



Global Power Technologies Group Quality Manual

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Executive Quality Improvement Team Commitment

This quality manual provides a statement of our quality policy and an overview of our quality management system. It is intended to provide our employees and our Customers with an understanding of our commitment to quality, and delegates the necessary authority to personnel implementing the policy. The members of the Executive Staff retain overall responsibility for the system, as defined in this document.

Authorized by:

A handwritten signature in black ink, appearing to read 'Sung Joon Kim', is written over a horizontal line.

Sung Joon Kim, President and CEO, Global Power Technologies Group
Revision: April 7, 2015

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1.0 Introduction

This manual is intended to demonstrate compliance to ISO 9001:2008 requirements to promote the adoption of a process approach when developing, implementing, and improving the effectiveness of the quality management system, to enhance customer satisfaction by meeting customer requirements.

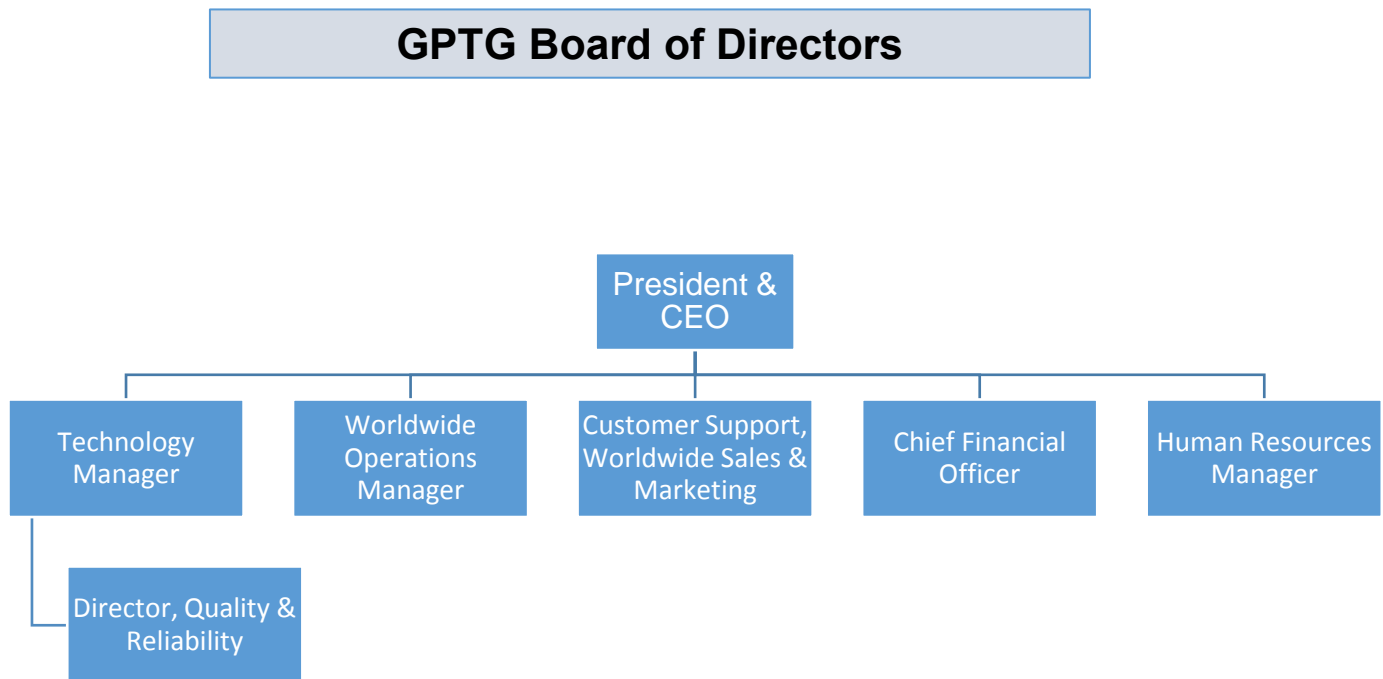
Design, some electrical die sort and final product testing, sales, marketing, and administration functions are located at the Company's headquarters in Lake Forest, California. Global Power Technologies Group employs the manufacturing services of foundry, assembly and test subcontractors at various locations worldwide.

This manual will be revised as required by major changes in organization, policy or procedures. The master manual will be maintained as a controlled document and will be used to prepare quality manuals for external distribution.

GPTG's commitment to quality and service is the foundation of our product strategy. The adoption of a Company-wide quality improvement system demonstrates the Company's commitment to continual improvement and Customer satisfaction.

