Quality and Environmental Manual

DSEM Holdings Sdn. Bhd.

Introduction

DSEM Holdings is a group of companies comprising of Substrates Manufacturing, Semiconductor Packaging, and other future endeavours, however, this integrated quality and environmental management system applies only to the Substrates Manufacturing and Semiconductor Packaging.

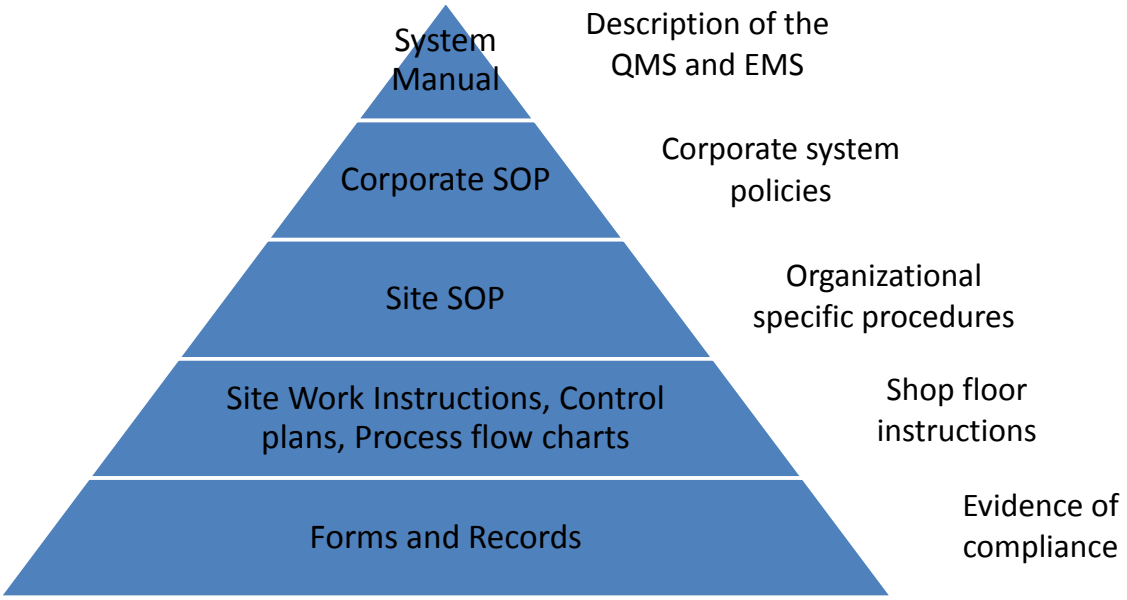
Quality Objectives and Leadership

Senior Management which comprises of the CEO, VP's and directs staffs are responsible of communicating through their direct reports the Quality and Environmental Policy and the importance of meeting Statutory and regulatory requirements to employees within their respective organization. With the aim of continual improvement, defect prevention, process variation reduction, waste reduction and meeting customer requirements, they shall ensure that it is understood and applied to the daily work of the organization through the establishment of goals and objectives. Key objectives are established in accordance to the Quality Policy and Environmental Policy and taking into account the following factors:

- Customer requirements (QMS)
- Business direction (QMS)
- Industry Standards (QMS)
- Significant Aspects (EMS)
- Legal Environmental requirements (EMS)

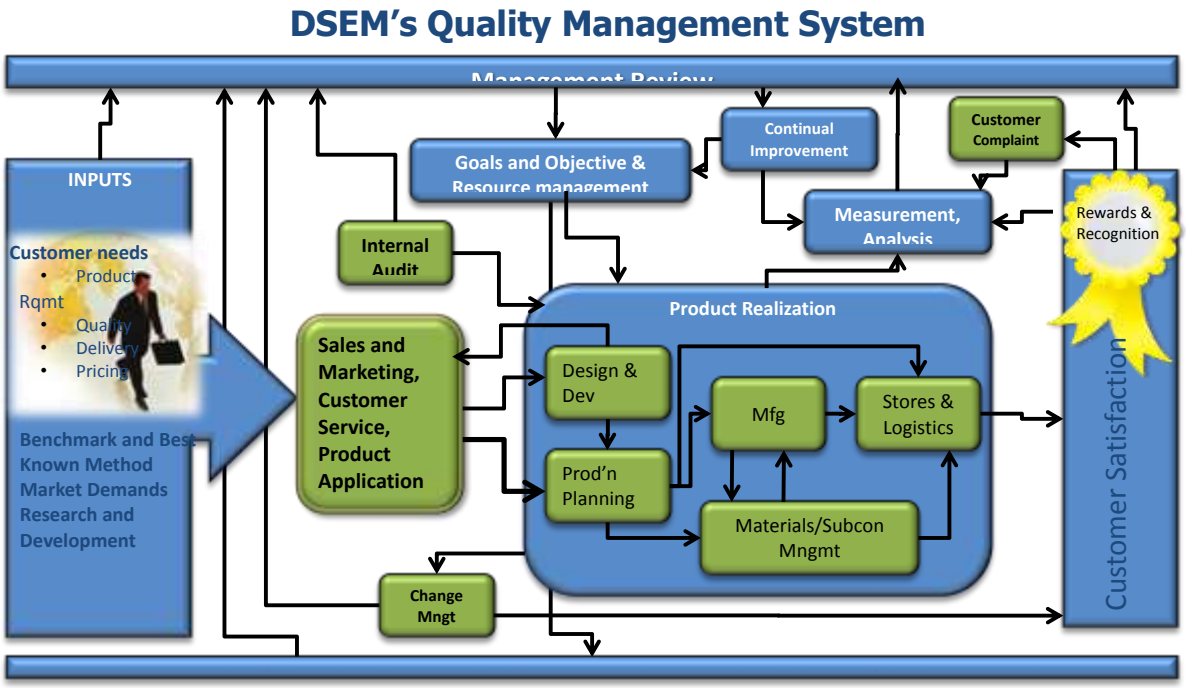
Document Structure

The Quality and Environmental Manual defines corporate level systems policies. This is followed by procedures (corporate level) that details how these policies are implemented. Second tier SOP outlines the site/organization specific procedures. Further down the structure are work instructions, control plans, process flow and other documents that outline the details of the operation and are used as a shop floor instruction guide. And the evidence of the existence and operation of these key processes are provided by records.



