customer Approved Deviations are retained and include:
8.7.2.1 Description of the non-conformity
8.7.2.2 Actions taken

8.7.2.3 Concessions or approvals obtained
8.7.2.4 Authority deciding the actions to be taken in respect to the non-conformity

Performance Evaluation

9.0 Performance evaluation

9.1 Monitoring, measurement, analysis and evaluation

9.1.1 EMS plans and implements the monitoring, measurement, analysis, and improvement processes by determining:

9.1.1.1 What needs to be monitored and measured

9.1.1.2 The methods for monitoring, measurement, analysis, and evaluation needed to ensure valid results

9.1.1.3 When the monitoring and measuring shall be performed

9.1.1.4 When the results from monitoring and measuring shall be analyzed and evaluated

9.1.1.5 EMS evaluates the performance and effectiveness of the quality management system, and retains documented information on the evidence of the evaluation results.

9.1.2 EMS monitors information relating to customer perception as to whether we have met customer requirements, as one of the measurements of performance of the quality management system. The methodologies for obtaining and using this information are described in procedure QMSP8210 –Customer Satisfaction.

9.1.3 EMS determines, collects and analyzes appropriate data to determine the suitability and effectiveness of the quality management system and to identify improvements that can be made. This includes data generated by monitoring and measurement activities and other relevant sources. EMS analyzes this data to provide information on:

9.1.3.1 Conformity of products

9.1.3.2 Degree of customer satisfaction

9.1.3.3 Performance and effectiveness of the Quality Management System

9.1.3.4 Effectiveness of planning implementation

9.1.3.5 Effectiveness of actions taken to address risk and opportunities

9.1.3.6 The performance of external providers

9.1.3.7 The need for improvements to the Quality Management System

9.2 Internal Audit

9.2.1 EMS conducts internal audits to determine:

9.2.1.1 If the organizational requirements for the Quality Management System are met

9.2.1.2 Whether the Quality Management System conforms to the requirements of ISO 9001:2015

9.2.1.3 If the Quality Management System has been effectively implemented and maintained

9.2.2 Per QMSP8220 Internal Auditing Procedure, EMS develops the audit schedule annually, taking into consideration the status and importance of the activity. The audit schedule is revised, if necessary, after each audit and updated. The audit scope, frequency, methods, and criteria are defined. Qualified and trained individuals perform internal Process Audits with no direct responsibility for the areas audited. The Internal Quality Audits are performed monthly with the objective of auditing all the process areas a minimum of once every 18 months. The results of the audits are recorded and brought to the attention of the personnel and responsible manager in the audited process.

9.2.2.1 The personnel responsible for the audited process shall take timely corrective actions on deficiencies found during the audit.

9.2.2.2 Extraordinary Internal Audits can be performed when requested by the customer, in case of significant or major non-conformities or in the situation of considerable Organizational changes.

9.2.2.3 Follow-up audit activities verify and record the implementation and effectiveness of the corrective actions taken will be part of the continuing Internal Audit Program.

9.2.2.4 The Internal Audits are recorded in accordance with QMSP8220- Internal Auditing Procedure and QMSP4240 Control of Records.

9.2.2.5 The results of Internal Quality Audits form an integral part of the input to Management Review.

9.2.2.6 Corrective actions are taken when planned results are not achieved.

9.3 Management review

9.3.1 General

9.3.1.1 The management team review the status of the Company Quality Management System to ensure its continuing suitability and effectiveness at planned Management Review meetings, scheduled at least one time per calendar year.

9.3.1.2 The management review identifies opportunities for improvement and any Quality Management System changes needed, review of Quality Objectives and the Quality Policy (annually) for continuing suitability, and reviews resource needs and availability.

9.3.2 Management review inputs

9.3.2.1 Inputs to the Management Review include:

9.3.2.2 Follow-up actions from previous management reviews

9.3.2.3 Changes in internal or external issues that are relevant to the Quality Management System

9.3.2.4 Information on the performance and effectiveness of the QMS including current year performance and trends in

9.3.2.4.0 Customer satisfaction

9.3.2.4.1 Meeting quality objectives

9.3.2.4.2 Process Performance and conformity of products

9.3.2.4.3 Nonconformities and corrective actions
9.3.2.4.4 Monitoring and measurement results
9.3.2.4.5 Audit results (internal and external)
9.3.2.4.6 Performance of external providers
9.3.2.5 Adequacy of resources
9.3.2.6 Effectiveness of actions taken to address risk and opportunities
9.3.2.7 Opportunities for improvement

9.3.3 Management review outputs
9.3.3.1 Outputs of the management review are recorded in the meeting minutes and include decisions and actions related to:
9.3.3.2 Opportunities for Improvement
9.3.3.3 Any need for changes to the Quality Management System
9.3.3.4 Resource needs

Improvement

10.0 Improvement

10.1 EMS assures the improvement of Company performance by checking the status of achievement against established targets of the Quality Management System.

10.1.1 This includes the use of customer visit reports, customer input, the quality policy, benchmarking results, quality objectives, audit results, analysis of data, lessons learned from other EMS operation locations, corrective actions, preventive actions, and management review using procedures QMSP8523 Corrective and Preventive Action and QMSP8600 Continuous Improvement.

10.1.2 Opportunities for improvement are determined, selected and implemented to:
10.1.2.1 Improve products or services to meet requirements and address future needs and expectations
10.1.2.2 Correcting, preventing or reducing undesired effects
10.1.2.3 Improving the performance and effectiveness of the Quality Management System

10.2 Nonconformity and corrective action

10.2.1 EMS takes corrective action to eliminate the cause of nonconformities in order to prevent recurrences. The corrective action taken is appropriate to the impact of the nonconformities encountered. The documented procedure for corrective actions are listed in QMSP8523.

10.3 Continual improvement

10.3.1 EMS assures the improvement of Company performance by checking the status of achievement of the Quality Management System objectives and taking actions to meet the objectives as needed.

10.3.2 This includes the use of quality policy, quality objectives, audit results, analysis of data, corrective actions, preventive actions, and management

review using procedures QMSP8523 Corrective and Preventive Action and QMSP8600 Continuous Improvement.