PURPOSE :- The purpose of this Manual is to provide a guide to the Quality, Environmental and Health & Safety policies of GAI-Tronics, a division of Hubbell Ltd (GH) and to give an overview description of the management system designed to implement them.

CONTENTS :-

Section number	Description
1	Policy and its implementation
2	Human resources
3	Customer needs
4	Design control
5	Information control
6	Material control
7	Facilities control
8	Production process control
9	Aftercare services
10	Performance monitoring and improvement

REVISION STATUS :- Issue 7 of this manual has been released to incorporate the following changes :-

1. The table in 1.4 and other references have been updated to encompass ISO14001:2004 requirements rather than ISO14001:1996.
2. Changes that were required as a result of the document review by LRQA have been incorporated. This includes a change to section 1.2.2 and 1.2.3(c) to cover communication with all persons working for or on behalf of the organisation, including temporary employees, contractors and visitors to the site with respect to commonsense guidelines that apply on site. This has also been mentioned in sections 2.5, 2.7 & 2.8, where control of the competence and training of temporary staff is now covered and in 7.5, which deals with contractors working on site.
3. Developments in the managements system made since the last issue have been reflected in the relevant sections. Section 7 has been revised to more closely relate to Q7 and make specific reference to the Register of Applicable Requirements (ROAR) and the Register of Environmental Aspects Defined (READ), which are central to the environmental management system. Compliance evaluation with the ROAR is also now included and a reference to it as an input to Management Reviews has been included in section 10.5.
4. Other minor changes have been made where necessary to clarify requirements.

This document has been approved for adequacy and issue by :-

Job function	Name	Signature	Date
Business Unit Controller (BUC)	Toby Balmer	*Toby Balmer*	27/7/05
Business Unit General Manager (BUGM)	Graham Lines	*Graham Lines*	27/7/05
Business Unit Director of Operations (BUDO)	Mark Bradford	*Mark Bradford*	28/7/05
Quality Manager (QM)	Dennis Turner	*Dennis Turner*	28/7/05

1. POLICY AND ITS IMPLEMENTATION

1.1 Scope of activities and background information

GAI-Tronics a division of Hubbell Ltd (GH), based in Burton upon Trent, is part of Hubbell Corporation, based in the USA, which has an overall turnover of $1.8 billion. GH has a long heritage and recognised expertise in the niche markets it services. The current scope of its activities comprises: 'The design, manufacture and servicing of ruggedised communications and control products and systems incorporating telephone, audio, radio and video techniques for use in arduous, hazardous or safety critical environments, and electrical distribution and control equipment'. No exclusions are claimed with respect to the requirements of the ISO 9001:2000 or ISO 14001:2004 standards.

1.2 Policies

1.2.1 Quality Policy

The quality policy of GH is to structure its organisation, manage its processes and recruit, train and develop its personnel in a way that will consistently deliver quality products and services to its customers, on time and to specification and ensure compliance with applicable statutory / regulatory requirements. The management system, which defines the methods used to deliver on these commitments is third party approved to ISO 9001:2000 by LRQA and also complies with the requirements of the ATEX Directive 94/9/EC.

Through teamwork and continual improvement GH is also pursuing the long term strategic objectives of :-

(a) Fulfilling customer expectations and enhancing their satisfaction with our performance as a supplier.
(b) Providing a stimulating and rewarding environment for its employees.
(c) Producing operating profit levels in line with Corporate expectations.
(d) Increasing its market profile and reputation for excellence as a provider of quality products and services.
(e) Integrating and simplifying systems to meet all applicable requirements more efficiently and effectively.
(f) Applying best practise techniques to refine and enhance operational processes.

1.2.2 Environmental policy

GH is committed to prevention of pollution, to compliance with applicable legislation, to conformance with ISO 14001:2004 and to the continuous improvement of its environmental management system. The environmental system is an integrated part of the management system as a whole and designed to be appropriate to the nature, scale and environmental impact of the Company's activities and the products and services it provides. Third party approval to ISO14001 will be sought in 2005.

GH assesses and monitors the environmental aspects of its activities to identify areas where there is the most significant impact as a basis for the selection of objectives and measurable targets to improve environmental performance. Company objectives and targets are communicated to all employees. This is the basis for the development of team and individual objectives and targets commensurate with these overall goals. The policy and objectives and/or the commonsense rules derived from them will be made known to employees, contractors working on behalf of the Company and customers, regulatory authorities and the public on request. Information on significant environmental aspects will only be provided in response to specific requests. Resources and responsibilities are allocated to achieve these objectives and targets within designated timescales. The following areas will be considered when developing / maintaining the system and setting objectives :-

(a) The potential for direct (via site activities) and indirect (via product supplied) pollution of the environment.
(b) The disposal of waste.
(c) The use of energy.
(d) The use of materials and the recycling of products and materials.
(e) Present & future legislative, market, corporate and public interest factors that may affect policy or practice.
(f) The use of best practice, to reduce adverse environmental impact, where this is economically viable.

1.2.3 Health and safety policy

GH is committed to ensuring the health, safety and welfare of its employees, as far as is reasonable and practicable. GH also recognises that other persons (such as contractors and visitors to the site) may be affected by its activities and will ensure that its statutory duties are understood and met at all times.

(a) Risk assessments are carried out regularly and whenever significant changes are made to the working environment or the processes taking place in it. Action is taken, where necessary, to eliminate or manage the risks detected to maintain and improve the safety of the work place and the well being of employees.
(b) Management shall ensure that all processes and systems of work are designed to take account of health and safety, with appropriate facilities, adequate guidance instructions and responsible supervision.
(c) Each employee shall be given the information, instruction and / or training necessary to enable the safe performance of work activities. A basic set of rules will be communicated to them and to site visitors.
(d) Adequate arrangements are maintained to enable employees to raise issues of health and safety, via their line management, their representative on the health & safety committee or directly to top management.
(e) Competent people are assigned to assist in meeting statutory duties including employees with appropriate skills and specialists that are employed by the Corporation to advise all Hubbell sites.
(f) The successful implementation of this policy requires commitment from all employees and adherence to commonsense rules. Each individual has a legal obligation to take reasonable care for his or her health and safety and for the safety of other people who may be affected by his or her acts or omissions.
(g) Details of the organisation and arrangements for health & safety are set out in section 2.1 and procedure Q7.
(h) This policy is monitored to ensure that the objectives are achieved, by reporting and analysing accidents, near misses and possible risks reported by employees. It will be reviewed in the light of legislative, organisational or process changes that may affect its applicability and be updated as required.

1.2.4 Setting improvement objectives and communicating them to all personnel

Overall improvement objectives and targets are set annually. Policy and objectives are communicated throughout the organisation via notice boards, newsletters, training and personal development reviews, where individual and team targets are established so that everyone understands their part to play in achieving the collective goals. External communication is developed and maintained according to need to ensure that interested parties are appropriately informed about the policy, aims and performance of GH.