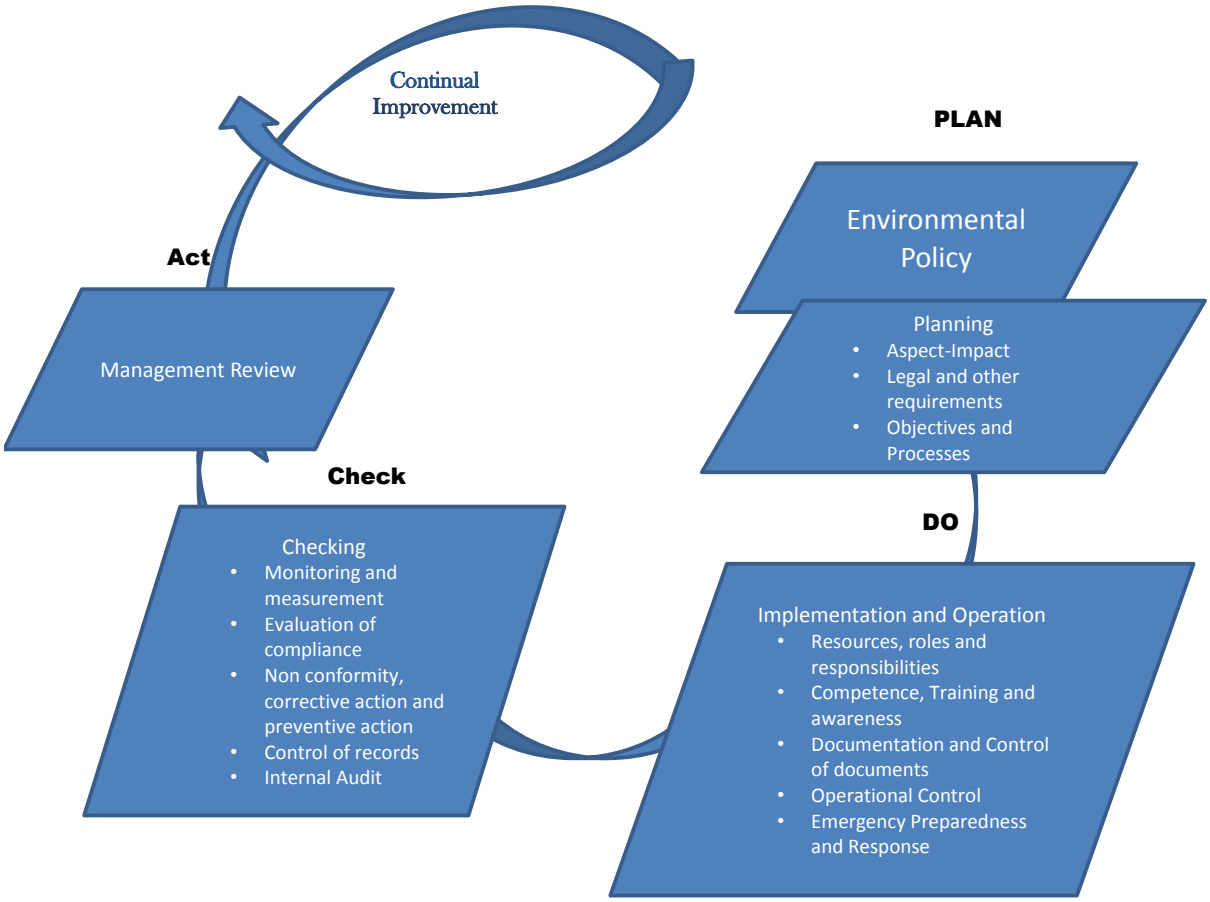
Note: "Site" refers to DSEM Systems and Device semiconductor; although these two operations are maybe housed in the same facility.

Below is the process map to describe the DSEM Holdings Quality Management System.



The environmental management system follows the P-D-C-A methodology which stands for Plan-Do-Check-Act.

Below is the environmental management system model of DST.



This Manual defines the Quality Management System for Device Semiconductor and DSEM Systems Technology to ensure that its products and services meet customers, statutory and regulatory requirement while the Environmental Management System is integrated for DSEM Systems Technology only to ensure its environmental aspects are within the bounds of the legal requirements and other environmental requirements that DST may subscribe to. This Q/EMS is compliant to ISO 9001 and ISO 14001

It is intended for use by all DSEM Holdings employees and certifying bodies.

The maintenance of this document is the responsibility of the Quality and Reliability Engineering Manager, any questions regarding this document shall be directed to our Quality and Reliability Engineering Manager.

1.0 Purpose:

This document describes the policies and requirements of DSEM Holdings' quality management system that ensures meeting customer requirements and enhancing its satisfaction through the effective application of the system while ensuring the environmental management system is integrated into its operation; taking into consideration legal requirements and other environmental requirements to which DST may subscribe to.

The quality management system also aims to emphasize on defect prevention and the reduction of variation and waste in the supply chain.

2.0 Scope:

2.1 DSEM Systems:

2.1.1 The design and manufacture of metal core PCB (MCPCB) for Quality Management System.

2.1.1.1 Manufacturing of Advanced Metal Substrates for Environmental Management System.

2.1.2 This quality and environmental manual defines the QMS and EMS which is structured around ISO 9001:2008 and ISO 14001:2004.

2.2 Device Semiconductor:

2.2.1 Provision of Backend Semiconductor Services.

2.3 Exclusion for ISO 9001:2008

2.3.1 For DST: Section 7.5.2 – Validation of processes for production is excluded because the product can be immediately inspected and measured in-house.

2.3.2 For DVM: Section 7.3- Design and Development is done by the customer and the Bill of Materials is also provided by the customer.
Section 7.5.2 – Validation of processes for production is excluded because the product can be immediately inspected and measured in-house.

3.0 Terms and Definition:

- ISO – International Standardizing Organization
- QMS – Quality Management System
- EMS – Environmental Management System
- QMR – Quality Management Representative
- EMR – Environmental Management Representative
- AMS – Advanced Metal Substrates is the product of DSEM Systems Technology
- Environment – surroundings in which DSEM Systems Technology operates, including air, water, land, natural resources, flora and fauna, humans and their interrelation.
- Environmental Aspect – elements of DSEM Systems Technology's activities, products or services that can interact with the environment.
- Environmental Impact – any change to the environment whether adverse or beneficial, wholly or partially resulting from DST environmental aspect.
- DST – DSEM Systems Technology organization
- DVM- Device Semiconductor organization
- ASL – Approved Supplier list

- GYAT – Get-Your-Act-Together is a meeting conducted at the beginning of the working day or shift in order to align all team members to the objectives of the day
- VOC- Voice of the customer, is any form of feedback from both internal and external customers
- Internal customers- refer to preceding process or department affected or receives the other's output or service within the organization
- TNA- Training Needs Analysis is an assessment of the training requirements of certain group or individual against its knowledge/skills to the expectations or its job function.
- MRB- Material Review Board is a group of team members convened to disposition a non-conforming material, process or other related matters.
- CAR- Corrective Action Request is a form of feedback for any discrepancies.
- RMA-Return Material Authorization is the procedure defined for the return of purchased goods to DSEM from the customer due to quality or other issues that are found valid.
- SPC-Statistical Process Control is a form of process monitoring using statistical method
- FMEA- Failure mode and effect analysis is a tool used to determine potential problems of the design or process and establish controls to prevent or mitigate them.
- Supplier- the term applies for both material and service supplier (subcontractor).

4.0 Quality and Environmental Management System

4.1 General Requirements

- DSEM Holdings established this quality manual to meet the requirements of our customers and other applicable standards. It is supported by documented procedures, work instructions and process flows that define specific activities needed to implement and maintain the QMS and continually improves its effectiveness in accordance to the ISO9001 standards.
- Key processes that support the implementation of the QMS and EMS are defined in this manual.
- Criteria and methods needed to ensure that both the operation and control of these processes are effective have been defined within this manual.
- DSEM Holdings Senior Management ensures the availability of the resources and information necessary to support the operation and monitoring of these processes.
- DSEM Holdings Senior Management is responsible to monitor, measure, analyze and implement actions necessary to achieve planned targets and continual improvement of these processes.
- This document also outlines the controls of outsourced processes.
- This document outlines the environmental management system requirements.
- Unless otherwise specified as either quality or environmental all elements apply to both Quality and Environmental management system

4.2 Documentation Requirements

4.2.1 General

The documentation needed to ensure effective planning; operation and control of processes are detailed in this Manual. Appendix A lists the procedures, documents defining minimum standards supporting key elements of the quality management system. Appendix B lists the procedure, documents for environmental management system.

4.2.2 Quality and Environmental Manual

This manual defines DSEM Holdings QMS and EMS necessary for its implementation, maintenance and improvement.

4.2.3 Control of Documents

DSEM Holdings controls documents and ensures required approval. The procedure, Document and Change Control Procedure defines the document and record control, review and change, approval requirements, revision status and availability at point of use. Obsolete documents are identified and controlled to prevent unintended use. Documents required for the operation of the QMS and EMS is managed by the Document Control function within the Quality Systems Organization

4.2.3.1 Timely review, distribution and implementation of all customer engineering standard/specifications and changes based on customer required schedule are defined in Document and Change Control Procedure.