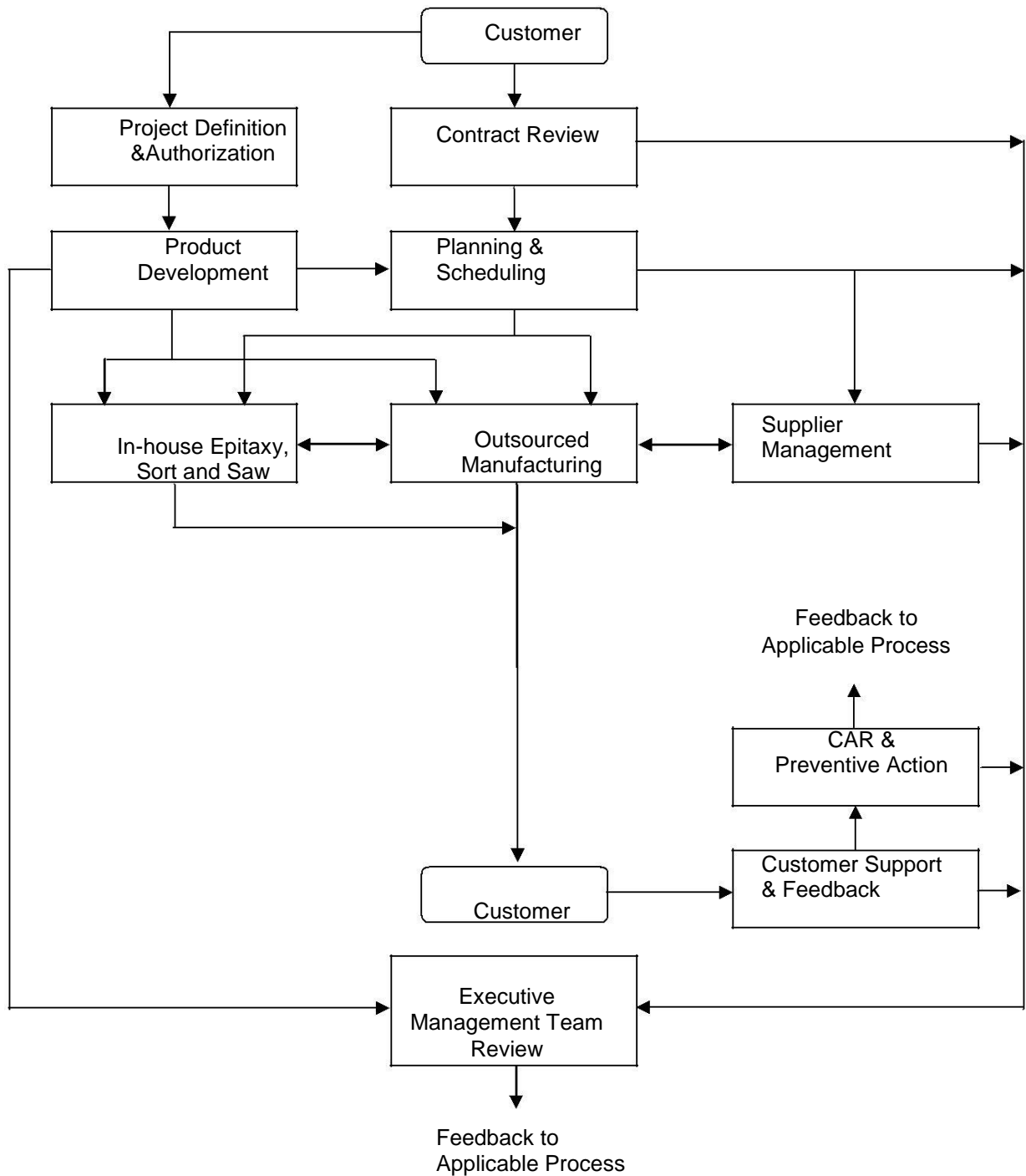
2.0 Organization

Figure 1: Global Power Technologies Group Executive Staff Organization Chart



3.0 Process

Figure 2: Quality Management System Process



3.1 Quality Management System Description - Table 1

Process	Application	Input(s)	Output(s)
Contract Review	Receive, review & process orders from Customers.	Orders from Customers	Sales orders
Planning & Scheduling	Manage the amount of product manufactured to meet Customer orders on time.	Sales orders Sales forecasts Manufacturing yields and Cycle times	Release against PO Manufacturing forecasts & scheduling
In-House Epitaxy	Grow epitaxial layer(s)	Purchased substrates Epitaxy specification	Epitaxial wafers
In-House Wafer Sort and Saw	Perform wafer sort (electrical testing) and wafer saw using GPTG's in-house equipment.	Test HW & SW Untested wafers	Tested and sawn Wafers for assembly or sale
Outsourced Manufacturing	Day to day control and management of outsourced manufacturing, including: wafer fab, die sort, packaging & final test	PO's to manufacturing suppliers Mask sets Test HW & SW Assembly diagrams & instructions	Wafers or parts for in-house test Finished parts Data, reports, yields
Project Definition & Authorization	Definition of new products and the allocation of design resources to work on their development	Customer needs Market needs and Opportunities Regulatory requirements	Development Plan
Product Development	Design product to meet specifications. Develop test HW/SW and other items required for production.	Development Plan Simulation models Design rules	Mask sets Substrate and epi requirements Assembly & Test Instructions Data sheets Sample parts
Product Qualification	Reliability testing to qualify product for production	Sample product Reliability test equipment (subcontracted)	Qualification Report
Supplier Management	Manage suppliers of out- sourced manufacturing, such as (but not limited to) wafer fabrication, package assembly and testing	Supplier performance metrics Manufacturing yields and cycle times	Approved supplier list P.O.'s to manufacturing suppliers Scorecards

