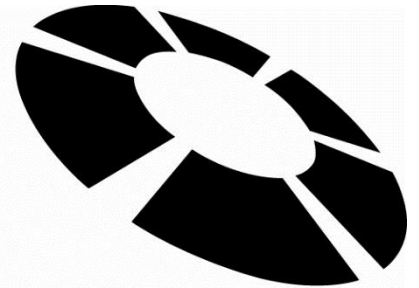


Quality Management Systems

of



smartpowersolutions

Smart Power Solutions LLP
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ISO 9001:2015



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Appendix A Smart Power Solutions Quality Management Objectives
Document ref. SPS908_3



I Company Profile and Structure

I.1 Company Profile

Smart Power Solutions is based in Leeds in the UK and was founded in 2001 to provide a comprehensive electronics engineering service for all stages of a project from concept through to manufacture. We have a team of focused power electronics professionals with many years of experience in the switched mode power supply and motor drive industries. SPS specialises in custom intelligent power electronics systems for both static and rotating applications such as grid-tied inverters and motor drive systems. With a broad range of in-house expertise required for intelligent power electronics, we can also undertake a variety of electronics development work for many different applications.

To complement our design services, we have an in-house low volume manufacturing and prototyping facility specifically targeted at power applications. This can take on anything from PCB based lower power products through to high power module based stack or full system assembly work.

Our experience covers automotive, appliance, medical and industrial applications over an extremely wide range of powers from 1W to 500kW+. We work for a diverse range of customers from individual entrepreneurs to large multi-national companies. Whether our customers require a few hours input to a design review or a complete turnkey solution, we can help. We add the most value to a development when we are involved early on and work collaboratively with our customers. This approach has been very much appreciated and customers often benefit from our innovation and wide experience in unexpected ways.

We are well used to managing the transition from prototypes to manufacture by factoring in specific design for manufacture and test requirements at an early stage. This is true whether manufacture is to be carried out in-house or externally at a CEM on the other side of the world. All our work is carried out in the strictest confidence and any IPR generated is usually assigned to the customer.

Our 'Quality management Systems' seeks to ensure the highest levels of customer satisfaction, in a culture of continuous improvement, which meets or exceeds the requirements of ISO9001:2015.

<http://www.smartpowersolutions.com/>



1.2 QMS ISO9001:2015. Scope, Boundaries & Applicability

The Quality Management Systems described in this document and the associated procedures, applies to all the activities of Smart Power Solutions LLP which are:

‘The development, manufacture, test, maintenance and service of electronics which typically controls either static or rotating electric power systems for a variety of end applications’.

The company recognises that its customers, employees and owners in particular are critical to the continued success and health of the company. Furthermore there are many other interested parties that are relevant to the company operating effectively in that they provide products, services, policy, grants or collaboration. All of these relevant interested parties will be consulted, monitored and kept informed as required.

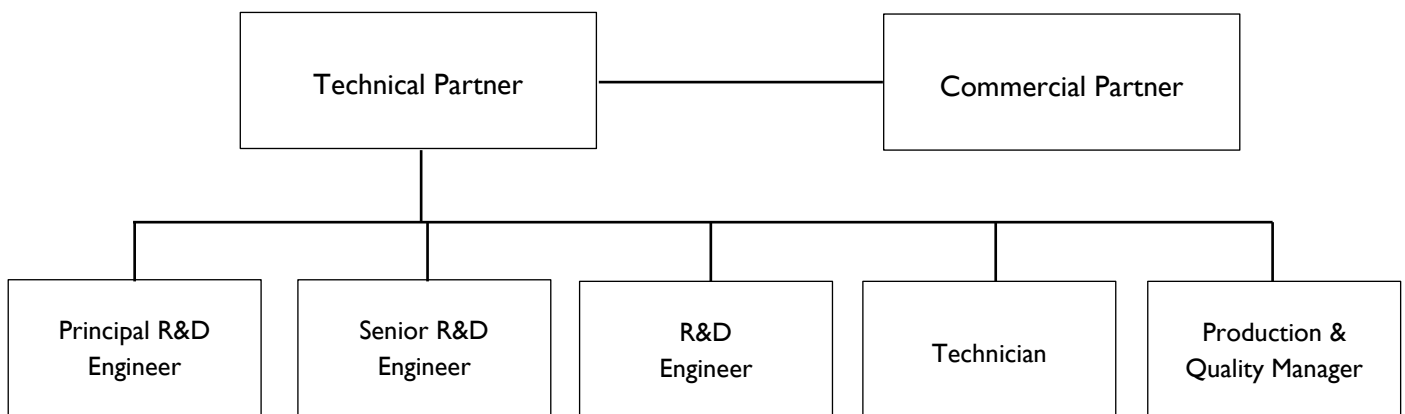
The scope of the Quality Management System stated here and the related processes and procedures takes into account the context of the organisation and the needs of relevant interested parties. These are annually reviewed and the scope of the Quality Management System, its reach and its boundaries amended as required. The evaluation and effectiveness are reviewed within quality meetings, management meetings and quality audits’.