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4.2.4 Control of Records

Records are established and maintained to provide evidence of conformity to requirements and of the effective operation of the QMS and EMS. Records shall remain legible and be readily identifiable and retrievable. Procedures on record retention are defined in the Document and Change Control Procedure. This procedure defines controls needed for the identification, storage, retrieval, retention time and disposition of records. These controls shall satisfy statutory, regulatory and customer requirements.

Note: 1. "Disposition" includes disposal
2. "Records" also include customer- specified records.

5.0 Management Responsibility

5.1 Management Commitment

Senior Management is committed to the development and implementation of the Quality and Environmental management system, for ensuring that it remains relevant to the company's objectives and the needs and expectation of our customers and that it fosters continual improvement.

This commitment includes:

- Communicating to the organization the importance of meeting customer as well as statutory, legal and regulatory requirements.
- Establishing Quality and Environmental Policy and objectives
- Conducting management reviews
- Ensuring the availability of resources

5.1.1 Process Efficiency

Senior Management reviews the product realization processes and the support processes to assure their effectiveness and efficiency.

5.2 Customer Focus

Senior Management ensures that customer requirements are determined and met with the aim of enhancing customer satisfaction.

5.3 Policies

5.3.1 *Quality Policy*

Senior Management ensures that the quality policy is appropriate to the purpose of the organization. The quality manual includes a commitment to comply with requirements and to continually improve the QMS. The quality policy is communicated throughout the organization and is reviewed for continuing suitability during the annual management review.

DSEM Holdings Quality Policy:

DSEM Holdings is committed to the compliance of the Quality Management System, fostering continual improvement in order to deliver complete solutions and services that are meeting or exceeding customer expectations at competitive pricing.
While striving to achieve zero defects and delivery on-time, every time, DSEM Holdings commits to provide superior customer service encounter, promoting customer satisfaction, loyalty and long term relationship.
We achieve this by fully engaging DSEM Holdings employees in a culture of Quality Ownership such as:

1. ***Designing-in Quality***
2. ***Building-in Quality***
3. ***Service with a smile***
4. ***Doing the right things right***
5. ***Doing things right the first time***
6. ***Seeking better ways to do things***
7. ***Quality-NO Excuse attitude***

5.3.2 *Environmental Policy*

Senior Management shall ensure that the environmental policy is appropriate to the nature, scale and environmental impacts of our activities, products and services, with a commitment to comply to legal requirements and other requirements which DST may subscribe to, continual improvement, prevention of pollution, measure its performance and communicate to its employees, contractors and visitors.

DST Environmental Policy:

DST recognizes its responsibility as a global citizen to continually strive to reduce environmental impact of the aspects generated by our activities.
DST is committed to:

- ***Promote environmental awareness to our stakeholders – employees, contractors working in our factory, supplier, customers and visitors.***
- ***Comply with the relevant environmental legislation.***

- ***To measure its impact on the environment and set targets for on-going improvement***.

5.4 Planning

DST identifies the significant aspects through the Aspect-impact evaluation procedure taking into account planned or new developments, or new or modified activities, products and services.

DST also identifies and regularly checks for updates the applicable legal requirements and other requirements as defined in the Environmental legal and other requirements and evaluation procedure.

5.4.1 Objectives

Quality objectives, including those needed to meet requirements for products and environmental objectives and targets are established at relevant functions and levels within the organization. All managers are responsible for communication of these goals and objectives within their respective organizations and reporting back to the organization Senior Management on the performance and the effectiveness of the quality and environmental management system. Quality objectives are measurable and consistent with the quality policy and are related/linked to the business plan. Environmental objectives are measurable and consistent with the environmental policy, including the commitment to pollution prevention, compliance to applicable legal requirements and other requirements that DST subscribes to.

5.4.1.1 Environmental Programs

DST establishes programs for achieving its objectives and targets on annual basis.

5.4.2 Quality Management System Planning

Senior management ensures Quality system planning is carried out in order to meet the requirements of ISO9001 as well as the quality objectives. Changes to the QMS are planned and implemented in such a way to maintain integrity of the QMS.

5.5 Responsibility, Authority and communication

5.5.1 Responsibility and authority

Senior Management defines the responsibilities and authorities in the Job description, organizational charts, Procedures, Work Instructions, and other responsibility matrix documents for Quality Management system while an EMS organization chart with its responsibilities and authorities defined is established regardless of the individuals' roles and responsibilities in the QMS. These are communicated within the organization and /or are deployed to each individual.

Responsibility for Quality

Production, Operation, Process Engineering and QA Managers with the responsibility and authority for corrective action are promptly informed of products or processes which do not conform to requirements.

Every employee of DSEM Holdings is responsible for his or her actions in support of the quality policy. Personnel responsible for conformity to product requirements are authorized to stop production and correct the problem. In addition, all shifts are staffed with a production supervisors and QA gate operators who are responsible of ensuring conformity to product requirements. Any employee may issue a "quality action request" to bring appropriate attention to any situation having a negative impact on quality.

5.5.2 Management Representative

Top Management has appointed the Quality and Reliability Manager as the Quality Management Representative. The QMR authorities and responsibilities are:

- Develop, implement and maintain the QMS including processes, programs, systems and procedures to assure that product quality is maintained and improved in accordance with this manual & ISO9001:2008.
- Report to Top Management on the performance of the QMS
- Promote awareness of customer requirements throughout the organization.

Senior Management has appointed the Environmental Management Representative who shall be responsible for:

- Ensuring that environmental management system is established implemented and maintained in accordance with the requirements of ISO 14001.
- Reporting to top management on the performance of the environmental management system for review including recommendations for improvement.

Customer Representative

The Customer Service together with the Quality Assurance team is responsible of ensuring that customer requirements are addressed. This includes selection of special characteristics, setting quality objectives and related training, corrective and preventive actions, product design and development.

The Customer Service is responsible for maintaining the customer scorecards.

The Quality Forum like Operations meetings will use these VOC (Voice of the Customer) inputs to drive actions to ensure that customer requirements are addressed.

5.5.3 Communication

Internal communication is one of the effective tools for deploying the Quality and Environmental Management System. The Operations Meeting, the Strategic Planning and the Management review are the main forums for internal communication. Other forms include:

- Daily Production/Operations Meeting (GYAT)
- Staff Meetings
- Design reviews for quality
- Memorandums and emails

In the Environmental Management, the EMR shall receive all external communications and keeping records of these communications and visits of these parties. The EMR or the communication's team leader shall respond to these external parties when needed. These communications shall include the emergency planning and other relevant issues with the public authorities.

The communications team with the assistance of the ERT champion/commander or Security officer shall ensure the communication of the environmental policy and related environmental rules and regulations of DST to external parties coming to visit the DST facility.

DST opt not to communicate externally the environmental aspects.

5.6 Management Review

5.6.1 General

Senior Management reviews the organization's Quality and Environmental management system to ensure its continuing suitability, adequacy and effectiveness. The review includes assessing opportunities for improvement and the need for changes to the QMS and EMS, including the policies and objectives. Reviews are scheduled annually

Quality Management System Performance

These reviews shall include all requirements of the QMS and its performance trends as an essential part of the continual improvement process. Part of the management review includes the monitoring of quality objectives, including cost of poor quality. Results are recorded providing evidence of the achievement of the quality objectives and customer satisfaction with product supplied.