Process	Application	Input(s)	Output(s)
Customer Support & Feedback	Sales Customer support	CCARs & RMAs	Corrective & preventive action requests
	Handling returned materials requests	Customer complaints	Reports to executive management
	Customer complaints and measuring Customer satisfaction	Customer scorecard	Process / product change notices (PCN)
		On-time delivery reports	
		Customer survey	
CAR & Preventive Action	Investigation and elimination of causes/ potential causes of nonconforming product and prevent recurrence of same or similar issues.	CCAR reports & RMAs	Corrective & preventive action requests(internal & to suppliers)
		Customer complaints	Corrective action reports
Management Review	Set corporate business & quality objectives and metrics. Review business& quality metrics	Business & quality metric data	Business & quality objectives
		Customer satisfaction survey results	Continual improvement feedback

4.0 Quality Management System

4.1 General Requirements

Quality management system processes and their interactions are shown in Figure 2. A description of quality management system processes and their applications throughout Global Power Technologies Group is shown in Table 1.

Global Power Technologies Group employs outsourced manufacturing for foundry, assembly and test at various locations worldwide. The Supplier Management Team is responsible for maintenance and control of supplier partnership programs.

4.2 Documentation Requirements

4.2.1 General

The quality management system includes this quality manual, containing the quality policy as stated in section 5.3 and the required records as per the applicable specification. The document control system at GPTG, available to the appropriate areas, has been established to ensure the quality management system documents are properly requested, prepared, reviewed, approved, distributed, amended and obsoleted. The system includes documents required by the ISO 9001 standard.

4.2.2 Quality Manual – Quality Management Scope

Global Power Technologies Group is a semiconductor company that designs, sub-contracts manufacturing and sells highly differentiated Silicon and Silicon Carbide, components, modules and subsystem solutions for automotive, alternative energy, industrial, medical, military (COTS) and storage applications.

The quality management system of Global Power Technologies Group establishes the methods required to ensure the quality system is properly documented, implemented and monitored to achieve planned results, Customer satisfaction and to promote continual improvement throughout the organization.

Post-delivery activity excluded as there is no after sale post-delivery activity connected with the sale of Global Power Technologies Group products. Validation of processes for production and service provision is excluded because of 100% electrical test and sample or 100% final visual inspection on all products before shipment.

Human Resources and Finance Policies and Procedures are exempted from the Global Power Technologies Group Quality Management System.

Quality management system documented procedures have been referenced throughout this manual. A description of the interaction between the quality management system processes is given in Figure 2 and section 4.1 of this manual.

4.2.3 Control of Documents

The Global Power Technologies Group document control system, identified in the applicable specification has been established to ensure that quality management system documents are properly requested, prepared, reviewed, approved, re-approved, distributed, amended and obsoleted.

Document Control is responsible for defining the structure and format of the specified documents and arranging for their controlled issue, at points of use and maintenance. Engineering Change Notice forms state the nature of the document change.

Document Control has a master index available upon request of all documents by revision level within the document control system. For Global Power Technologies Group employees, document copies are available via the intranet. For external customers, Document Control will distribute documents, as required.

In order to retain traceability, all controlled production documents are archived by Document Control in accordance with the applicable specification.

Copies of applicable external standards & codes are maintained by Document Control and are listed in the master index. Revisions to these documents are handled by an outside service.

4.2.4 Control of Records

Department managers are responsible for correct and complete record generation, identification, storage, protection, retrieval, retention and disposal in their functional areas. The extent of Global Power Technologies Group quality records is defined in the applicable specification. Designated records are maintained within the responsible functional department until space constraints dictate that they be moved off-site and archived. Purchasing is responsible for providing archive record storage at an off-site storage facility.

5.0 Management Responsibility

5.1 Management Commitment

GPTG's Executive Management Team, comprised of the President/CEO and his staff, is responsible for establishing the quality policy and objectives, defining the requirements of the quality management system, and periodically reviewing the effectiveness of the system and providing resources.

The effectiveness of the quality management system and the importance of meeting Customer as well as statutory and regulatory requirements are communicated by Company-wide performance review meetings or other means of communication.

5.2 Customer Focus

The Sales Department is responsible for Customer communications and the review of Customer requirements prior to sales order completion in order to enhance Customer satisfaction.

5.3 Quality Policy

GPTG's quality policy, established by the Executive Management Team, states:

In our relentless drive to zero defects, Global Power Technologies Group employees, using a process of continual improvement, will accept from suppliers and deliver to Customers goods and services that meet or exceed agreed requirements.

The quality policy is communicated to employees at all levels in the Company through communication meetings and training conducted by department managers and supervisors. Suitability and effectiveness are reviewed through the Executive Management Team.

5.4 Planning

5.4.1 Quality Objectives

The Executive Management Team develops and maintains a set of corporate strategic quality goals and objectives focused on satisfying Customer requirements and improving time to market for new products. Quality activities throughout the Company are, whenever possible, conducted in support of one or more of these goals and objectives. Quality objectives shall be measurable and consistent with the quality policy.

5.4.2 Quality Management System Planning

Quality management planning falls into one of the following categories:

- a) Establishment of quality goals and objectives throughout the organization.
- b) Promotion of continual improvement of both products and the quality management system.