The company utilises off-site specialist testing facilities (e.g. EMC, environmental and motor dynamometers) in order to verify designs. These facilities are typically in the UK. It also carries out verification and validation activities on customer sites that could be located anywhere in the world.

The Company or its customers do not perform verification at external providers premises unless requested to so by the external provider.

The documented Quality Management Systems complies with all sections and requirements of the ISO9001:2015 standard with no exclusions.

1.3 Company Structure



1.4 Standards & Codes of Practice

The company works on a wide variety of applications for a diverse range of geographical locations. It works closely with customers and external approval bodies to identify and assure conformity to the relevant standards which typically cover electrical safety, electromagnetic compatibility, environmental and energy efficiency requirements. The relevant standards are identified during early stages of a project and reviewed regularly to ensure they are current. In addition, the following standards and codes of practice are applied across all activities:

- ISO9001:2015 Quality Management Systems
- IPC-A-610 Acceptability of Electronic Assemblies
- IPC- WHMA-A -620 Requirements and Acceptance for Cable and Wire Harness Assemblies



2 Quality Policy Statement

The **Smart Power Solutions LLP** Quality Management systems, processes, procedures and controlled documentation ensures that our core activities of **development, manufacture, test, maintenance and service of intelligent electronic / electrical power systems and controls**, are carried out in a manner which meets or exceeds the highest standards expected by its customers, owners and employees.

The owners of Smart Power Solutions LLP wish the company's activities to be directed towards business that minimises or reduces environmental impact whenever possible. This will be done by focusing on applications that give rise to electrical energy saving, more effective use of our finite resources and / or reduction in harmful emissions.

By providing the employees with training, experience, and a suitable work environment the company will ensure that it continues to offer its customers innovative and cost effective solutions.

The Company has quantifiable objectives in place to systematically promote quality improvements and to ensure a safe, stable and healthy working environment. Risk-based methodology is used across the company in order to focus its resources and ensure that customer requirements are met.

It is the policy of **Smart Power Solutions LLP** to maintain, on a continual basis, an effectively managed Quality Assurance programme as defined in the ISO9001:2015 standard. This will assure all interested parties that products and services supplied will conform to the laid down procedures and / or disciplines of the company.

The management of **Smart Power Solutions LLP** is firmly committed to the documented procedures and control systems of the Company and all employees are involved in the implementation of this policy.

The Technical Partner is entrusted with the authority and responsibility for the control of the Quality Management System.