1.2.5 Progress and policy reviews

Performance is continually monitored via appropriate metrics, customer feedback and internal audits, which provide the basis for the evaluation of progress in relation to the objectives in the quarterly management reviews. Corrective and/or preventive action is agreed and applied as required to address any significant deviation from the objectives and targets set. These reviews include consideration of whether the management system continues to provide suitable means for the implementation of policy and the achievement of the objectives. Any changes required are included in the management system procedures and work instructions. The policies themselves are also reviewed to ensure that they continue to be appropriate in the light of changes in customer and regulatory requirements, and Corporate priorities.

1.3 The Management System

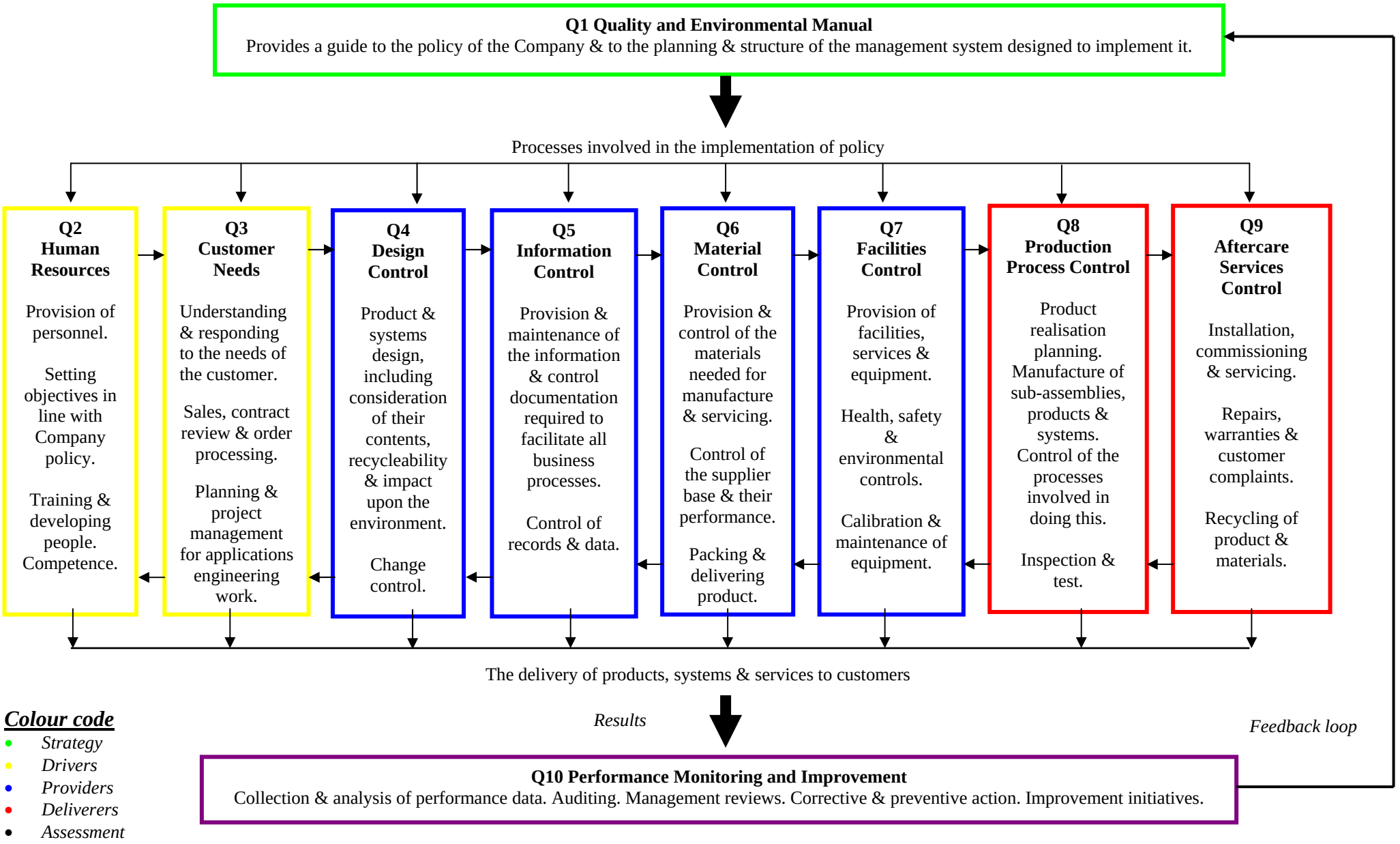
The management system consists of a series of 10 procedures including this manual, which are the result of the consideration by management of the needs of the organisation as a whole and the planning of the orchestration of its activities to meet these needs. It provides the means of fulfilling the policies detailed in section 1.2. The correspondence of these procedures with the requirements of ISO9001:2000 and ISO14001:2004 is explained in section 1.4. The inter-relationship of the procedures is described in broad terms in 1.5. The procedure numbering (Q1 to Q10) is consistent with the main section numbering of this manual, which provides a guide to the criteria content and methods used in these procedures. In addition detailed work instructions, forms and specifications have been generated, where necessary, to ensure that specific activities in need of control have appropriate documented guidance. The integrity of the management system as a whole is maintained by the Quality Manager (QM), who reviews any changes planned before implementation.

1.4 Cross reference of the ISO 9001:2000 & ISO 14001:2004 standards with the management system

ISO9001 Section	ISO9001:2000 section title	Q1 section references	Other procedure references
4	**Quality management system**		
4.1	General requirements	1.3-1.5, 2 & 10	Q2 to Q10
4.2	Documentation requirements	1 & 5	Q5
5	**Management responsibility**		
5.1	Management commitment	1.2, 2 & 10	Q2 and Q10
5.2	Customer focus	3	Q3
5.3	Quality policy	1.2.1, 1.2.4 & 1.2.5	Q2 and Q10
5.4	Planning	1.2.4, 1.3, 1.5 & 2.4	Q3, Q4 and Q8
5.5	Responsibility, authority & communication	2.1-2.4	Q2
5.6	Management review	1.2.5, 10.5	Q10
6	**Resource management**		
6.1	Provision of resources	2.3 & 7.1	Q2 and Q7
6.2	Human resources	2	Q2
6.3	Infrastructure	7	Q7
6.4	Work environment	7 & 8	Q7
7	**Product realisation**		
7.1	Planning of product realisation	3.4, 4, 5 & 8	Q3, Q4, Q5 and Q8
7.2	Customer related processes	3, 4 & 9	Q3, Q4 and Q9
7.3	Design and development	4	Q4
7.4	Purchasing	6	Q6
7.5	Production and service provision	6, 7, 8, 9	Q6, Q7, Q8 and Q9
7.6	Control of monitoring & measuring devices	7.4	Q7
8	**Measurement, analysis & improvement**		
8.1	General	1.2.5, 4, 8 & 10	Q4, Q8 and Q10
8.2	Monitoring and measurement	8 & 10	Q8 and Q10
8.3	Control of nonconforming product	4, 6, 8, 9 & 10	Q4, Q6, Q8, Q9 and Q10
8.4	Analysis of data	10	Q10
8.5	Improvement	1, 4. 6, 8, 9, 10	Q4, Q6, Q8, Q9 and Q10

