Datum Engineering Solutions Ltd

Quality Manual Including Factory Production Control

ISO 9001:2015

EN 1090-1+2

CE

Excellence in
Steel Fabrication

Contents

1 Introduction

Datum Engineering Solutions Ltd provide high quality sheet metal work and fabrications to clients across the UK.

Datum Engineering Solutions Ltd has developed and implemented a quality management system (QMS) which uses ISO 9001:2015 as a framework that allows our organization to document and improve our practices in order to better satisfy the needs of our stakeholders.

This manual describes the QMS, and documents the authorities and responsibilities of personnel operating within the management system. The manual also provides references to procedures and activities that also comprise our QMS.

The manual is used to familiarise employees and other external stakeholders with the controls that have been implemented and to assure them our quality management system is focused on customer satisfaction and continual improvement.

Our quality management system meets the requirements of ISO 9001:2015 and uses the Plan, Do, Check and Act approach to process planning.

2 References

In addition to ISO 9001:2015 we also make reference to other relevant British and/or international standards as well as customer specifications appropriate to our products and market: -

- BS EN 1SO 9000:2015 Quality Management Systems – Fundamentals and vocabulary
- BS EN ISO 9004:2000 Quality Management Systems – Guidelines for performance improvements
- BS EN ISO 9004:2000 Quality Management Systems – Guidelines for performance improvements
- EN 1090 Part 1: Execution of Steel and Aluminium Structures – Requirements for Conformity Assessment of Structural Components
- EN 1090 Part 2: Execution of Steel and Aluminium Structures – Technical Requirements for Steel Structures
- ISO 3834 Part 3: Quality Requirements for Fusion Welding of Metallic Materials – Standard Quality Requirements
- ISO 14731: Welding Coordination – Tasks and Responsibilities
- ISO 8501-3: Preparation for Welding

3 Definitions

This document does not introduce any new definitions but relies on the terms and vocabulary commonly used in quality assurance and our industry sector.

4 About Our Organisation

4.1 Organizational Context

Datum Engineering Solutions Ltd has undertaken analyses of itself and its stakeholders to determine the strategic direction of the company. This involves: -

- Understanding our core products and services, and the scope of the management system
- Identifying “interested parties” (stakeholders) who receive our products and services or who may be impacted by them, or those parties who may otherwise have a significant interest in our company
- Understanding internal and external issues that are of concern to the company
- Internal issues include delivery on time, staff levels, work equipment, and materials
- External issues include regulations, customer requirements, and supplier management

4.2 Relevant Interested Parties

The issues determined in section 4.1 above are identified through an analysis of risks facing Datum Engineering Solutions Ltd and its interested parties. Interested parties are those stakeholders who receive our products and services, or who may be impacted by them, and other parties who have a significant interest in our company. These include: -

- Customers
- Suppliers
- Directors
- Staff
- Insurers
- Regulators
- Landlord
- Banks

The outcomes from risk analysis is used by senior management to determine the company’s strategic direction. This is recorded in management review minutes, and periodically updated as conditions and situations change.

4.3 Quality Management System Scope

Based on the analysis of the issues and requirements identified in Sections 4.1 and 4.2, Datum Engineering Solutions Ltd has established the scope of our quality management system as follows:

*“*Design, manufacture and installation of metal equipment and structures*”*

The service category and the production category of the structural steel products fabricated by Datum Engineering Solutions Ltd are confirmed with the customer at quotation stage (via email). These are:

Service Category: SC1

Production Category: PC2

4.4 Quality Management System and its Processes

4.4.1 Management System Processes

Datum Engineering Solutions Ltd has implemented a quality management system that has established, documented and implemented our processes, quality policies and objectives, whilst satisfying the requirements of ISO 9001:2015.

To achieve this, Datum Engineering Solutions Ltd has adopted the process approach advocated by ISO 9001:2015. Senior management has determined the processes required for achieving the intended outputs. By defining four key process-groups and by managing their inputs, activities, controls, outputs and interfaces; we ensure that system effectiveness is established maintained. These key process groups are:

1. Leadership and planning processes;
2. Customer and stakeholder processes;
3. Product / service development processes;
4. Evaluation and improvement processes.