Signed: _____

Technical Partner

Date: _____



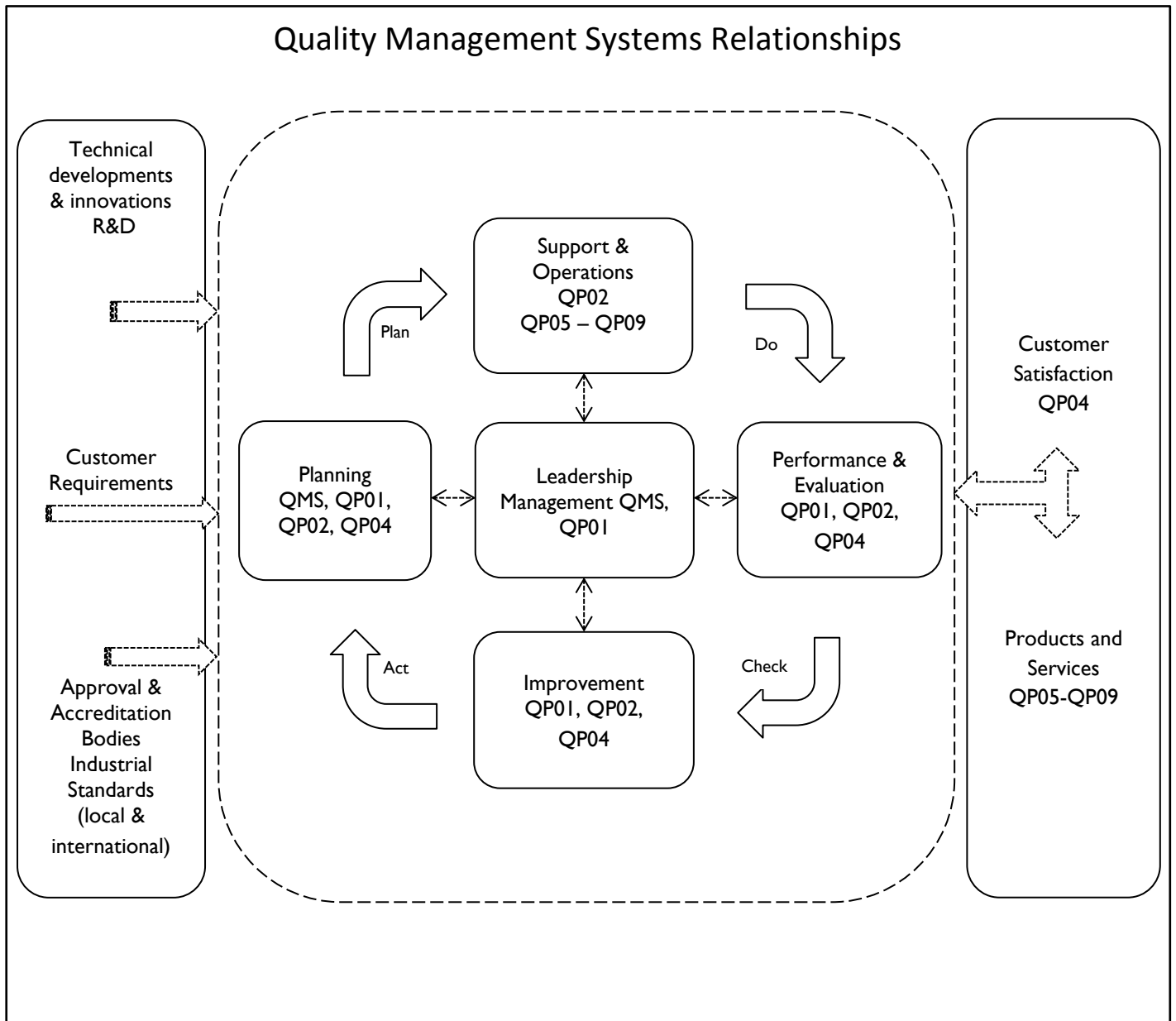
3. Smart Power Solutions Quality Management Systems

The company has implemented Quality Management Systems that carefully considers external and internal requirements, controlled processes, procedures that meet or exceed international standards, customer requirements and satisfaction.

The Quality Management Systems ensure that all critical phases of management, design/development and production of product is carefully planned and that risks are considered and mitigated prior to process being carried out ensuring a high, efficient performance in all sectors therefore and a high level of customer satisfaction.

This Quality Management Systems carefully considers the interaction between processes and resources, the effectiveness of those processes, and the need to adequately control through monitoring and continual improvement the relevance of the processes to the business and interested parties.

3.1 Quality Management Systems Relationships, fig 1





3.2 The Control and Retention of Documented Information

All documented information be it generated for managerial purposes, administration, project design / development or the assembly and production of product is securely maintained.

As required permitted access to documented information is set and controlled by the senior management.

All project design, development and production specification related documentation is strictly revision controlled and records kept of revision changes.

Where possible Smart Power Solutions operate 'paperless' processes and procedures.

Full details of Smart Power Solutions Control and Retention of Documented Information can be found in Procedure 'QP02'.