ISO14001 section	ISO 14001:2004 section title	Q1 section references	Other procedure references
4.1	**General requirements**	1.1 & 1.3 to 1.5	
4.2	**Environmental Policy**	1.2	
4.3	**Planning**	1 & 2	
4.3.1	Environmental aspects	1.2.2, 2 & 4 to 10	Q2 & Q4 to10, especially Q7
4.3.2	Legal & other requirements	1.2.2, 5 & 7	Q5 & Q7
4.3.3	Objectives, targets and programme(s)	1.2.2,1.2.4,1.2.5, 2,4,7 & 10	Q2, Q4, Q7 & Q10
4.4	**Implementation & operation**	2 to 10	Q2 to 10
4.4.1	Resources, roles, responsibilities & authority	2.1 to 2.3, 2.8 & 2.9, 7	Q2 & Q7
4.4.2	Competence, training & awareness	2.4 to 2.7 & 7	Q2 & Q7
4.4.3	Communication	1.2.4, 2.1, 2.4, 2.9, 3,5,7 & 9	Q2, Q3, Q5, Q7 & Q9
4.4.4	Documentation	1.3 to 1.5, 5 & 7	Q5 & Q7
4.4.5	Control of documents	5 & 7	Q5 & Q7
4.4.6	Operational control	1.3 to 1.5, 2 to 10	Q2 to 10
4.4.7	Emergency preparedness & response	7, 9 & 10	Q7, Q9 & Q10
4.5	**Checking**	6 to 10	Q6 to Q10
4.5.1	Monitoring & measurement	7, 8 & 10	Q7, Q8 & Q10
4.5.2	Evaluation of compliance	2, 7 & 10	Q2, Q7 & Q10
4.5.3	Non-conformity, corrective action & preventive action	7 & 10	Q7 & Q10
4.5.4	Control of records	5	Q5
4.5.5	Internal audit	10	Q10
4.6	**Management review**	1.2.5 & 10	Q10

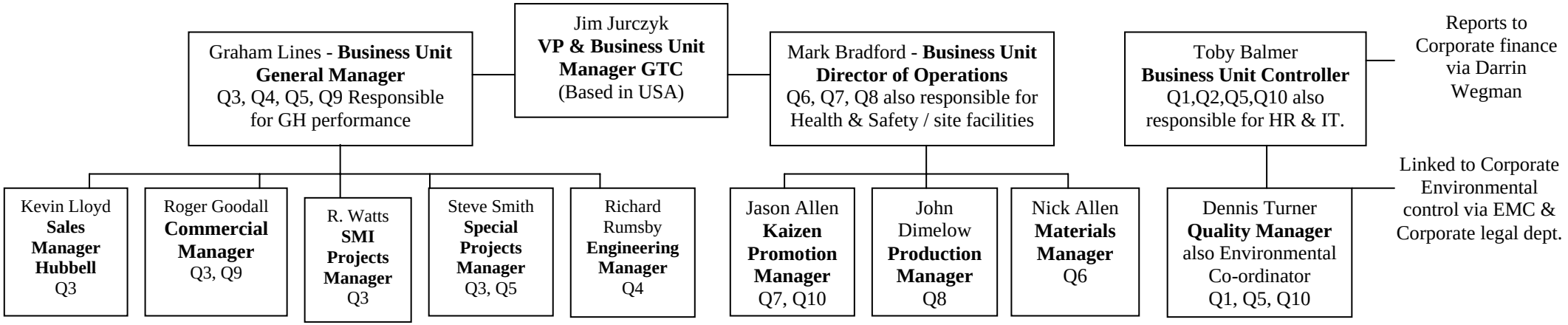
1.5 System overview diagram



2. HUMAN RESOURCES

2.1 Responsibility and authority in relation to quality, the environment and health & safety

Management responsibilities and inter-relationships are defined in the following diagram. Authority for the implementation of the management system is defined as shown by the procedure numbers in the diagram. Off-site management (JJ, DW) have no direct responsibility for the management system.



2.2 Management Representative

The Quality Manager (QM) is the Management Representative, with responsibility and authority to ensure that the processes needed for the management system are established, implemented and maintained. This in no way detracts from the direct responsibility of Management to 'own' and implement procedures as defined above. For this reason procedures are jointly authorised for issue by the QM and the Management directly responsible. The QM monitors performance, reports to top management on the adequacy and effectiveness of the management system, and highlights improvement needs where appropriate. The QM also acts as a point of external liaison on quality and environmental issues, receiving, documenting and responding to relevant communications from external interested parties, and ensures that awareness of customer requirements is promoted throughout the organisation, in support of the efforts of the Commercial, Sales & Marketing and Service teams who have continual contact with customers. GH is a member of the Staffordshire Business & Environmental Network and connected to the Hubbell Corporate environmental programme.

2.3 Provision of resources

The Management Team is collectively responsible for determining and providing the resources needed for effective implementation of policy and continual improvement of the management system. The provision of appropriate personnel is the responsibility of the Managers involved in consultation with the Business Unit Controller (BUC). Managers are responsibility for setting individual objectives and training people to equip them to achieve what is required.

2.4 Setting objectives and reporting on performance

The Senior Management Team ensures that Company strategy and policy is translated into verifiable objectives that are effectively communicated throughout the organisation to focus efforts upon key issues and provide the basis for individual and team targets. The BUC ensures that suitable information on Company performance in relation to the objectives is prepared and distributed throughout the organisation via team briefings and briefing information.

2.5 Establishing awareness and competency

Skills matrices have been established to define the skills required within the business and the current competence of personnel. Job specifications are used to define specific roles and the competence requirements associated with them. Annual personal development reviews are conducted to evaluate the performance of employees in relation to the job requirements, to identify any training needs and to set personal / team objectives / targets for the coming year that are commensurate with the Company objectives.

All personnel, including temporary employees are introduced to basic guidelines relating to care for the environment, health and safety. Operators are taken through a basic training process before they are issued with an Operator stamp that authorises them to carry out assembly tasks without direct on-going supervision. Thereafter the range of their competence is extended by training and experience to incorporate more skills required by the business according to need and inclination. Authority to carry out inspection / test is controlled in the same way. Where a particular task requires specific skills, knowledge or expertise a work instruction or some other reference standard is established as a guide to the fundamental requirements of the task and personnel are provided with training before they are qualified as competent to perform it.

It is the responsibility of Managers and Supervisors to ensure that the personnel working for them are aware of the relevance and importance of their activities and how they contribute to the achievement of Company objectives. They are also responsible for ensuring that the quality of work carried out in their area of responsibility is assessed to ensure that the appropriate levels of competency have been established and are maintained. This is supplemented by internal auditing, product inspection/test and performance monitoring.

2.6 Recruitment and induction

Personnel are recruited to fulfil defined job functions, for which a job specification has been established.
A formal induction process is implemented for each new employee to introduce them to the Company, its general working practices and those that are specific to their job function. As a part of the induction process the competency of the person is evaluated in relation to the job they are being asked to perform and training and / or mentoring arrangements are made to address any shortfall and establish the appropriate levels of awareness and competence. This aspect of the induction process is also applicable to personnel who transfer from one job function to another that requires different skills.