- c) Ensuring that changes take place in a controlled manner.

The Executive Management Team establishes measurable quality objectives at the corporate level on a yearly basis to support GLOBAL POWER TECHNOLOGIES GROUP quality policy requirements. Departmental as well as individual goals and objectives are defined to support corporate goals. Monitoring, measuring, and analysis of processes will provide continual improvement of both products and the quality management system. Quality management system documentation as defined in section 4.2 will provide sufficient control when changes are planned and implemented.

5.5 Responsibility, Authority and Communication

5.5.1 Responsibility and Authority

5.5.1.1 GPTG's President and Chief Executive Officer (CEO)

GPTG's President and Chief Executive Officer is responsible for providing the overall leadership of the quality management system, demonstrating executive management commitment, and leading the Executive Management Team.

5.5.1.2 Executive Management Team

GPTG's Executive Management Team, comprised of the President/CEO and his staff, is responsible for establishing the quality policy, defining the requirements of the quality system, and periodically reviewing the effectiveness of the system.

5.5.1.3 Technology Manager (General Manager in interim)

Reports to: President and Chief Executive Officer

Responsibilities:

- a) Select process technologies required for product development in conjunction with Sales, and Manufacturing.
- b) Providing design capability for the Company, including the personnel, software and systems necessary to successfully complete new product designs on schedule and in a cost-effective manner
- c) Developing, implementing, and enabling design capabilities, and know-how for the Company product design community
- d) Ensuring that adequate quality control is built into the design methodologies, systems, and processes of circuit design through adequate documentations and records of revisions, changes, or updates
- e) Continually Improving Company productivity in product design by identifying and correcting any deficiencies in design methodologies, flows, tools, systems, resource usage, resource capacity or allocation

5.5.1.4 Worldwide Operations Manager (General Manager in interim)

Reports to: President and Chief Executive Officer

Responsibilities:

- a) Implementing and maintaining a quality management system to assure that quality objectives are achieved.

- b) Planning and execution of manufacturing operations and product inventory objectives to achieve the product sales and product costs plans of the company.
- c) Provide facilities management to sustain a safe, clean workplace for the employees of Global Power Technologies Group.

5.5.1.5 Director, Quality & Reliability

Reports to: Technology Manager

Responsibilities:

- a) Initiate action to prevent the occurrence of product nonconformity
- b) Identify and record any product quality problems
- c) Initiate, recommend or provide problem solutions through designated channels
- d) Verify the implementation of solutions
- e) Control further processing or delivery of nonconforming product until the deficiency or unsatisfactory condition has been corrected.
- f) Develop, propose and implement quality improvement programs
- g) Specify and conduct internal and external quality audits
- h) Investigate causes of nonconformance
- i) Report the performance of the quality system to the Executive Management Team for review and as a basis for improvement
- j) Establish a Customer quality satisfaction plan
- k) Define and implement quality improvement training
- l) Ensure prompt awareness of Customer requirements in Global Power Technologies Group
- m) Coordination of quality assurance activities
- n) Administration of the Material Review Board
- o) Supplier Quality Management Administration of failure analysis from internal and external sources
- p) Administration of lab analytical services
- q) Administration of product and process change control system
- r) Reliability qualifications
- s) Reliability monitors
- t) Administration of a document control system
- u) Administration of internal quality audits
- v) Administration of equipment calibration recall system
- w) Administration of the corrective action system

5.5.1.6 Customer Support: Worldwide Sales & Marketing

Reports to: President and Chief Executive Officer

Responsibilities:

- a) Managing all aspects of the Company's Sales processes
- b) Achieving Company quarterly bookings goals
- c) Managing all sales channels for the Company: Strategic accounts, direct Customers and Distributors
- d) Managing the Company's Sales Representative network
- e) Managing the Company's world-wide sales offices
- f) Developing and executing account plans for major accounts
- g) Meeting/exceeding sales targets for all new products
- h) Administration of corporate communication systems

5.5.1.7 Chief Financial Officer

Reports to: President and Chief Executive Officer

Responsibilities:

- a) Providing all sources of Finance
- b) Providing all budgeting and cost accounting processes and services
- c) Managing all aspects of Treasury
- d) Managing the Company's internal and external financial auditing processes
- e) Accurately reporting and filing all necessary documents pertaining to the Company's operations
- f) Ensuring that the Company is in compliance with all externally mandated financial regulations, including Sarbanes-Oxley requirements
- g) Managing investor relationships

5.5.1.8 Human Resources Manager

Reports to: President and Chief Executive Officer

Responsibilities:

The planning, development, implementation and administration of all personnel, compensation, benefits, employment, training and employee relations programs.

5.5.1.9 All Global Power Technologies Group Employees

All Global Power Technologies Group employees are responsible for the quality of the products and services provided by them to Global Power Technologies Group and its Customers. Unless otherwise stated, the functional responsibilities and authority of all Global Power Technologies Group employees are embedded in the applicable functional operating procedures.

5.5.2 Management Representative

The Director of Quality & Reliability is designated as the management representative with authority and responsibility for ensuring that the requirements of the quality management system are established, implemented, maintained and communicated to improve customer satisfaction and continual improvement.