3.3 List of Controlled Quality System Documented Processes and Procedures, fig 2.

| Procedure Ref. | Description | Document ref. | Responsibilities |
|----------------|---|---------------|--|
| SPS QMS | Smart Power Solutions Quality Management Systems | SPS908_4 | Technical Partner |
| QP01 | Leadership and Management | SPS908_14 | Technical Partner |
| QP02 | Control and Retention of Documented Information | SPS908_15 | Technical Partner Quality manager |
| QP03 | Support and Resources Infrastructure & environment. People, materials, goods and equipment controls | SPS908_16 | Technical Partner Commercial Partner Quality manager |
| QP04 | Performance and Evaluation | SPS908_17 | Technical Partner Quality manager |
| QP05 | Operational Flow Chart 'Enquiry to Order' | SPS908_21 | Technical Partner |
| QP06 | Operational Flow Chart 'Design & Development' | SPS908_22 | Technical Partner Principal Engineer Quality manager |
| QP07 | Operational Flow Chart 'Procurement' | SPS908_23 | Technical Partner Commercial Partner Quality manager |
| QP08 | Operational Flow Chart 'Manufacturing' | SPS908_24 | Technical Partner Production Manager Quality manager |
| QP09 | Operational Flow Chart 'Service & Maintenance of Manufactured Product. | SPS908_26 | Technical Partner Quality manager |

3.4 Control and monitoring of Smart Power Solutions Quality Management Systems

The Quality Management Systems, process, procedures, documented information and maintenance of documented information are internally and externally audited on an annual basis by competent persons.

The Quality Management Systems and audit reports are reviewed within the annual Management Review along with non-conformance reports. All issues are reviewed. Risks, opportunities for improvements are identified and actions planned.

Full details ref. Smart Power Solutions procedure QP04



4. Smart Power Solutions Leadership and Management

4.1 Leadership & Management

The *Technical Partner* defines the 'Quality Management Systems', 'Quality Policy', associated 'goals and objectives' of the organisation. This includes the organisational structure and resources to achieve its goals and the objectives and all statutory and regulatory requirements that are required to meet customer's needs.

The *Technical Partner and Commercial Partner* conduct annual (or more frequent) management reviews against the stated goals contained within the Quality Policy, goals and objectives. During Management Reviews, support and resources are assessed against the organisations stated goals and objectives.

4.2 Customer Focus

Customer needs and requirements are determined through effective contract and design reviews (*operations QP05 & QP06*). Allowing **Smart Power Solutions LLP** assess key stages, associated risks and mitigation, planning, test and measurement, to meet or exceed the customer's expectations.

4.3 Responsibility and Authority

The *Technical Partner* is responsible for the provision and maintenance of the company's quality management systems. To facilitate this various levels of authority have been allocated. The company organisation is designed that responsibilities and authorities of all personnel, who manage, perform and verify work is clearly defined.

4.4 Infrastructure & Environment

The company ensures that the infrastructure essential to ensure product conformity, and conformance with statutory and regulatory requirements, continues to be satisfactory and are reviewed at the management review meetings.

Through the company's Health and Safety policies and practices the work environment is reviewed, to ensure all activities are safely performed ensuring customer satisfaction and compliance with current regulations and practices.

Full details ref. Smart Power Solutions procedure QP01, QP03

5. Operations

5.1 Management of Design, Development Projects & Manufacturing Product

The organisation produces and maintains system processes, procedures, quality/project plans and strictly controlled documented information in order to meet or exceed customer specification / expectations.

To achieve this, careful consideration is given to each contract / project requirement, processes to be employed, objectives, provision of resources, verification and validation of acceptance criteria.

Full details ref. Smart Power Solutions procedures QP05-QP09

5.2 Resources, Parts, Materials and Services

All External Providers are selected and approved on the basis of quality assessed by certification, historical performance or on/off site audits.

Processes and procedures exist that ensure traceability of resources and parts or material used. This may also include specific equipment used for measurement and test.

All equipment is controlled. Procedures are in place for the control of all measuring and testing devices. Qualified external agencies are used for calibrations that are outside the company capability.

Full details ref. Smart Power Solutions procedures QP03, QP04.