2.7 Training and qualification records

The BUC is responsible for :-

(a) Working with the Functional Managers to establish a Company training plan, identify / deliver appropriate training and monitor the implementation of the plan, including evaluation of the effectiveness of training (as described in 2.5 above).
(b) Ensuring that appropriate records of education, training, skills and experience are established and maintained to demonstrate the competence of personnel, including temporary employees.

2.8 Health, safety and environmental (HSE) responsibilities

The Business Unit Director of Operations (BUDO) has overall responsibility for implementing HSE policy for monitoring HSE performance in practice and for co-ordinating any corrective or preventive action required to address actual or potential risks. Managers are responsible for assessing the risks associated with the activities they control, for establishing clear written guidance instructions on safe practice, where required and for ensuring that personnel reporting to them are competent to perform the tasks assigned to them safely. All personnel are responsible for complying with established HSE policy and guidance instructions.

2.9 Environmental system responsibilities

Responsibility for environmental systems is distributed between the QM (ISO14001 compliance, internal co-ordination and external communication), the BUDO (practical control of processes and facilities that have an environmental impact) and the Engineering Manager (the environmental impact of product design – including the design aspects of the response to the WEEE & ROHS Directives).

3 CUSTOMER NEEDS

3.1 Evaluating customer needs and measuring customer satisfaction

The Business Unit General Manager (BUGM) has the prime responsibility for determining the needs of customers, reporting on this to the Management Team and generating product requirement specifications to guide the design and development of products and services to meet the general needs of the market place. Specific requests for information on quality, environmental and H & S systems and issues are responded to by Sales, Marketing and Commercial staff with the assistance of the QM and other management where necessary.

A Customer survey is carried out annually by marketing and sales personnel and the results are analysed by the QM. A consistent survey format is used to enable trends in customer opinion to be monitored. Other information, based on the experience of the Sales, Commercial, Service and Repair teams in dealing with customers and the analysis of customer complaints, warranty returns and long term product reliability monitoring, is also provided to enable the management team to assess customer satisfaction overall. Customer needs and customer satisfaction are discussed in management review meetings on at least an annual basis and adjustments are made to policy or practice as needed to better respond to customer requirements.

3.2 Determination of requirements related to the product

When an enquiry from a customer is received the requirements of the customer, including those relating to delivery and post-delivery activities are determined. Consideration is given to requirements not stated by the customer but necessary for the specified or known and intended use, statutory and regulatory requirements that relate to the product and any additional requirements that may be applicable.

3.3 Review of requirements related to the product

The requirements related to the product are reviewed prior to the submission of a tender, the acceptance of contracts or orders, the acceptance of changes to contracts or orders, or the release of product advertising or catalogue information for general use. The purpose of this review is to ensure :-

(a) Product requirements are defined and published specifications are accurate.
(b) Contract or order requirements differing from those previously expressed are resolved.
(c) The Company has the ability to meet the defined requirements.

Where the customer provides no documented statement of requirement initially a confirmation of requirement is secured before an order acknowledgement is sent to confirm acceptance. Where requirements change the documentation that defines these requirements is updated accordingly and the personnel involved in fulfilling these requirements are made aware of the changes.

3.4 Planning product realisation and applications engineering

The processes and procedures described in this Quality Manual are the plans made by the Company to secure product realisation. Where customer needs differ from what is generally provided by the Company an evaluation is carried out prior to the provision of a quotation to ensure that the Company has, or is able to obtain, the resources and capabilities to meet the customer need. When an order is received anything that is unclear is resolved by discussions with the customer and their requirements are documented. Where necessary a contract review meeting is called to ensure that the primary personnel that will be involved in fulfilling customer requirements understand them clearly, and to define responsibilities and develop plans to ensure that the product / service delivered is satisfactory. Where appropriate a Project Manager is assigned to orchestrate the response to the customer requirement, including any applications engineering work involved. Any design work involved is referred to the Engineering Department and carried out as described in Q4. Procedures Q5 to Q9 describe the methods used to translate design specifications into deliverable product.

3.5 Customer communication

The Sales and Commercial departments are responsible for communicating effectively with customers in relation to enquiries, orders, contracts and product information. Customer complaints are managed via an inter-departmental team that meets regularly to orchestrate corrective and preventive action. The Commercial department provides the interface with the customer and maintains the records of complaint handling.

4. DESIGN CONTROL

4.1 Design input objectives

A Product requirement specification is established to set the objectives for each project. This includes :-

(a) Functional and performance requirements.
(b) Applicable statutory and regulatory requirements.
(c) Information derived from previous designs, where applicable.
(d) Any other requirements, such as the target product cost, which are essential for design and development.

These objectives are reviewed for adequacy, completeness and to ensure that the requirements are not ambiguous or conflicting with each other. Subsequent revisions or additions to these requirements that emerge from the process of design or via changes in customer requirement are also reviewed and documented.

4.2 Planning

A standard framework (DES 060) has been established to control the design and development process with set stages and requirements to be met at each stage, including the review, verification and validation activities that are appropriate. The interfaces between the various departments involved in the design and development process and their specific responsibilities in relation to it are also defined by this framework to ensure effective communication. Project plans define the work to be done and when it will done by and assigning responsibility for these tasks to the individuals that constitute the project team. These plans are reviewed / updated as needed.

4.3 Design outputs

The design outputs required are defined by DES 060 in a way that ensures that the input objectives are fulfilled. They are reviewed and approved prior to release via the change control process or the project design reviews that occur at each stage. This review process ensures that the outputs :-

(a) Meet the input requirements.
(b) Provide appropriate information to purchase parts/services and to control production and service activities.
(c) Contain or reference any acceptance criteria applicable.
(d) Specify the characteristics of the product that are essential for its safe and proper use.
(e) Include an assessment of the environmental impact of the product and how adverse impact can be limited.

4.4 Design review

At suitable stages, defined by the DES060 framework, systematic reviews of design and development are conducted to evaluate the ability of the design to fulfil the project objectives, to identify any problems and to propose necessary actions. These reviews involve participation by representations of the functions concerned with the stage(s) under review. Records of the results of these reviews are maintained via the DES060 form and meeting minutes, which carry forwards outstanding actions for review at future project meetings.

4.5 Design verification

Verification is performed to ensure that the outputs from the design and development process satisfy the input objectives. Records of verification that define the methods used, document the results and detail any follow up action required are established, maintained and referenced in the project file.

4.6 Design validation

Validation is carried out as planned to ensure that the product derived from the design process is capable of fulfilling the specified or known intended use or application. Where practicable validation is carried out prior to substantial delivery or implementation of the product, but field trials are necessary where there are aspects of the operational environment that cannot be replicated under laboratory or factory conditions. Records of validation that define the methods used, document the results and detail any follow up action required are kept in the project file.