5.5.3 Internal Communication

Effectiveness of the quality management system is communicated through the performance review meetings or other means of communication.

5.6 Management Review

5.6.1 General

The Executive Management Team periodically conducts reviews of the quality management system to assess its effectiveness and suitability in assuring the quality of products provided. The results of these reviews are documented in the minutes of the review meetings and maintained as per the applicable specification.

5.6.2 Review Input

Quality management system reviews include the results of audits of the quality management system, customer feedback, failure analysis of returned material, process performance and product conformity, changes for continual improvement and the resultant corrective/ preventive actions, follow up of previous actions, changes that could affect the quality management system and recommendations for improvement. The format of the Executive Management Team reviews, as per the applicable specification, enables the discussion and actions needed for continual improvement in the quality management system.

5.6.3 Review Output

The Executive Management Team directs actions needed to improve the effectiveness of the quality management system processes and Customer relations and also to assess productivity and provide resources.

6.0 Resource Management

6.1 Provisions of Resources

GPTG's Executive Management Team shall determine and provide necessary resources to implement and maintain the quality management system with focus on continual improvement to enhance Customer satisfaction.

6.2 Human Resources

6.2.1 General

All employees performing work affecting product shall be competent based on appropriate education, training, skills and experience.

6.2.2 Competence, Awareness and Training

Human Resources is responsible for initial employee orientation training and for assisting with Company-wide training as necessary to support the goals of GPTG's business plan. This training includes a review of the Global Power Technologies Group Quality Policy.

The Executive Management Team is responsible for setting corporate goals and objectives on an annual basis and is evaluated on the achievement of those goals, as well as individual performance, by the CEO. Management reporting up to the Executive Management Team shall utilize the employee performance review process to identify employee competency and to ensure that personnel are aware of the relevance of their job activities toward corporate goals and objectives.

The effectiveness of any training provided may be evaluated during the employee performance review process.

6.3 Infrastructure

Management is responsible for providing an adequate infrastructure and work environment. The Information Technology Group maintains and upgrades computer systems and networks. Area managers have the responsibility to ensure that the equipment, personnel and services required to perform job duties are available.

6.4 Work Environment

Facilities Maintenance is responsible for the building environmental controls. The Safety Department is responsible for safety and ergonomics. Human Resources Department is responsible for maintaining a positive working atmosphere among employees by using recognition, communication and development programs.

7.0 Product Realization

7.1 Planning and Product Realization

Product realization planning falls into one of the following categories:

- a) Planning and defining of the overall product quality objectives, systems and procedures.
- b) Product realization and preparation of individual quality plans as required for specific quality programs or contracts.
- c) Definition of requirements for suppliers.

Planning of quality requirements for new product designs are integrated into the product planning formalities outlined in section 7.3 of this manual. A cross-functional team performs planning with input from Customers and suppliers as applicable.

Individual contracts, purchase orders, and Customer specifications are reviewed in light of existing processes, procedures and equipment in order to identify incompatibilities and special needs. Manufacturing instructions shall be prepared detailing how the Customer's requirements and product acceptance are to be achieved if required by contract, or otherwise deemed necessary. Reference Section 7.2 of this manual.

Requirements for subcontractors are detailed to the extent necessary in quality plans, either generic or unique to a product or order. These may take the form of procurement specifications, procedural documents, control plans, flow charts, build diagrams and/or manufacturing instructions. Reference Section 7.4 of this manual.

7.2 Customer Related Processes

7.2.1 Determination of Requirements Related to the Product

The Global Power Technologies Group Sales department is responsible to determine Customer specific requirements, including the requirements for delivery, by review of contract documents, Customer drawings, specifications and purchase orders. The product data sheet will provide necessary information for product application as well as statutory and regulatory requirements, if any.

7.2.2 Review of Requirements Related to the Product

Review of Contract documents and Customer purchase orders are initiated by the Global Power Technologies Group Sales department prior to order acceptance, in accordance to the Contract Review SOP.

Once requirements are agreed to, Operations is responsible for generating the manufacturing instructions to define the inspection, test, backend processing, and packing and product identification requirements in accordance with Customer specific requirements.

Amendments/revisions to contracts are reviewed in a similar manner to original contracts.

Global Power Technologies Group Sales will document and confirm the requirements prior to order acceptance if the Customer provides no documented statement of requirements. The Manufacturing Instructions Group maintains a Customer file containing records of the contract review/Customer related processes and any Customer approved waivers.

7.2.3 Customer Communication

The Global Power Technologies Group public website is utilized to communicate product information to its Customers. Inquiries, contracts or order placement/acceptance and amendments are channeled through the Sales department utilizing applicable procedures. Results of review, when applicable, are communicated to Customers for confirmation.

Sales department utilizes Salesforce.com and the CustomerSupport@gptechgroup.com email box to manage requests for product information, Return Material Authorization and Corrective Action Requests. Customer Corrective Action Requests (CCARs) are handled through the CCAR@gptechgroup.com email box. The Customer survey system is used to enhance Customer satisfaction and may make associated department referrals to address Customer complaints. Customer surveys shall be used to obtain feedback and focus on enhancements to improve Customer satisfaction.