6. Index / cross ref. ISO9001:2015 - QMS Processes, Procedures, documented information

| ISO9001:2015 Standard | SPS ref. | Process, procedure, documentation description |
|---|---|---|
| 4.1 – 4.3 Context, Interested Parties, Scope | QMS, (SPS908_4) Web site QP01 (SPS908_14) | Quality Management Systems http://www.smartpowersolutions.com/ Review of context and interested parties QP01 Leadership and Management, Management Review Reports Monthly QMS meetings / reviews |
| 4.4 QMS and It's Processes | QMS, (SPS908_4) QP01 to QP09 (SPS908_14 to 17, SPS908_21-26) | Quality Management Systems QP01 Leadership and Management - Management Review Reports QP02 Control & Retention of Documented Information QP03 Support & Resources QP04 Performance & Evaluation QP05 Operation Flow Chart Order to Enquiry QP06 Operation Flow Chart Design / Dev QP07 Operation Flow Chart Procurement QP08 Operation Flow Chart Manufacturing QP09 Operation Flow Chart Service & Maintenance of Manufactured Product Related documented information, ref. QP01-QP09 Monthly Quality Management Meetings 6 Month and Annual QMS reports |
| 5 Leadership, Policy, Organisation 5.1 – 5.3 | QMS (SPS908_4) QP01 (SPS908_14) | Quality Management Systems QP01 Leadership and Management - Management Review Reports Related documented information, ref. QP01 Monthly Quality Management Meetings 6 Monthly and Annual QMS reports |
| 6 Planning, risks, opportunities, Objectives 6.1 – 6.3 | QMS (SPS908_4) Objectives (SPS908_3) QP01 (SPS908_14) QP04 (SPS908_17) | Quality Management Systems SPS Quality Objectives QP01 Management Review - Management Review Reports Related documented information, ref. QP01 & QP04 Monthly Quality Management Meetings 6 Month and Annual QMS reports |
| 7. Support 7.1 – 7.5 | QMS (SPS908_4) QP01 (SPS908_14) QP02 (SPS908_15) QP03 (SPS908_16) QP04 (SPS908_17) Std Op's (SPS911_3) | Quality Management Systems QP01 Leadership & Management - Management Review QP02 Control & Retention of Documented Evidence QP03 Support & Resources QP04 Performance & Evaluation Related documented information, ref. QP01 & QP04 Std Operating Procedures Health & Safety Policy Monthly Quality Management Meetings 6 Month and Annual QMS reports |



| | | |
|---|---|--|
| <p>8. Operations 8.1 – 8.7</p> | <p>QMS, (SPS908_4) QP01 to QP09 (SPS908_14 to 17, SPS908_21-26) Std Op's (SPS911_3)</p> | <p>Quality Management Systems QP01 Leadership and Management - Management Review Reports QP02 Control & Retention of Documented Information QP03 Support & Resources QP04 Performance & Evaluation QP05 Operation Flow Chart Order to Enquiry QP06 Operation Flow Chart Design / Dev QP07 Operation Flow Chart Procurement QP08 Operation Flow Chart Manufacturing QP09 Operation Flow Chart Service & Maintenance of Manufactured Product Related documented information, ref. QP01 & QP09 Std Operating Procedures Monthly Quality Management Meetings 6 Month and Annual QMS reports</p> |
| <p>9. Performance and evaluation. 9.1 – 9.3</p> | <p>QMS, (SPS908_4) QP01 (SPS908_14) QP04 (SPS908_17)</p> | <p>SPS Quality Management Systems QP01 Leadership & Management – Management Review QP04 Performance and Evaluation Related documented information, ref. QP01, QP04 <i>Internal Audit Programme, Internal Audits, NC's – CAR's</i> Monthly quality meetings 6 month and annual QMS reports</p> |
| <p>10. Improvement 10.1 – 10.3</p> | <p>QMS, (SPS908_4) QP01 (SPS908_14) QP04 (SPS908_17)</p> | <p>SPS Quality Management Systems QP01 Leadership & Management – Management Review QP04 Performance & Evaluation Related documented information, ref. QP01 <i>Internal Audit Programme, Internal Audits, NC's – CAR's</i> Monthly quality meetings 6 month and annual QMS reports</p> |