4.7 Change control

A change note is the record of change review, used to document the formal release or modification of engineering specifications and other documentation used to define or control product or component characteristics. Changes are reviewed, verified and validated as appropriate before implementation. The review of design and development changes includes an evaluation of the effects of change on constituent parts and delivered product. Records are maintained of the results of change review. Any follow up actions applicable are orchestrated via the change control database, which notifies the personnel responsible and records their response. The change control system is also used to manage other requirements for Engineering resources such as requests for technical advice, investigations and the approval of concessions.

Applications engineering deploys established product designs in a system, configuration or variation that satisfies particular customer needs and most of this work is now carried out in the Commercial area, but change control is used to issue the 'as shipped' defining documentation and any actual change in product design. Records of any reviews, verification or validation required are established and stored or referenced in the project file maintained by the Project Manager assigned, or are attached to related change notes issued.

5. INFORMATION CONTROL

5.1 Management system documentation

The management system is defined by this Quality & Environmental Manual, which includes the policy, system scope and strategic objectives. It describes the procedures that control business processes and how they interact to meet the requirements of customers and regulatory standards (including ISO 9001 & ISO14001). These procedures are designed to ensure the effective planning, operation and control of business processes and to provide the evidence needed to demonstrate this. These procedures are the product of teamwork between the Senior Management Team and the QM who directly controls the issue and maintenance of these procedures. Task specific work instructions and forms have also been established where appropriate by the Management of the functions responsible. The control and issue of such documentation is the joint responsibility of the department concerned and the QM.

5.2 Control of information

The documented procedure Q5 has been established to define the controls applicable to procedures, instructions and other information pertinent to the operation of the management system and the supply of products and services. This procedure also covers back-up and recovery methods for information technology systems.

Documents that define controls are approved for adequacy by designated authorities prior to issue. They are reviewed, updated, re-approved and accorded a new revision status as necessary thereafter to maintain the currency of the controls applicable. The reasons for change are defined in each up-issued document or, in the case of technical specifications, in an engineering change note released at the same time. Relevant versions of applicable documentation are made available at the point of use, in legible and readily identifiable form, as hard copy or via a database. Obsolete documentation is identified as such and segregated to prevent unintended use.

Standards, directives, legislative information and customer provided documentation that are used for control or reference purposes are identified and stored in an orderly manner. Where appropriate, their currency is maintained via the BSI plus list. Users are responsible for checking the currency of non-controlled items. This includes information on Quality, Environmental, Health & Safety, CE, ATEX, UL, CSA, MOD and other requirements pertinent to the supply of products and services or the control of site or field service activities. External documents relevant to the environment, such as the site lease and plans are controlled by the BUDO.

5.3 Control of records

Records are established and maintained that provide evidence of conformity to all requirements (including ISO9001, ISO14001 and the various regulatory regimes applicable) and demonstrate the effective operation of the management system. The controls defined in Q5 ensure that such records are identified, sorted and stored in a way that protects their legibility, facilitates their retrieval and identifies the retention time applicable.

6. MATERIAL CONTROL

Procedure Q6 covers all aspects of the process of the supply, checking, handling and use of materials, including those supplied by customers. It also covers the packing and delivery of product.

6.1 Control of the purchasing process

The Engineering department is responsible for defining the specification of components, sub-assemblies and products, which provides the basis for purchasing items not assembled in-house. Some factored and contract specific material is specified by Project Engineers in Commercial. Specifications are issued via change control.

The evaluation and selection of suppliers is made by the Materials department on the basis of their ability to supply what is required, to specification, on time and at an acceptable price. The advice or assistance of other functions in the evaluation process is secured where necessary. Initial assessment is conducted via a simple questionnaire designed to evaluate the basic size, capability and quality / environmental system maturity of the supplier. Evaluation visits are used to strengthen the supplier assessment process, where appropriate, particularly if the nature of the items or services to be procured :-

(a) Could seriously affect the quality or regulatory compliance of the products or services provided by GH.
(b) The items required are not standard proprietary products and interpretation of the specifications provided by GH is a critical issue.
(c) Certification or other safety related requirements necessitate specific controls such as a quality plan.

The on-going performance of suppliers is monitored on the basis of quality and delivery. A formal review of their performance is carried out annually by Purchasing. Where the performance of a supplier is found to be unsatisfactory appropriate action is determined and implemented. Priority is given to addressing supplier performance issues most likely to impact upon the ability of GH to meet customer and / or regulatory requirements. Records to demonstrate the implementation of the above controls are established and maintained.

6.2 Purchasing information

Purchase orders describe what is required and include, where appropriate :-

(a) Reference to specifications that must be complied with, which are copied to the supplier as necessary.
(b) Any requirement for a first-off inspection sample and report, to prove that the product complies with the technical specification applicable, before approval is given to proceed with further manufacture.
(c) Any requirement for a certificate of conformity, or confirmation of compliance with the ROHS Directive.
(d) Any quality or environmental management system requirements that are obligatory.
(e) Any other requirements, relating to the approval of products, procedures, processes or equipment, the qualification of personnel or the control of significant environmental aspects related to what is supplied.

Purchasing staff are responsible for ensuring that the purchase order adequately specifies the requirements applicable before it is transmitted to the supplier concerned.

6.3 Verification of purchased product

On receipt of purchased product a routine check is made against the purchase order requirements to ensure that what has been supplied does basically comply with these requirements. Any evidence in this regard that is required by the purchase order shall also be checked on receipt (see 6.2 b, c and e). Where it is deemed to be appropriate incoming inspection is performed, as defined by Q6 and MWI 406 or by documented contract specific requirements referred to Goods Inwards, in relation to the specifications that apply to the items concerned. Where necessary, suppliers may be visited to check their compliance with requirements applicable, as referenced on the purchase order, by arrangement with the management responsible. As a general principle, however, suppliers are expected to be responsible for any checks necessary to guarantee the compliance of the product with specified requirements.

6.4 Control of non-conforming materials

When it is detected that purchased materials do not conform with the specified requirements this is addressed by Purchasing and / or Goods Inwards Inspection in one or more of the following ways :-

(a) The rejection of the material to the supplier concerned for rectification or replacement. A supplier response form is sent with each rejection that asks the supplier to investigate the reasons for the failure to meet the specified requirements and to report upon this, with an account of any corrective and preventive action taken to address the cause. Rectified or replaced material is subject to re-verification on receipt.
(b) An application for concession is sent to Engineering and / or the customer to secure their permission to use the material, as it is, or after specified modification, for defined purposes.
(c) Rectification by repair of the items concerned to ensure their conformance. (Most common where the fault is due to the GH specification or an ordering error).
(d) Scrapping the material, or using it for purposes that will have no impact upon the quality of products or services that are supplied to customers.

Records are established and maintained to demonstrate conformity with these requirements and for the purposes of reviewing and addressing supplier performance issues.