7.3 Design and Development

Global Power Technologies Group employs a phased release system in order to manage and execute its new product design activities on schedule and in a cost effective manner. These activities are outlined as follows:

- Phase 1 – Authorization & Planning
- Phase 2 – Development
- Phase 3 – Prototyping & Qualification
- Phase 4 – Release to Production

Process details are outlined in Sections 7.3.1-7.3.7 as noted below.

7.3.1 Design and Development Planning

Design and development activities necessary to meet the specified requirements are detailed in product development specifications, development team communications and Purchase Orders to suppliers. Engineering presentations to management and standard operating procedures cover the product authorization, development, verification, qualification and validation and, finally, release to production. They also identify the resources and responsibilities throughout various stages of development plan and schedule tracking.

7.3.2 Design and Development Inputs

Design inputs including statutory and regulatory requirements are reviewed during the project authorization phase. Product functional and performance requirements are reviewed to determine if Global Power Technologies Group and/or its approved suppliers has the capabilities and access to appropriate technologies compatible with the specified requirements. Information derived from previous designs may be utilized to improve device performance in the next generation of the related products. Incomplete, ambiguous or conflicting requirements are resolved with Sales and, if appropriate, with the Customer prior to completion of the design and layout.

7.3.3 Design and Development Outputs

The output of the design process takes the form of substrate specifications, epitaxy specifications, wafer processing specifications, mask set, electrical test specifications, datasheets, and the necessary manufacturing instructions. Prior to mask making, simulations and verification steps are performed to verify compliance to the specifications as well as manufacturability. After mask making, prototypes are built to qualify, characterize and validate product performance against the requirements.

7.3.4 Design and Development Review

Depending on the complexity and challenge of the product, informal design review meetings will be held throughout the design to solicit input from peers and improve the odds of success. Formal final design reviews, involving other functions concerned with the new product development, are held prior to making the first mask set of a product.

7.3.5 Design and Development Verification

Design verifications establish that the design output meets the design input as well as manufacturability requirements. Device and process simulations are used throughout the design phase to ensure that design output meets design requirements. Design rule checking is carried out prior to release to mask making.

7.3.6 Design and Development Validation

Upon receiving the first prototypes, a series of evaluation, validation, characterization and qualification tests will be performed to ensure adherence of the product to the target specifications. If all of the test results are satisfactory, the product will move to the release stage.

7.3.7 Control of Design and Development Changes:

Design and development changes to the existing products are reviewed, verified, validated and approved as defined in the applicable procedures. The Qualification Review Board is responsible to evaluate the changes and to inform applicable Customers when there is a major change to a released product. The results of the design activities are documented in various technical documents, drawings, specifications, notes and computer files which reflect the requirements for implementation of the design changes into a functional product. Copies of certain documents are filed in the design binder that resides with the respective design group. Copies of relevant documents are filed in the product binder that resides with manufacturing. Computer files are archived and backed-up from the engineering computer network. The results of design verification, such as document review or qualification testing, are recorded and retained by the respective design department. Design of Global Power Technologies Group, Device and Modules is not regulated by any regulatory body such as UL/CSA, FDA, OSHA, etc. When applicable standards are revised, Global Power Technologies Group receives the latest revision for review and internal distribution as applicable.

7.4 Purchasing

7.4.1 Purchasing Process

Purchasing is responsible for key supplier relations, negotiations with suppliers, obtaining quotations and issuing the purchase documents. Purchasing, together with the Supplier Management Team, is responsible for initiating the supplier selection process. Purchasing ensures order acknowledgment and is responsible for monitoring the processing of the order

to ensure that Global Power Technologies Group purchased products complies with the specified requirements. Purchasing is also responsible for maintaining an approved supplier list.

7.4.2 Purchasing Information

Purchasing documents are required to contain a clear description of the products ordered and the requirements the product has to meet. To the extent appropriate for the product or the service, the following forms a part of the purchase documents:

- a) Drawing number
- b) Bill of materials
- c) Material, test and inspection specifications
- d) Indications of required quality records and certificates
- e) Quantity ordered
- f) Cost
- g) Required delivery dates
- h) Packaging requirements
- i) Manual for Supplier Partnerships Towards Excellence

7.4.3 Verification of Purchased Product

Should GPTG, GPTG's Customer or GPTG's Customer representative decide to perform source inspection at the supplier's facility, the source arrangements and method of product acceptance shall be incorporated into the purchase order. This verification would not absolve the supplier of the responsibility to provide acceptable product nor would it preclude subsequent rejection.

7.5 Production and Service Provision

7.5.1 Control of Production

The respective manufacturing, test or product engineer prepares the technical process specifications necessary for production control. These documents contain the process details (working steps, equipment to be used, machine parameters, related documents and forms) and are applied by qualified personnel working with appropriate equipment. Document Control maintains the formal document system.

Necessary steps are carried out following the written instructions on the manufacturing instruction. Production results are recorded on the manufacturing instructions or logs for each process step.

Equipment used for production is selected by the responsible managers and engineers on the basis of its ability to perform the intended function. Measuring & test equipment used to verify the quality of the product is subject to calibration prior to being included in the production process. Regular preventive maintenance of equipment is performed and recorded.