5.6.2 Review Input

Inputs to quality management review shall include the following:

- Information on audit results
- Customer feedback
- Process performance and product conformity
- Status of preventive and corrective actions
- Follow up actions from previous management review
- Changes that could affect the quality management system
- Recommendations for improvement
- Analysis of actual and potential field failures including their impact on quality, safety or the environment

Inputs to environmental management review shall include the following:

- Results of internal audits and evaluations of compliance with legal requirements and with other requirements to which DST subscribes.
- Opinions of interested parties
- Environmental performance of the organization, environmental management programs
- The extent to which objectives and targets have been met
- Status of corrective and preventive actions

- Follow up actions from previous management reviews
- Changing circumstances, including developments in legal and other requirements related to its environmental aspects and
- Recommendations for improvement

5.6.3 Review Output

The output from management review includes decisions and actions related to the improvement of the effectiveness of the QMS and its processes, the improvement of product related to customer requirements, and resources needs.

6.0 Resource management

6.1 Provision of Resources

DST is committed to provide adequate resources for implementing, maintaining and continually improving the effectiveness of the QMS in order to enhance customer satisfaction. It shall also ensure the availability of resources essential to establish, implement, maintain and improve the environmental management system including emergency situations.

6.2 Human Resources

6.2.1 General

Employees performing work affecting product quality and/or have potential to cause a significant environmental impact shall be competent on the basis of appropriate education, training, skills and experience. The Training procedure defines the training system for operative and non-operative employees as well as the EMS awareness, emergency response and its related procedures. Records of employee trainings and effectiveness of training are kept as per Document and Change control procedure.

6.2.2 Competence, awareness and training

The Department managers, supervisors and HR shall:

- Determine the necessary competence for employees performing work affecting product quality and for those affecting the environmental management system. Training Needs Analysis is used to document the training requirement per job function.
- Make training available to employees or take other actions to satisfy competency needs.
- Evaluate the effectiveness of the actions taken through demonstrations of competency or certification.
- Ensure the employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality objectives and how their work affects the environmental aspect and impact.
- Ensure that appropriate records of education, training, skills and experience are maintained in the employee record file.

Product design skills

Employees with product design responsibility are competent to achieve design requirements and are skilled in applicable tools and techniques.

Applicable tools and techniques are defined by the Design and Development team.

Training

Human Resources has established and maintained documented procedures for identifying training needs and achieving competence of all employees. Employees performing specific assigned tasks shall be qualified, as required, with particular attention to the satisfaction of customer requirements.

Training on the job

In any new or modified job affecting the product quality, employees (including contract workers) are to go through the on-the-job training. Personnel whose work can affect quality are informed about the consequences to the customer of non-conformity to quality requirements.

Employee motivation and empowerment

DSEM Holdings is committed to employee motivation as a means of driving quality objective results, and promoting the principles of continual improvement and innovation consistent with the philosophy of the learning organization. Performance appraisal process and other reward system are some of the processes to support to the commitment. Quality and technological awareness is promoted throughout the organization.

During the internal audit employees are interviewed or surveyed to measure the extent to which employees are aware of the relevance and importance of their activities and how they contribute to the achievement of the quality and environmental objectives.

6.3Infrastructure

DST Management shall provide infrastructure necessary to achieve product requirements and meet the legal and other environmental requirements by maintaining:

- Buildings, workspace and associated utilities
- Waste treatment facilities
- Process Equipment (software and hardware)
- Security
- Safety
- Janitorial Services
- Café Services
- Prayer rooms
- Drinking fountains
- Toilets
- Emergency kits and defined exit point
- Emergency preparedness and response procedure

Plant, Facility and Equipment Planning

A multidisciplinary approach shall be used to develop plant, facility and equipment plans. Plant layouts optimize material movement; handling and value added use of floor space and facilitate synchronous material flow. Metrics such as cycle time, on-time-delivery, conversion rate and others are used to evaluate the effectiveness of the existing operation.

The infrastructure and work environment is planned and supported by:

- Engineering, maintaining all equipment specific to manufacturing.
- Operations, maintaining the work environment necessary to achieve conformity to product requirements
- IT, maintaining systems/network
- External Technical services, maintaining phones/faxes/computers/printer
- Lab Technicians, maintaining equipment specific to the reliability and failure analysis labs.

Contingency Plans

The following are the contingencies for each emergency case:

- Power interruptions – DSEM have identified vendors for Gen Set rental
- Labour shortage- DSEM have identified labour contractors
- Key equipment failure- DSEM use standard equipment and are readily available at short lead time. The equipment vendors provide services. Identified subcons are also available to perform the process.
- Field returns- comprehensive 8D problem solving is immediately conducted; containment action within 24 hours of the complaint. A fast track processing is employed to build replacement products.

6.4 Work environment

DSEM Holdings Management shall define and manage the work environment needed to achieve conformity to product requirements.

Employee safety

DSEM Holdings Management shall provide the proper safety education and the proper protective equipment necessary to operate the system or perform the task. Product safety shall also be addressed in the design and development process.

Cleanliness of premises

DSEM Holdings maintains its premises in a state of order, cleanliness and repair consistent with the product and manufacturing process needs and in the control of its environmental aspects.

7.0 Product Realization

7.1 Planning of Product realization

Management determines quality objectives and requirements for the product and the need to establish processes, documents, and resources required for verification, validation,

monitoring, inspection, and testing specific to the product and the criteria for product acceptance. Records are defined to provide evidence that the product realization process and the resulting product meet QMS and customer requirements.

The process begins with the review of the customer requirements or market needs- unclear requirements are clarified. The specific product characteristics are determined and the manufacturing feasibility is assessed. Information from previous projects and other sources of inputs are reviewed. Where applicable a process for communicating with the customer regarding product and contract requirements and providing customer feedback is established.

For big projects whereby a complete light engine is required, Advance package quality planning process is followed. Otherwise for the substrates level design, shall follow the order processing flow.

Customer requirements
Customer requirements and references to its technical specifications shall be included in the planning of the product realization as a component of the quality plan.

Acceptance Criteria
Acceptance criteria shall be defined and approved by the customer. Acceptance level shall be zero defects for attribute sampling.

Confidentiality
Customer contracted products and projects and its related information shall be treated with high confidentiality.

Change Control
DSEM Holdings has defined processes to control and react to changes that impact product realization. The effects of any change, including those caused by the suppliers, shall be assessed verified and validated to ensure compliance to customer requirements before implementation. DSEM Holdings shall maintain a record of the date on which each change is implemented in production. The implementation of changes includes updated documents. Changes in form, fit and function will be notified to customer prior implementation and where required customer approval and additional customer verification requirements will be met.

7.2 Customer Related process

7.2.1 Determination of Requirements related to the product

DSEM Holdings determines customer requirements including delivery and post delivery activities, those not stated by the customer but necessary for the intended use, statutory and regulatory requirements related to the product and other requirements defined by DSEM Holdings.

Customer-designated special characteristics

Special characteristics shall be indicated in the Process Control plan if there are any.

7.2.2 Review Requirements related to the product

DSEM Holdings reviews product related requirements per customer drawing and/or other documented requirements from the customer before committing to supply. Should there be no documented requirements and/or drawing from the customer, DSEM Holdings shall follow the internal specifications with the customer concurrence/approval.

Organization manufacturing feasibility

Manufacturing feasibility is assessed and any potential risks are communicated back to the customer.

7.2.3 Customer communication

DSEM Holdings considers customer communication as a vital factor in customer satisfaction. Electronic mails and teleconferences are the means of communicating with customers regarding product information, inquiries, contracts of order handlings, including amendments, customer complaints, feedback and product quality alert notification.

7.3 Design and Development

7.3.1 Design and development planning

DSEM Holdings plans and controls the design and development of the product. During the design and development planning, the design and development stages, review, verification and validation are determined. Responsibilities and authorities are determined and communicated effectively.