6.5 Identification and traceability of materials

Repetitively purchased parts are assigned a part number by which their procurement, storage and use can be traced using the materials requirements planning system on the computer network. Labelling by part number is used when storing such materials and the part number or a bill of materials reference number is used to label issued parts. Where it is appropriate to do so incoming inspection and / or supplier records are established and maintained to demonstrate conformity with specified requirements and allow the material to be traced. Identification and an incoming inspection stamp are applied to items deemed to be particularly critical for safety reasons to prevent their unintended use in a non-verified state and to facilitate traceability to the appropriate records. Special arrangements have been made to facilitate batch traceability to source for materials destined for Ministry of Defence end use where this is a contractual requirement.

6.6 Material requirements planning

Material requirements are determined by customer needs and minimum stock levels are established in some cases to cope with delivery requirements shorter than the lead times quoted by suppliers. The material requirements planning system on the computer is used as a tool to optimise the supply of material to meet these customer needs, minimise inventory holding and maintain a good stock turn performance.

6.7 Material storage, handling and preservation

Controls have been established to ensure that materials, sub-assemblies and products are identified, packaged, handled, stored and protected in a manner that will preserve their conformity with the specified requirements. In cases such as chemicals and batteries, where there is a significant risk of deterioration over time and for fragile items such as static sensitive devices and castings with flame retardant paths, specific controls have been established to preserve quality. Health and safety and environmental considerations related to material handling are dealt with under Q7 (see section 7).

6.8 Control of customer property

Any materials supplied by customers are handled with the same care and in the same way as materials provided by a supplier, as outlined above, unless particular arrangements have been agreed with the customer. It is segregated and identified as customer property where it is appropriate to do so. Product stock held for customers is clearly labelled and bonded. A record is maintained of the quantity held and any shipments made.

6.9 Control of purchased services that could affect product quality or the environment

Suppliers providing such services are assessed, monitored and controlled in the same way as those who provide materials. Specific controls that apply are specified within the procedures that control these processes, e.g. see Q7 for controls upon calibration and waste disposal suppliers.

7. FACILITIES CONTROL

Procedure Q7 controls all aspects of the provision, maintenance and appropriate use of facilities. It covers the various health, safety and environmental controls that are required for the responsible and effective functioning of the Company including the safety testing and calibration of equipment.

7.1 Control of the infrastructure and working environment

In Management reviews and the annual strategic planning process associated with setting objectives, consideration is given to the present and future infrastructure needs of the business including :-
(a) Compliance with legal and other environmental requirements (summarised in the Register of Applicable Requirements - ROAR), which is subject to evaluation by the Health, Safety & Environmental Committee.
(b) Environmental aspects involved in the operation of the business (summarised in the Register of Environmental Aspects Defined – READ) and how to control and reduce their impact upon the environment.
(c) Compliance with health and safety legislation and the control and reduction of health and safety risks.
(d) Efficiency of operation, to minimise the cost, lead times and energy usage associated with business processes and thus improve the timeliness and effectiveness of the response to customer needs.
(e) The maintenance and improvement of product quality by the provision of appropriate facilities, processes and measurement and monitoring equipment.
Specific improvement programmes are established as necessary to meet defined objectives. Responsibility for their completion and appropriate metrics to monitor progress are added to the objectives and briefing information prepared by management to communicate goals and monitor progress. (See Q10).

Processes or activities that involve health and safety risks, or could have a significant environmental or quality impact are controlled by informing and training personnel to establish competency and the provision of documented instructions that define operational methodologies. Monitoring and maintenance requirements are detailed in such instructions to ensure that activities are carried out under controlled conditions. Examples are COSHH controls for chemicals used and special waste disposal (see Q7), and flow soldering process controls in PCB (see MWI).

If the contract review process reveals a need for facilities or services not currently available to the organisation to fulfil a proposed contract, then consideration is given to the practicality of the provision of such facilities before a quotation is provided or a contract / order is accepted. (See Q3). When new products are designed (see Q4) consideration is given to the processes and equipment that will be needed to manufacture and deliver the end product. Specific personnel (usually Production Engineering / Test Methods staff) are tasked with evaluate the needs, securing any equipment and establishing any processes and control instructions required.

If the monitoring of customer satisfaction, customer complaints/warranty returns or internal pass rates reveals a shortfall in the quality of products or services provided, and investigation reveals that this is due to a deficiency in processes or facilities, then corrective and / or preventive action is taken to bring the process or facilities concerned up to the standard required (see Q10). This may be achieved by the provision of equipment and / or services that are an intrinsic part of the business infrastructure (see Q7), or by seeking suppliers capable of providing the missing facilities on a sub-contract basis, under the supervision and control of GH (see Q6).

7.2 Risk assessments

In addition to the strategic processes described above, Management use the HRWI 2 checklist to carry out comprehensive risk assessments to identify and evaluate any actual or potential health & safety, environmental, quality or other risks applicable and to document the action taken to address these concerns. A permit to work system is used to control one-off risks in the factory and manual handling risk assessments are used to manage lifting and handling risks. Field service personnel are sometimes required to use risk assessment to identify and minimise the risks involved in installation, commissioning, maintenance or repair services. GH also has an active health and safety committee that meets regularly to help management to address, risks including those detected by the workforce. External or Corporate expertise is called upon where appropriate, to advise on issues where the skills needed do not exist in-house.

7.3 Emergency preparedness and response

Where a significant risk to health and safety and/or the environment would be involved in the event of an accident or an emergency situation (E.g. a fire in the building), then contingency plans are established to control the response to such an eventuality to minimise the risks involved. Written instructions are established and personnel potentially affected are trained how to respond. Where it is practical to do so the effectiveness of such plans is tested by simulation of an emergency. In the event of unsatisfactory results from such a test run or an actual emergency incident, the contingency plans shall be reviewed and revised as necessary to take account of lessons learnt.

7.4 Monitoring and measuring performance and the calibration of equipment

All critical aspects of business performance are monitored and measured by appropriate means. This includes the testing of components, sub-assemblies and product, the monitoring of process characteristics, and the measurement of environmental performance. Equipment not suitable for such use is labelled '*For indication only*' and not relied upon for such measurements. Equipment that is used for such measurements is :-

(a) Calibrated or verified at specified intervals, or prior to use, against appropriate measurement standards, which are traceable to international or national standards. Where no such standard exists the basis used for calibration or verification is recorded. If it is dependent for its functioning upon computer software then the ability of this software to fulfil the intended application is verified prior to initial use and reconfirmed as necessary. This is normally a part of the calibration process for the equipment concerned.
(b) Adjusted or re-adjusted as necessary at the time of calibration to bring it into specification and optimise the measurement capability. Where this calls into question the validity of previous measurements made using this equipment an evaluation is made of the potential impact of the measurement error and corrective and / or preventive action is taken as necessary. Equipment that cannot be returned to reliable operation within the specification applicable is not used for critical measurements thereafter.
(c) Carries a label to indicate its calibration status, whether equipment is calibrated internally or externally.
(d) Safeguarded against adjustment that would invalidate the measurement results, where it is feasible to do so and personnel are trained not to adjust equipment in this manner.
(e) Protected from damage and deterioration during handling, maintenance and storage.