Critical production steps, such as planning, scheduling and shipping of products on time, are monitored on a regular basis to assure that all parameters are within the specified limits.

7.5.2 Validation of Processes for Production Provision

Conformance to specified limits and conditions and mechanical performance of the end product are assured by performing electrical test on 100% of each production lot and sample or 100% final visual/mechanical inspection, depending on the Global Power Technologies

Group product line. All guaranteed electrical parameters are validated through testing, correlation, or characterization. Additionally, critical mechanical parameters are monitored as required. Test equipment is checked for calibration and preventive maintenance prior to use.

7.5.3 Identification and Traceability

Identification and traceability are assigned according to the applicable procedures. Functional departments must ensure that the documentation accompanying product, such as production, inspection and test records, and the electronic manufacturing tracking systems contain the correct product identification and traceability. Examples of these are:

- a) Sales assigns order numbers via the ERP system.
- b) Inventory Control assigns lot numbers for wafer sort and subsequent processing steps.
- c) Manufacturing controls the proper marking of the product by the supplier.
- d) Shipping generates the packing slip and bar code labeling.

Production lot numbers are identifiable at any production stage. Production status and process history, including direct material, shall be identifiable for every production lot.

Material in process shall be identified such that it can be determined where the material is located in the production flow. Identification has to be sufficient to prevent accidental movement of the product.

7.5.4 Customer Property

Procedures for identification, verification, and protection of Customer supplied product have been defined in the applicable specs. Customer supplied product must be clearly identified as such. Until the use or installation of these products, they shall be kept segregated under conditions that protect them from damage. If Customer supplied product is lost, damaged, or otherwise becomes unsuitable for use, it shall be treated under the control of nonconforming product described in section 8.3 of this manual and shall be reported to the Customer for disposition.

7.5.5 Preservation of Product

Preservation of product including identification, handling, transportation, storage, packing and delivery within GPTG, from receiving of material to shipping of finished product have been defined in the applicable procedures. These procedures are designed to avoid damage, deterioration and mishandling of product.

7.6 Control of Monitoring and Measuring Equipment

The Calibration Coordinator maintains a listing of all equipment that require calibration and records of such calibrations. When equipment is received it is required to be checked for calibration before being placed in use. Inspection measuring and test equipment in use are regularly calibrated per the due date scheduled on the recall list. This is either performed in-house or by an outside calibration laboratory. When the calibration validity period has expired the equipment is returned by the user or recalled by the Calibration Coordinator. It is the user group's responsibility to ensure that equipment is not in use past the "next calibration due" date.

Equipment used for performing calibration must have a known and valid relationship to calibration standards traceable to NIST, international standards or other documented and acceptable standards. Necessary data is maintained in the corresponding equipment files. Calibration status of the equipment is indicated on labels showing the last calibration date and the date the next calibration is due. If, during an equipment calibration, deviations are detected exceeding the admissible tolerances, the

Calibration Coordinator is notified. The Calibration Coordinator then convenes a meeting of the Material Review Board to assess the impact on product processed at the applicable inspection and/or test operation where the out of calibration condition occurred. If calibration standards are found out of tolerance, the equipment checked with them shall be withdrawn from use for re-verification.

The calibration lab, either internal or external, is responsible for ensuring the correct environmental conditions during calibrations, inspections, measurements and tests. Suitable environmental monitoring such as temperature or relative humidity ensures this. The user ensures that the equipment is handled, stored and preserved in such a manner that accuracy and fitness for use are maintained.

8.0 Measurement, Analysis and Improvement

8.1 General

Information gathered from monitoring, measurement & analysis of the quality management system processes from section 4.1 is utilized to demonstrate that products meet the planned requirements and also demonstrate effectiveness of the quality management system.

Requirements for the use of statistical techniques are imposed on the Company's suppliers and subcontract manufacturers by the Supplier Management Team described in Section 7.4 of this manual.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

The Sales Department utilizes the Customer Corrective Action Requests (CCARs), Return Material Authorization, Corrective Action Request and Customer survey systems to enhance Customer satisfaction and may make associated department referrals to address Customer complaints.

8.2.2 Internal Audits

Internal quality management system audits are performed annually (unless otherwise specified). Internal audits are used to verify that the requirements of the quality management system are being complied with and identify any non-conformances. Internal audits are performed in all areas within Global Power Technologies Group that are covered by this quality manual and the ISO-9001 standard.

The Audit Coordinator has the responsibility to effectively implement, plan/schedule, perform, document, evaluate and maintain records as per the applicable specification of the internal audits. He/She is also responsible for verification of the corrective actions taken.

Auditors shall be selected on the basis of their knowledge and capabilities, shall have received formal training in the auditor task and shall be approved by the Director, Reliability & Quality Assurance. No auditor shall audit their own work. There shall be no punitive measures taken against either an auditor or an auditee.

Department managers and supervisors are responsible for ensuring that the quality management system audit findings are responded to and that the necessary corrective actions are taken in a timely manner. Results of internal audits together with corrective actions and improvements are reported to the Executive Management Team.