Multidisciplinary approach

DSEM Holdings involves all the affected/appropriate departments in the product realization planning using, FMEA approach to reduce potential risks and developing control plans.

7.3.2 Design and development inputs

Inputs relating to product requirement s are determined and records are maintained. Inputs include:

- Functional and performance requirements
- Applicable statutory and regulatory requirements
- Where applicable, information derived from previous similar designs

These requirements shall be reviewed for adequacy, completeness, and not in conflict with each requirement.

Product design input

Product design input requirements includes customer requirements, identification, traceability, packaging, targets for product quality, reliability, timing and cost. Deploys information gained from previous design projects, competitor analysis,

supplier feedback, internal input, field data, and other relevant sources for current and future projects of similar nature.

Manufacturing process design inputs

Such data include productivity, process capability, and experiences from previous developments.

Special characteristics

Special characteristics are defined with the customer and noted in the control plan and other applicable documents/instructions.

7.3.3 Design and Development outputs

The outputs of design and development is the fabrication drawing and gerber which enables verification against the design and development input and shall be approved prior to release. It shall provide appropriate information for purchasing, fabrication and for service provision when applicable, contains or reference product acceptance criteria, and specify the characteristics of the product that are essential for its safe and proper use.

Product design outputs

The product design output is used to verify and validate the design input requirements. Such outputs include

- DFMEA and reliability results,
- Product special characteristics and specifications,
- Product definition including drawings or mathematically based data (software simulations),
- Product design reviews.
- Product error-proofing, as appropriate
- Diagnostic guidelines, where applicable

Manufacturing Process design output

The manufacturing process design output may include:

- Specifications and drawings
- Process flow charts and layout
- PFMEA
- Control Plans
- Work Instructions
- Process approval acceptance criteria
- Data for quality, reliability, maintainability and measurability
- Results of error-proofing activities
- Methods for rapid detection and feedback of product/manufacturing process nonconformities.

7.3.4 Design and development review

Customer inputs and requirements are first reviewed to determine the key characteristics or design features. Then with the aid of the design rule check, manufacturing feasibility is determined. Review of the design, constraints (if any) and proposals are conducted before

communicating back to the customer. Participants of the review shall include representatives of functions concerned with the design and development stages. Records of the results of the reviews and any necessary actions are maintained.

Monitoring

Stages of review are defined in the APQP procedure and shall be part of the management review agenda.

7.3.5 Design and development verification

During the design and development reviews verification shall be performed to ensure that the design and development outputs have met the input requirements. Minutes of the meeting or records of the verification with the necessary actions are maintained.

7.3.6 Design and development validation

A final validation of the product occurs prior to shipment. The validation check/test and acceptance criteria may be customer, product or market specific and is defined in the design input. Record of the results of validation and necessary action shall be maintained.

Prototype program

When required by the customer, DST will have a prototype program and control plan. Whenever possible the same suppliers, tooling and manufacturing processes will be used in production. All performance testing activities shall be monitored for timely completion and conformity to requirements. While services may be outsourced, the organization shall be responsible for the outsourced services, including technical leadership.

Product approval process

When required DST shall conform to a product and manufacturing process approval procedure recognized by the customer. This manufacturing process approval procedure shall be applied to suppliers.

7.3.7 Control of design and development changes

Design and development changes are identified and records are maintained. The changes shall be reviewed, verified, validated as appropriate and approved before implementation. The review of the design and development changes includes evaluation of the effect of the changes on constituent parts and product already delivered. Records of the results of the review of changes and necessary actions shall be maintained.

7.4 Purchasing

7.4.1 Purchasing process

Note: In the following paragraph the term supplier is used to denote the material suppliers, service supplier and subcontractors with the full knowledge that the requirements for each may not always be exactly the same.

The DSEM Holdings purchasing system described in purchasing procedure ensures that products, materials and services purchased from the suppliers conform to the requirements including applicable regulatory requirements. The purchasing department reviews all purchase requisitions to ensure that appropriate levels of management as determined by the spending and authorization policy, have been approved.

DSEM Holdings evaluates and selects suppliers based on their ability to supply products and services in accordance with the requirements. Criteria for selection, evaluation and re-evaluation are established. Evaluation records and necessary actions shall be maintained.

Regulatory conformity
All purchased products or materials used in product shall conform to applicable statutory and regulatory requirements.

Supplier Quality management system development
DSEM Holdings performs supplier quality management system development with the goal of supplier conformity to latest version of ISO9001. Prioritization of supplier shall depend on performance and importance of product supplied. Unless otherwise specified by the customer, suppliers to DSEM Holdings shall be third party registered to ISO9001 by an accredited certifying body.

Customer approved sources
When specified by the contract, DSEM Holdings shall purchase products, materials or services from approved sources. DSEM Holdings shall still take responsibility for ensuring quality of the purchased product, services, tools, etc. from customer designated sources.

7.4.2 Purchasing information
Purchasing information shall describe the product to be purchased. Purchasing department shall ensure the adequacy of specified purchase requirements prior to their communication to the supplier.

7.4.3 Verification of purchased product
DSEM Holdings has established and implemented inspection or other activities necessary to ensure that purchased products meets specified purchase requirements. When verification is intended to be performed at the supplier's facility, it shall be indicated in the purchase order the intended verification arrangement and method of product release.

Incoming Product quality
Incoming product quality is assured by utilizing one or more of the following methods:

- Evaluation of supplier statistical data
- Receiving inspection sampling plans
- Second or third party assessments coupled with records of acceptable delivered product quality
- Part evaluation by a designated laboratory.

- Other methods agreed with the customer

Supplier Monitoring
Supplier performance is monitored through the following indicators:
- Delivered product quality
- Production disruptions including field returns
- Delivery schedule performance
- Notifications related to quality or delivery issues

Quality and delivery performance ratings shall be transmitted to the suppliers based on supplier activity. Purchasing and Quality Assurance shall administer the evaluation of supplier performance. An Approved Supplier List (ASL) is maintained.

7.5 Production and service provision

7.5.1 Control of production and service provision
Manufacturing processes at DSEM Holdings are carried out under controlled conditions. Controlled condition includes:
- Availability of information describing the characteristics of the product
- Availability of Work instruction
- Use of suitable equipment
- Use of monitoring and measurement devices
- Implementation of monitoring and measurement
- Implementation of releases, delivery and post delivery activities
- Availability of aspect control and monitoring procedures
- Application of waste segregation scheme for scheduled wastes
- Use of scrubbers and wastewater treatment plants for the prevention of pollution
- Availability of emergency preparedness and response procedure
- Use of calibrated or verified measuring tools

Control Plan
DSEM Holdings shall develop control plans for the processes that produce products supplied to our customers. In case of outsourced processes, DSEM Holdings shall ensure that the supplier develop control plans. Control plan for pre-launch and production shall take into account the DFMEA and PFMEA outputs.

Control plans shall list the controls used for manufacturing process controls, include methods for monitoring of control over special characteristics defined by both customer and DSEM Holdings. A Reaction plan shall be defined when the process becomes unstable or not statistically capable. Control plans shall be reviewed and updated when changes occur affecting product, process, measurement, logistics, supply source or FMEA.

Control plans and FMEA shall be maintained within the DCC system. Supplier documents will be requested and used as required then returned or destroyed.

Environmental monitoring plan
DST shall develop monitoring plan for its significant aspects to measure its level on a regular basis against the legal requirements and DST objectives.

Work Instruction
Documented work instruction for all employees having responsibilities for the operation of processes that impact product quality are to be accessible for use at the workstation.

Verification of job set-ups
Set-up procedure is defined per process and these are performed usually during initial run, shift change, material change.