Plans are established on an annual basis, which specify the calibration requirements applicable, and updated to show what calibration has been carried out. Records of calibration are maintained to demonstrate compliance with these requirements.

7.5 Maintenance of facilities and installation of new facilities

A maintenance plan has been established to list the maintenance requirements applicable to all equipment and facilities. Where the effective operation of a process depends upon regular in-house, maintenance then a work instruction is established to explain what needs to be done or to refer to manufacturer's instructions where this is detailed. Records are kept to demonstrate that planned maintenance has been performed and to enable any repair of equipment carried out to be traced. Where maintenance requires external expertise or new equipment needs to be procured and installed an appropriate contractor is selected and assessed (see Q6 & Q7). Contractors are informed of basic health, safety and environmental rules on site and are required to provide risk assessments and / or method statements where significant risks are involved.

8. PRODUCTION PROCESS CONTROL

8.1 Production planning

Sales orders are a result of the contract review process (see Q3) and the main input to the production planning process. On the basis of this information manufacturing orders for products and sub-assemblies are generated via the computerised material requirements planning system, which highlights material needs. Actual material ordering and stocking policy takes into account usage and lead times. Production capacity is taken into account when scheduling the release of manufacturing orders for kitting and assembly, which highlights any shortages that need to be chased. Shortage and late delivery incidents are monitored / followed up to reduce recurrence.

8.2 Control of production processes

Production processes are controlled by the provision of (procedure references are provided in brackets) :-

(a) Engineering information that defines the material constitution & build characteristics of the product (Q4).
(b) Visual aids, are used instead of drawings for volume production (Q8).
(c) Routing instructions that define the production sequence and reference any drawings, test specifications, visual aids and work instructions applicable (Q8).
(d) Suitable manufacturing equipment and work instructions to describe how to use it effectively (Q7).
(e) Facilities, instructions & training to control any H & S or environmental risks of the process (Q7).
(e) Test specifications by Test Engineers, on the basis of product performance defined by Engineering (Q8).
(f) Measuring equipment suitable for product conformity verification and process monitoring (Q7).
(g) The training and qualification of personnel to perform the tasks involved (Q2 & Q8).
(h) Routing records that demonstrate that product has been manufactured and verified as specified (Q8).
(i) Records demonstrating that process characteristics were maintained within defined operational limits (Q7).

8.3 Special processes

If the output of a production process cannot be verified by subsequent monitoring or measurement and could result in deficiencies that would only be detected in the field, then the process is controlled by :-

(a) Defining the criteria & methodology that governs the process in a work instruction (Q7 & Q8).
(b) Approving the equipment by demonstrating that it is capable of doing what is required (Q7 & Q8).
(c) Qualifying personnel to operate the procedure and recording this via Skills Matrices (Q2 & Q8).
(d) Keeping records relevant to the operation of the process (Q8 & Q5).
(e) Validating the process by in-house tests to simulate field conditions or by field trials (Q4 & Q8).
(f) Monitoring field returns and customer complaints to detect any signs of failure due to this process (Q9).
(g) Taking corrective and / or preventive action to promptly address any problems detected (Q10).

8.4 Monitoring and improving processes

Production process parameters are monitored and rejects, defects, late deliveries and field returns are analysed / used to detect any weakness in the process, which is addressed by appropriate corrective and/or preventive action (see Q10). Responsibility for this rests with Manufacturing Management.

8.5 Monitoring, measuring and maintaining product conformity

The characteristics of products are monitored and measured at appropriate, planned stages of the production process (as defined by routing instructions) to ensure that they meet the requirements defined by Engineering and Test specifications. Evidence of the completion of these activities is recorded on the batch traveller that contains the routing instructions and accompanies the product through the manufacturing process. Personnel have been assigned stamps, which accord them specific permission to carry out assembly, monitoring and measurement activities on the basis of experience and training. These stamps are used to signify completion of each activity via the batch traveller and a label attached to the product involved. Product release is not sanctioned until all of the activities specified in the routing instructions have been satisfactorily completed.

8.6 Control of non-conforming product

Any non-conforming product that cannot be immediately dealt with is labelled as a reject by the person responsible for this decision and segregated from verified product. Test personnel and Production Supervisors have responsibility and authority to deal with non-conforming product in one or more of the following ways :-

(a) By faultfinding and rework to restore the item to full, acceptable functionality, verified by a retest.
(b) By obtaining a concession from Engineering (and from the customer where this is a contract requirement), to release the product for use (under defined conditions if this is appropriate).
(c) By scrapping the item and disposing of it so that it cannot be mistaken for usable product.

Records of the nature of non-conformities and the action taken to resolve them are maintained and analysed to identify trends that require additional corrective or preventive action. Any product non-conformities detected after delivery are dealt with as customer complaints / warranty returns or via recall as described in Q9 and Q10.

8.7 Identification and traceability

Products and major sub-assemblies are identified by labelling that specifies their manufacturing order and item numbers, which are traceable to the records of assembly and test. Part numbers, names and approval markings are deployed as appropriate to identify the product type and confirm its status in relation to recognised approval criteria. Tested product is identified as verified by the attachment of a label that carries the authorisation mark of a recognised test person. Where the contract requires version control labelling is used to identify the mod state of the product, which is controlled via the Engineering change control process.

8.8 Preservation of product

Methods have been defined in procedures and work instructions to preserve the quality and conformity of products and their constituent parts throughout the process of manufacture and delivery to the intended destination. These methods are implemented via production process design, storage, packaging and transit protection that is appropriate for the items concerned and maintains product identification (see Q6 & Q8).

9. AFTERCARE SERVICES CONTROL

The Commercial Manager is responsible for all field service activities and the registration and administration of customer complaints. In-house repair activities and the handling of product returned under warranty is the responsibility of the Repairs Supervisor, who also reports to the Commercial Manager. The QM chairs regular meetings of an inter-departmental management team to ensure that complaints are dealt with effectively.

9.1 Field service activities

Field service is provided as a part of a contract with a customer, or as a specific response to a customer need. The customer need is evaluated via contract review and the service response is planned to fulfil this need. Fault reports from customers / service users are processed by the control centre. Service personnel are assigned to tasks on the basis of their capability to deal with the need in question. Service provision is supported by :-

(a) Engineering information relevant to the product or system in question and access to technical advice.
(b) Work instructions that describe predictable activities in response to contractual needs.
(c) The provision of suitable equipment, including calibrated measurement devices where appropriate.
(d) Materials, sub-assemblies and product likely to be needed to effect field repairs or modifications.
(e) Remote monitoring of product from the service control centre to detect faults and help to resolve them.
(f) Service response templates and reports that record the tasks undertaken including verification.
(g) Training and qualification of staff, including coverage of health, safety and environmental issues applicable.

On completion of the activity required confirmation is secured from the customer, where appropriate, that they are satisfied with the service provided. Self-monitoring of service provision is also undertaken to ensure that any contract requirements have been complied with and to identify and implement any further action required.