8.2.3 Monitoring and Measurement of Processes

Quality management system processes have been defined in section 4.1 of this manual.

Responsible departments shall monitor and measure, where applicable, to ensure planned goals are achieved. Corrective and preventive action shall be taken as necessary, if measured results do not meet their goals.

8.2.4 Monitoring and Measurement of Product

Electrical tests and lot acceptance inspections are in place to monitor and measure the characteristics of the product.

Test Engineering within the division is responsible for creating and maintaining test programs for Final Test & QC acceptance. Subcontract testing is controlled by the Supplier Management Team described in section 7.4 of this manual.

Final Test personnel are responsible for carrying out the required electrical tests and recording the results on the applicable lot documentation. Test personnel are responsible for performing final QC Electrical acceptance sample testing and inspection. Inspection and test results are recorded on the manufacturing instructions.

Under GPTG's Total Quality Management philosophy, the Company's suppliers are expected to furnish material that meets the specification. Incoming inspection is not normally required on material furnished by suppliers that are ISO 9001 registered and provide Global Power Technologies Group with periodic SPC data. Internal Quality Assurance inspection may be performed on an exception basis and any resulting rejections will be dispositional by the Material Review Board.

In-process inspection and testing shall be carried out by Production in accordance with the conditions specified on the manufacturing instructions.

Prior to testing of product, the setup is verified using correlation units maintained specifically for this purpose. Mark and Pack performs the final external visual inspection.

Plant Clearance is the last inspection operation performed before the product is shipped to the Customer. This function is performed by shipping personnel at Global Power Technologies Group or at the subcontract test facility.

Non-conforming product is segregated and reworked, scrapped or submitted to the Material Review Board for disposition in accordance with section 8.3 of this manual.

The manufacturing instructions define all production and inspection/testing stages of the process flow. No deviation from the chronological order in the manufacturing instructions is permitted.

Completion of every step on the manufacturing instructions has to be confirmed by entry of the employee ID number of the respective production or inspection personnel. The results of any inspections or tests also have to be recorded on the manufacturing instructions. The completed manufacturing instructions are the base document for traceability purposes. Records are maintained as per applicable specification.

8.3 Control of Non-conforming Product

Non-conforming material is to be clearly identified and segregated from acceptable material to avoid use or shipment of non-conforming product. If non-conformities are detected, a discrepant material report can be issued and the product put on hold pending an evaluation of the severity of the non-conformance. Material rejected for serious non-conformances is forwarded to the Material Review Board administrator where it is segregated pending Material Review Board disposition.

Material Review Board disposition decisions are entered onto the Discrepant Material Report, e.g.; use as is, scrap, 100% screen, and return to supplier, Customer waiver and rework. Results of the rework activities are confirmed on a rework run card or rework manufacturing instruction. Reworked material shall be re-inspected to original specification requirements.

Records of the nature of non-conformities and any subsequent actions taken, including concessions obtained shall be maintained as per applicable specification.

If non-conforming product is detected after delivery, the Customer will be contacted.

8.4 Analysis of Data

Data collected from the quality management system and product realization processes will be analyzed to provide necessary information toward Customer satisfaction by using Return Material Authorization, Customer Surveys, etc. and also to ensure that product meets the planned requirements. Gathered information is utilized to support preventive action process and also to provide information to the Company's suppliers for continual improvement.

8.5 Improvement

8.5.1 Continual Improvement

Strategic objectives, established as an integral part of the annual business plan, define the expected results from the Company's processes. A key overall objective is Customer satisfaction, which begins with a thorough understanding of Customer requirements. Improvements in Customer satisfaction are achieved through the quality management system processes defined on Figure 2. Also shown on Figure 2 are the measurements used to provide feedback to the processes in order to continually improve effectiveness and ultimately to improve Customer satisfaction, done through the use of the quality policy, quality objectives, audit results, analysis of data, corrective and preventive actions and Executive Management Team review.

8.5.2 Corrective Action

The corrective action system eliminates causes of non-conforming product and system deficiencies, by identifying root cause and implementing corrective action plans to avoid reoccurrence.

Corrective Action Request coordinator evaluates discrepant material reports issued to Manufacturing and initiates Corrective Action Requests when warranted. Corrective Action Requests are issued to subcontractors when appropriate.

Marketing and/or Sales records nonconformities of product at the customer. Necessary information is transmitted to the Director, Customer Quality Engineering for analysis and corrective action.

For evaluation and traceability purposes the corrective action report is generated per requested format as defined in the applicable specification. Records of the results of action taken shall be maintained. Results of corrective actions are reported to the Executive Management Team for review.

8.5.3 Preventive Action

Available trend data from quality monitoring and process performance in addition to corrective action results, Customer complaints, failure analysis results, audit observation, etc. form the basis of preventive action.

The intent of preventive action is to proactively eliminate potential root causes prior to the occurrence of non-conformities. The ultimate responsibility of implementing preventive action belongs to not only each process owner but also the supplying and receiving sides of this process. Evaluation, qualification, and brainstorming prior to product design or realization are required to discover the potential deficiencies or problem areas.

Records of preventive action results taken shall be maintained as per applicable specification. The results of preventive actions are reported to the Executive Management Team for review.