Preventive and predictive maintenance
Operations shall identify key process equipment and provide resources for machine maintenance and develop an effective planned total preventive maintenance system. As a minimum this system shall include planned maintenance activities, packaging and preservation of equipment, tooling and gauging; availability of replacement parts for key manufacturing equipment; documenting, evaluating and improving maintenance objectives. Operations shall utilize predictive maintenance methods to continually improve the effectiveness and the efficiency of production equipment.

Management of Production Tooling
DSEM Holdings provides resources for tools and gauge design, fabrication and verification activities. The system includes:

- Maintenance and repair facilities and personnel
- Storage and recovery
- Set-up
- Tool-change program for perishable tools
- Tool design modification documentation, including engineering change level
- Tool modification and revision documentation
- Tool identification, defining the status, such as production, repair or disposal
- Monitor system for all activities that are outsourced

DSEM Holdings implements a system to monitor these activities for works that are outsourced.

Production Scheduling
Production scheduling is order driven to meet the customer requirements

Feedback of information from service
After sales support includes customer problem resolution and material return and replacement.

7.5.2 Validation of process for production and service provision
-Exclusion-

7.5.3 Identification and traceability
DSEM Holdings maintains comprehensive identification and traceability system from order entry to shipping. Identification and traceability is maintained down to individual panels by means of panel marking. DSEM Holdings utilizes WIP tracking system and paper system (e.g., lot travellers, labels, inspection log).Records shall be maintained per Document and Change Control Procedure.

7.5.4 Customer Property
DSEM Holdings shall exercise care with customer property while it is under the organization's control or being used by DSEM Holdings. The following customer properties are:

- Customer drawing which shall be governed by document control procedure under external documents
- Tooling which shall be governed by the equipment maintenance procedure.

If any damage or loss or otherwise unsuitable use of these property, DSEM Holdings shall report this to the customer and maintain a record of this report.

7.5.5 Preservation of Product
All products shall be packaged for shipment from DSEM Holdings in a manner to prevent mechanical damage.

Storage and inventory
The condition of product in stock shall be assessed at appropriate intervals in order to detect deterioration. The inventory management system shall optimize inventory turns over time and stock rotation. Obsolete product shall be controlled in a similar manner to nonconforming product.

7.6 Control of monitoring and measuring devices
DSEM Holdings determines the monitoring and measurement to be undertaken and the monitoring and measuring devices needed to provide evidence of conformity of product and conformity to legal environmental and other requirements. Processes are established to ensure that monitoring and measurement can be carried out and are carried out in manner that is consistent with the monitoring and measurement requirements.

All inspection, measurement and test equipment used in the manufacturing, end-point acceptance inspection and environmental aspect monitoring (as applicable) shall be placed

into the calibration system. The calibration system specifies measurement equipment to be calibrated or verified at specified intervals, or prior to use, against measurement standards traceable to international or national measurement standards. The basis used for calibration or verification shall be recorded where no such standard exist. Measurement equipment shall be safeguarded from adjustments that would invalidate the measurement result.

Measurement equipment shall be protected from damage and deterioration during handling, maintenance and storage.

A recall system is used to ensure that all such identified equipment is calibrated within the prescribed interval, or is withdrawn from use (and identified) until calibrated.

Records are maintained to provide evidence of conformity. When the equipment is found not conforming to requirements, previous measurement shall be assessed and take appropriate action on the equipment and any product affected.

Measurement System analysis

Statistical studies are recommended to analyze the variation present in the results of each type of measuring and test equipment system. This applies to key measurement system referenced in the control plan.

Calibration/verification records

Records of the calibration/verification activity for all gauges, measuring and test equipment needed to provide evidence of conformity of product requirements shall include:

- Equipment identification, including the measurement standard against which the equipment is calibrated.
- Revisions following engineering changes
- Any out of specification readings as received for calibration/verification
- An assessment of the impact of out of specification condition
- Statements of conformity to specification after calibration/verification
- Notification to the customer if suspect product or material has been shipped.

Laboratory requirements

Internal laboratory

The laboratories at DSEM Holdings shall have a defined scope that includes its capability to perform the required inspection, test or calibration services. The laboratory scope shall be included in the QMS documentation. The lab shall specify and implement technical requirements for adequacy of the lab procedures, competency of the lab technicians/operators, testing of the product, capability to perform these services correctly, traceable to the relevant process standard, and review of the related records.

External laboratory evidence

External labs used for inspection, test or calibration services shall have a defined lab scope that includes its capability to perform the required inspection, tests or calibration and either have evidence that it is acceptable to DSEM Holdings or be accredited to ISO/IEC 17025.

8.0 Measurement, Analysis and Improvement

8.1 General

Management plans and implements the monitoring, measurement, analysis and improvement processes needed to

- ensure conformity of products
- ensure conformity of the quality management system
- Continually improve the effectiveness of the QMS.
- Continually improve the effectiveness of the EMS

Identification of statistical tools

DSEM Holdings management reviews internal processes for the application of statistical process control and are included in the control plan.

Knowledge of basic statistical concepts

Basic statistical concepts such as variation, control (stability), process capability and over adjustment shall be understood and utilized by employees in areas where processes require statistical techniques.

8.2 Monitoring and Measurement

8.2.1 Customer Satisfaction

DST top management has established processes to measure and monitor customer satisfaction and to continually use this information to improve the performance. This includes customer perception as to whether the organization has met customer requirements. The methods used to collect this data include:

- Delivery performance
- Customer scorecards
- Customer complaints
- RMA process
- CAR (corrective action report)

8.2.2 Internal Quality and Environmental Audit

Internal audits are scheduled, performed, reported and followed up in accordance with the requirements of internal audit procedures. This includes the responsibilities and requirements for planning, conducting, reporting results and maintaining audit records.

Internal audits determine if the Management Systems conforms to the requirement of ISO9001 and ISO 14001 and is effectively implemented and maintained.

Audit planning takes into consideration the status and importance of the processes and areas to be audited as well as the results of the previous audits. Audit planning defines the audit criteria, scope, frequency and methods used. The audit process ensures objectivity and impartiality. Auditors do not audit their own work. Audit findings are entered into the NCR system to ensure that management of the audited area takes actions without undue delay to eliminate detected non-conformities.

Follow up activities include the verification of the action taken. Internal audit recommendations and results are reviewed as part of management review.

Quality Management system audit
The QMS is audited to verify compliance to ISO9001 and all additional QMS requirements.
Environmental Management system audit
The EMS is audited to verify compliance to ISO 14001.

Manufacturing process audit
Each manufacturing process is audited to determine its effectiveness to achieving the required quality output.

Environmental Operation audit
These operations and processes are audited to determine its effectiveness to meeting the required Legal and other requirements output.

Product audit
Product audits are conducted at appropriate stages of production and delivery to verify conformity to all specified requirements such as product dimensions, functionality, packaging and labelling at a defined frequency.

Internal audit plans
Internal audit covers all quality management related processes, activities and shifts. Internal audits are scheduled according to an annual plan. When there are non-conformities or customer complaints, the audit frequency shall be appropriately increased.

Internal auditor qualification
Only qualified Internal auditors can lead in the internal audits. To qualify, one must have a certification to ISO 9001 Internal Auditor training for QMS and ISO 14001 for EMS.

8.2.3 Monitoring and measurement of processes
Quality and environmental performance indices are identified measured and monitored. When target results are not achieved corrective actions are taken to ensure product and service conformity.

Monitoring and measurement of manufacturing processes

- Process capability are measured and monitored and are used to provide additional input for process control.
- Significant process event such as tool change or machine repair are recorded.
- DSEM Holdings shall ensure that a certain reaction plan from the control plan is initiated for characteristics that are either not statistically capable or unstable.
- Record of process changes shall be maintained as defined in the Document and Change Control procedure.