9.2 In-house repair services

A return materials authorisation (RMA) system has been established to document and control the investigation, repair or modification of returned product. The product is assessed on receipt and where any work that needs to be carried out is chargeable customer permission is sought to proceed, unless a prior contractual arrangement has been established. Repairs personnel have appropriate skills, access to current and previous issue technical information, suitable test facilities and the necessary tools and materials required to effect repairs on all products still supported by GH. Equivalent replacement product is typically offered in the case of obsolescence. Products are tested by authorised personnel to verify satisfactory functionality, to appropriate specifications, after repair. Records of the repair process are established and maintained via the RMA system, which allows traceability to the personnel responsible. These records also provide valuable information on product failure modes, which is analysed and acted upon as a part of the monitoring and improvement process described in Q10. It is also a natural part of the function of Repairs to receive back and recycle products and materials where appropriate and to interface with Production Engineering and Purchasing on external recycling.

9.3 Management of customer complaints and warranty returns

A control system has been established to document and process all customer complaints. Complaints are recorded on receipt, investigated by the department(s) responsible and resolved via appropriate corrective and / or preventive action. An inter-departmental management team meets on a regular basis to review all outstanding complaints, check that they are being handled effectively and ensure that any changes required in product design or operational practice to prevent recurrence are understood and successfully implemented. Product returned under warranty is processed via the Repairs Department, as described in 9.2. Causes and costs of complaint and warranty returns are analysed by product type and any identified trends are referred to the management team that deals with complaints or the Senior Management for investigation and resolution. (See Q10). Records of complaints, warranty returns, team meetings and corrective / preventive action are retained.

10. PERFORMANCE MONITORING AND IMPROVEMENT

10.1 Continual improvement

GH is committed to the continual improvement of the effectiveness of its management system and has a well-established track record to demonstrate this. The Management Team provide the leadership needed to ensure that this commitment remains a core feature of the strategy, policy and objectives of the organisation as a whole. They also ensure that this focus on improvement is supported by appropriate resources, cascaded down through the organisation and fostered in individuals via appropriate training and development. The Kaizen Promotions Manager and the QM help to co-ordinator these improvement efforts and to ensure that they are focused on the real needs of the business, which are evident from the monitoring of performance and customer satisfaction. The methodology deployed to achieve improvement is described in more detail in Q10.

10.2 Monitoring performance

Key metrics have been established in relation to the performance of the organisation and its processes, which are used to set tangible improvement targets and to monitor actual results in relation to these objectives. These metrics include, delivery performance, internal pass rates on test, levels of complaint / warranty return, environmental performance, supplier performance, inventory levels and many other specific indices. The QM and the BUC ensure that the relevant data is collected from throughout the organisation, analysed and presented in an appropriate manner to the Management Team and the workforce as a whole. Further information is gathered by specific studies, such as the analysis of the patterns of field failure in product and of customer satisfaction, to try to understand the underlying causes of what is going on, in order to focus improvement efforts upon real priorities.

10.3 Internal audit

Internal audits are carried out at planned intervals to assess the effectiveness of the management system and evaluate its continuing appropriateness. Audits are aimed at determining whether the system :-

(a) Successfully delivers products and services that meet customer requirements.
(b) Conforms to the requirements of ISO 9001, ISO14001 and other regulatory / statutory requirements that are applicable, such as the ATEX directive & relevant environmental & health & safety legislation, presently in force or planned for introduction in the foreseeable future.
(c) It fulfils the policy of the organisation, as stated & explained in this Quality & Environmental Manual.
(d) It is effectively implemented and maintained.

The internal audit programme is planned on an annual basis and takes into account the status and importance of the processes and areas to be audited and the results of previous audits, including those carried out by second and third parties. The plan defines the scope of each audit in terms of departments and/or applicable procedures. GH also views the auditing process as a form of ‘risk assessment’ and an opportunity to provide advice and counsel on how to enhance performance in the area concerned and prevent future problems. In this respect it supplements the risk assessments carried out by the management responsible for each area, using the checklist provided in HRWI 2, which covers health & safety, environmental, quality and other forms of risk.

Procedure Q10 describes the methods used, the selection and training of internal auditors and the process of reporting and following up on audit findings. The QM is responsible overall for planning and conducting the audit programme and maintaining records as described in Q10. Auditors are not permitted to audit their own work, to ensure that the results of audits are objective and impartial.

Where the auditing process reveals non-conformities or opportunities for improvement it is the responsibility of the Management of the area concerned to promptly investigate the issue and to take appropriate corrective and / or preventive action. A scoring system is used, allocating 1 to 10 points to each issue raised on the basis of its importance, so that actions can be prioritised. Risk assessments are scored in the same way, but on a 0 to 5 point range. These matters are followed up objectively, on the basis of an agreed time scale, to verify that appropriate action has been taken and to intensify the focus on any issues that remain to be resolved, until the process of resolution is complete. The results of this verification activity are reported to the management.

10.4 Corrective and preventive action

Procedure Q10 also describes the approach adopted to understanding and eliminating the causes of actual and potential non-conformities in any aspect or area of the business, in which the following factors are important :-

For corrective action :-

(a) Reviewing instances & trends of non-conformity to determine their cause and mitigate their impact.
(b) Considering what action is required to address the nonconformity and ensure it does not reoccur.
(c) Implementing appropriate action and recording and reviewing the results to evaluate their effectiveness.

For preventive action:-

(d) Identifying potential problems and evaluating the risks associated with them.
(e) Determining what the causes of these potential problems are and how best to address them to minimise risk.
(f) Identifying and implementing appropriate action, monitoring the results and watching for any side effects.

And in both cases :-

(g) Care to ensure that the response is appropriate to the magnitude of the problem.
(h) On-going monitoring to ensure that progress is sustained and to feed back into the process any need for further action E.g. to address previously undetected problems that come to light because of progress made.

10.5 Management review

Planned management reviews are a part of the audit programme for the year and usually occur on a quarterly basis. The purpose of these reviews is to assess the suitability, adequacy and effectiveness of the management system and its implementation throughout the organisation. The aim is to identify opportunities for improvement, in policy, objectives, methods, the management system and their implementation. Reviews are chaired by the BUC and attended by all available Senior Management. As an input to the review the QM, or those responsible, provide reports, which cover the following topics :-

(a) The results of audits (internal, third party and second party as appropriate).
(b) Feedback from customers & other external interested parties, including Hubbell Corporate & other sites.
(c) Process performance, product conformity and environmental performance (reported via the briefing pack).
(d) The status of outstanding preventive and corrective actions.
(e) Follow up actions from previous management reviews.
(f) Any planned changes that could affect the management system.
(g) Progress in achieving objectives & targets, and recommendations for improvement.
(h) Other issues relating to the system, such as the implementation of the training plan.
(i) (Annually) report from an evaluation of compliance with the Register of Applicable Requirements (ROAR).

The output from the review is a set of minutes that identify decisions and actions agreed in relation to :-

(a) The improvement of the effectiveness of the integrated management system and its processes.
(b) The improvement of products and services in relation to customer requirements.
(c) Adherence to regulatory and approval requirements, and the policy direction of the parent company.
(d) Any resource/training needs associated with these issues and how they will be addressed.