- Where manufacturing processes are outsourced, DSEM Holdings ensures that these requirements are met.

8.2.4 Monitoring and Measurement of product

- At DSEM Holdings, product quality and reliability is monitored and measured at every stage of the process from the Design and Development of the product to Manufacturing Processes.
- Evidence of conformity with acceptance criteria and record of product release authorization is kept.
- Product release occurs after planned arrangements have been satisfactorily completed, unless otherwise approved by a relevant authority and where applicable by the customer.

Layout inspection and functional testing

Product dimensions are measured versus the customer engineering drawing and the functionality of the product is tested as specified in the control plan. Results are available for customer review.

Appearance Items

DSEM Holdings does not manufacture any "appearance items" products

8.3 Control of non-conforming products

Non-conforming materials or products are segregated and identified to prevent its unintended use pending investigation of root cause and to assess to what extent the non-conformance may impact other products, processes or service.

When materials, products, processes and services are found to be non-conforming to applicable procedures, specifications, drawings or customer contractual agreements, a Material Review Board (MRB) may be initiated to evaluate and disposition the matter. The MRB disposition process includes the control of rework, customer notification and customer waiver as appropriate.

Non-conforming products can be dealt with by one or more of the following ways:

- By taking action to eliminate the detected non-conformity.
- By authorizing its use, release or acceptance under concession by a relevant authority and where applicable by the customer.
- By taking action to preclude its original intended use or application.

Records of non-conformity and subsequent actions taken, including concessions obtained, are maintained. When non-conforming product is corrected it shall be re-verified to demonstrate conformity to the requirements. When non-conforming product is detected after delivery or

use has started, DSEM Holdings shall take action appropriate to the effects, or potential effects of the non-conformity.

Control of reworked product
Instructions for rework, including re-inspection requirements, shall be accessible to and utilized by the appropriate employees.

Customer information
Customers shall be informed promptly in the event that non –conforming product has been shipped.

Customer waiver
DSEM Holdings shall obtain a customer waiver prior to further processing whenever the product or manufacturing process is different from that which is currently approved. The waiver record shall contain the expiration date or quantity authorized. DSEM Holdings shall ensure compliance with the original or superseding specifications and requirements when the waiver expires. Material shipped on a waiver shall be properly identified on each packaging. This applies equally to purchase product. DSEM Holdings shall agree with any requests from suppliers before submission to the customer.

8.3.1 Environmental non-conformities
Environmental non-conformities maybe identified through the Aspect impact evaluation, monitoring and measurement, internal audit or emergency preparedness and response review. Corrective actions and preventive actions shall be initiated in order to lessen or eliminate the actual or potential environmental impact. The HOD of the affected area shall be responsible for:

- Handling and investigating the non-conformance
- Taking necessary actions to mitigate the environmental impact caused by the non conformance
- Initiate and complete corrective actions and preventive actions

Non-conformance, potential and actual maybe observed by anyone in the organization. This person shall inform the HOD of that area.

The investigation, corrective actions and preventive actions maybe documented in 8D form or the CAR form. Corrective action and preventive action are deemed effective if there is no recurrence of the problem or similar incident in another area, or material. All these reports shall be kept by the EMR for 1 year and when there is no recurrence of the incident within the year, after which shall be archived as per DCC procedure.

8.4 Analysis of Data
Trends in quality and operational performance shall be compared with the objectives and lead to action when targets are not met.

The analysis of data shall provide information relating to:

a) Customer satisfaction
b) Conformity to product requirements
c) Characteristic and trends of processes and products, including opportunities for preventive action
d) Suppliers

8.5 Improvement

8.5.1 Continual Improvement

The continual improvement process is a companywide methodology to improve the effectiveness of the QMS and EMS through the use of the policy, objectives, audit results, analysis of data, corrective and preventive actions and management review. Findings are reviewed with management and appropriate project and/or actions are taken to implement the necessary improvements.

It is the responsibility of the functional managers to promote the principles of continual improvement through their functions and encourage their respective departments to take full responsibility for implementing this.

8.5.2 *Corrective Action*

The corrective action process incorporates as systematic step-by-step corrective action problem solving approach (8D process) used to identify the cause of non-conformity, eliminate the cause and prevent recurrence.

Problem Solving

DSEM Holdings has a defined process for problem solving leading to root cause identification and elimination.

Error Proofing

Error proofing methods are used within the corrective action process.

Corrective action impact

Best known methods, improvement and corrective actions are fanned-out to other area where applicable.

Rejected product test/analysis

DSEM Holdings shall conduct failure analysis on parts rejected by the customer either at their incoming or in-process upon their request at shortest lead time. Records of analysis shall be made available to customer. Subsequent corrective actions shall be committed to eliminate recurrence of the complaint/rejection.

8.5.3 Preventive Action

As part of a continuous drive for improvement within our processes, data is collected and analyzed to eliminate the causes of potential non-conformities in order to prevent their occurrence. These are analyzed and recorded in the FMEA for quality and Aspect-impact evaluation for environmental.

Appendix A:

ISO 9001 Elements		DSEM Holdings Document No.	Title
4.1	QMS General Requirements	QAA-OP-001	Quality and Environmental Manual
4.2	Documentation Requirements	DCC-OP-001	Document and Change Control Procedure
4.2.3	Control of documents	DCC-OP-001	Document and Change Control Procedure
4.2.4	Control of records	DCC-OP-001	Document and Change Control Procedure
5.1	Management commitment		Quality policy Quality objectives
5.2	Customer Focus	CSD-OP-001 DND-FR-002(01) CSD-OP-002 QAA-OP-005	Order Processing Flow Design Checklist Customer Satisfaction Survey Procedure Management Review
5.3	Quality Policy		Quality Policy
5.4.1	Quality Objectives	QAA-OP-005	Quality Objectives List Management Review
5.5	Responsibility, authority and communication		Job Description Organizational Chart Respective Work Instructions
5.6	Management review	QAA-OP-005	Management review
6.1	Provision of Resources		Job Description, Organisation Chart
6.2.1 6.2.2	Competence, awareness and training	TND-OP-001 DCC-OP-001 TND-FR-001(05) HRD-OP-001	Training and certification procedure Document and Change Control procedure Training Needs Analysis Performance Appraisal Policy
6.3	Infrastructure	FAC-OP-002 ENG-OP-004	Control Plan Facilities Maintenance Equipment Preventive Maintenance
6.4	Work environment	QAA-OP-020 DST-SO-002 DST-OP-004	Work Environmental Control Procedure Emergency Preparedness and Response Monitoring and Measurement of Environmental Aspect

		DST-SO-003 DST-SO-005 DST-SO-001	EMS Legal Waste Segregation Aspect Impact Evaluation
7.1	Planning of Product Realization	CSD-OP-001 DND-OP-001 QAA-OP-017 ENG-OP-001	Order Processing Flow New Product Development APQP PCR
ISO 9001 Elements		**DSEM Holdings Document No.**	**Title**
7.2	Customer related processed	DND-FR-002(01) CSD-OP-001	Customer Drawing (external doc) Design Checklist Order processing flow Quotation system PO/Contract Review
7.2.1	Determination of requirements related to the product	DND-FR-002(01) CSD-OP-001	Customer Drawing (external doc) Design Checklist Order processing flow Quotation system PO/Contract Review
7.2.2	Review of requirements related to the product	DND-FR-002(01) CSD-OP-001	Customer Drawing (external doc) Design Checklist Order processing flow Quotation system PO/Contract Review
7.3	Design and Development	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
7.3.1	Design and Development Planning	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
7.3.2	Design and development inputs	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
7.3.3	Design and development outputs	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP

7.3.4	Design and development review	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
ISO 9001 Elements		**DSEM Holdings Document No.**	**Title**
7.3.5	Design and development verification	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
7.3.6	Design and development validation	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
7.3.7	Control of design and development changes	CSD-OP-001 DND-FR-002(01) DCC-OP-001 DND-OP-001 QAA-OP-017	Order processing Flow Design checklist Document and Change Control New Product Development APQP
7.4	Purchasing	PUR-OP-001 QAA-OP-023 PUR-FR-001(01) QAA-OP-022 QAA-OP-008	Purchasing Procedure Material Procurement spec Qualification report Approved Supplier list Supplier Audit Rating and Ranking IQA SCAR Purchase Order
7.4.1	Purchasing process	QAA-OP-024	Outsourcing Control/Sub control
7.4.2	Purchasing information	QAA-OP-023 DST-SQ-001	Material Procurement Spec Banned and control substrate policy
7.4.3	Verification of purchased product	QA-OP-013	Zero Acceptance

7.5.1	Control of production and service provisions	QAA-OP-013 QAA-OP-024	Control plans Work instructions Process Flow QA gates IPQC Zero Acceptance Outsourcing Control/Sub control
ISO 9001 Elements		**DSEM Holdings Document No.**	**Title**
7.5.3	Identification and traceability	QAA-OP-025 DST-SO-006 STR-OP-001	Product traceability and identification Material Part numbering system Lot traveller generation Store and Shipping procedure
7.5.4	Customer Property	DCC-OP-001 FAC-OP-001 ENG-OP-003 QAA-OP-018 QAA-OP-019 STR-OP-001 FAC-OP-001 DST-SQ-003	Document and Change Control Facilities Preventive Maintenance General Preventive Maintenance procedure Consigned Equipment Customer Consigned Material Store and Shipping procedure Scrap Handling Chemical Safety Handling
7.5.5	Preservation of product	STR-OP-001	Store and Shipping procedure
7.6	Control of monitoring and measuring devices	QAA-OP-014 QAA-OP-006 DST-SO-004	Calibration procedure MRB procedure Monitoring and Measurement procedure
8.2.1	Customer Satisfaction	CSD-FR-002(01) QAA-OP-007 QAA-OP-010 CSD-OP-002	Customer Survey form 8D problem solving procedure RMA procedure Customer Satisfaction
8.2.2	Internal Audit	QAA-OP-002 QAA-OP-005	Internal Audit Management Review
8.2.3	Monitoring and measurement of processes	ENG-OP-002 QAA-OP-016	Process Control procedure SPC procedure
8.2.4	Monitoring and measurement of product	DST-SO-004 QAA-OP-013	QA gates Outgoing inspections Monitoring and Measurement procedure Zero Acceptance
8.3	Control of non conforming	QAA-OP-006	MRB Procedure

	product	QAA-OP-012 QAA-OP-008 QAA-OP-009 QAA-OP-004 QAA-OP-016	QDN procedure SCAR Customer Complaint Non Conforming Handling procedure Statistical Process Control
8.4	Analysis of Data	QAA-OP-005 CSD-OP-002 QAA-OP-016	Management Review Procedure Customer Satisfaction Statistical Process Control
ISO 9001 Elements		**DSEM Holdings Document No.**	**Title**
8.5.1	Continual Improvement	QAA-OP-003 QAA-OP-005	Corrective and Preventive Action Management Review
8.5.2	Corrective Action	QAA-OP-007 QAA-OP-006 QAA-OP-012 QAA-OP-008 QAA-OP-003	8D procedure MRB QDN SCAR Corrective and Preventive Action
8.5.3	Preventive Action	QAA-OP-011 QAA-OP-003	FMEA Corrective and Preventive Action

Appendix B:

ISO 14001 Clause		**DSEM Holdings Document No.**	**Title**
4.1	General requirements	QAA-OP-001	Quality and Environmental Manual
4.2	Environmental Policy	QAA-OP-001	Quality and Environmental Manual
4.3.1	Environmental Aspect	DST-SO-00	Environmental aspect-impact evaluation
4.3.2	Legal and other requirements	DST-SO-003	Environmental Management system Legal requirements procedure
			Legal and other requirements registry
4.3.3	Objectives, targets and programs	QAA-OP-001	Quality and Environmental Manual
		DST-SO-001	Environmental aspect-impact evaluation
			Programs on resource conservation and pollution prevention
4.4.1	Resources, roles, responsibilities and authorities	QAA-OP-001	Quality and Environmental Manual
			EMS org chart
			EMS roles , responsibilities and authority matrix
4.4.2	Competence, training and awareness	TND-OP-001	Training procedure

		HRD-OP-001	Appraisal Procedure
4.4.3	Communication	TND-OP-001	Training procedure
		QAA-OP-001	Quality and Environmental Manual
4.4.5	Control of Documents	DCC-OP-001	DCC procedure
ISO 14001 Clause		**DSEM Holdings Document No.**	**Title**
4.4.6	Operational Control	DST-SO-005	Waste Segregation and Disposal Procedure
			Waste water treatment system
			Fume treatment system
		DST-SO-004	Monitoring & Measurement
		DST-SO-002	Emergency preparedness and response procedure
		DST-SQ-003	Chemical safety handling procedure
		ENG-OP-003	General Preventive Maintenance Procedure
		FAC-OP-002	Facilities preventive maintenance procedure (to include safety)
4.4.7	Emergency Preparedness and response	DST-SO-002	Emergency preparedness and response procedure
4.5.1	Monitoring and measurement	DST-SO-004	Monitoring & Measurement
		QAA-OP-014	Calibration procedure
		DST-SO-005	waste segregation and disposal procedure
			Waste water treatment system
			Fume treatment system
		QAA-OP-005	Management review
4.5.2	Evaluation of compliance	DST-SO-003	Environmental management system Legal requirements procedure
			Legal and others requirement registry
			Waste water treatment system
			Fume treatment system

		QAA-OP-002	Internal Audit
		QAA-OP-005	Management Review
4.5.3	Non conformance, corrective action and preventive action	QAA-OP-007	8D procedure
		QAA-OP-001	Quality and Environmental Manual
ISO 14001 Clause		**DSEM Holdings Document No.**	**Title**
4.5.4	Control of Records	DST-SO-001	Environmental aspect-impact evaluation
		DCC-OP-001	DCC procedure
4.5.5	Internal audit	QAA-OP-002	Internal audit
4.6	Management review	QAA-OP-005	Management review

Appendix C (Cross reference of ISO 14001 clause to this Quality and Environmental Manual)

ISO 14001:2004 Clause	**Title**	**QAA-001 section**
4.1	General Requirements	4.1
4.2	Environmental Policy	5.3.2
4.3	Planning	5.4
4.3.1	Environmental aspects	5.4
4.3.2	Legal and other requirements	5.4
4.3.3	Objectives, targets and programs	5.4.1, 5.4.1.1
4.4.1	Resources, roles, responsibilities and authority	5.1,5.5.1,6.3,5.5.2,6.1, 6.4
4.4.2	Competence, training and awareness	6.2.1,6.2.2
4.4.3	Communication	5.5.3
4.4.4	Documentation	4.2.1
4.4.5	Control of Documents	4.2.3
4.4.6	Operational Control	7.5.1,6.4
4.4.7	Emergency preparedness and response	6.1,6.2.1,6.3
4.5.1	Monitoring and measurement	5.6.1,7.6,7.5.1,8.2.3,8.1
4.5.2	Evaluation of Compliance	5.4, 7.5.1,8.4
4.5.3	Nonconformity, corrective action and preventive action	8.3.1,8.5.2,8.5.3

4.5.4	Control of records	4.2.4
4.5.5	Internal Audit	8.2.2
4.6	Management review	5.6.1,5.6.2