These process groups are described using tools such as documented procedures and flow charts. It is recognized that defining, implementing and documenting our quality management system is only the first step towards fully implementing its requirements. The effectiveness of each process and its subsequent output is measured and evaluated through regular internal audits, quality inspections and data analysis.

We use key performance indicators (KPIs) that are linked to our objectives to control and monitor our processes, as well as assessments to determine the risks and opportunities inherent to each process. We use trends and indicators relating to nonconformities, objectives and corrective action, as well as, monitoring and measurement results, audit results and customer satisfaction data, process performance and the conformity of our products and services.

The Factory Production Control System (FPC) is the permanent internal control of the production process of Datum Engineering Solutions Ltd. It includes the requirements for testing to assure compliance of the product with the declared performances of the Type Test or Calculation.

Datum Engineering Solutions Ltd has established and documented a Factory Production Control System in accordance with EN 1090 to ensure that the structural elements, as they are fabricated and placed on the market, comply with the performances and characteristics of such products, which were declared for the given intended use.

The FPC System consists of procedures, regular inspection and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process including welding and the product.

4.4.2 Outsourced Processes

Any process performed by a third party is considered an “outsourced process” which must be controlled e.g. sub-contractor work.

The type and extent of control to be applied to the outsourced process take into consideration:
1. the potential impact of the outsourced process on the company’s capability to provide product that conforms to requirements,
2. the degree to which the control for the process is shared,
3. the capability of achieving the necessary control through the purchasing contract requirements.

Structural calculations and design and drawing work for larger projects are outsourced.

5 Leadership & Governance

5.1 Leadership and Commitment

5.1.1 General

The senior management of Datum Engineering Solutions Ltd demonstrates its leadership and commitment to the development and implementation of the management system and continually improving its effectiveness by:-

- taking accountability of the effectiveness of the management system;
- ensuring that the quality policy and quality objectives are established for the management system and are compatible with the strategic direction and the context of the organization;
- ensuring the integration of the management system requirements into the organization's other business processes;
- promoting awareness of the process approach;
- ensuring that the resources needed for the management system are available;
- communicating the importance of effective quality management and of conforming to the management system requirements;
- ensuring that the management system achieves its intended results;
- engaging, directing and supporting persons to contribute to the effectiveness of the management system;
- promoting continual improvement;
- supporting other relevant management roles to demonstrate their leadership as it applies to their areas of responsibility.

5.1.2 Customer Focus

The Managing Director of Datum Engineering Solutions Ltd adopts a customer focussed approach which ensures that customer needs and expectations are determined, converted into requirements and are met with the aim of enhancing customer satisfaction. This is accomplished by ensuring: -

- customer and applicable statutory and regulatory requirements are determined, understood and consistently met;
- the risks and opportunities that can affect conformity of products and services and the ability to enhance customer satisfaction are determined and addressed;
- the focus on enhancing customer satisfaction is maintained.

5.2 Quality Policy

The quality policy acts as a reference by providing the direction and framework for establishing key performance measures, as well as related objectives and targets. Senior management ensures that our company policies are established and documented, and that the policies are available to all interested parties via our website.

The Managing Director has overall responsibility for defining, documenting, implementing and reviewing our quality policy in consultation with the management teams and other personnel, or their representatives. The policy is reviewed at least annually, as part of the management review program or at a frequency determined by:

1. The changing needs and expectations of relevant interested parties, see Section 4.2.
2. The risks and opportunities that are presented through the risk management process, see Section 6.1.

The quality policy is communicated to all employees at all levels throughout Datum Engineering Solutions Ltd via training and regular internal communications. Employee understanding of our policies and objectives is determined during internal audits.

5.2.1 Quality Policy Statement

Datum Engineering Solutions Ltd is firmly committed to complying with all the requirements of ISO 9001:2015, and to continually improving the effectiveness of its quality management system.

The quality policy is based on three fundamental principles: -

1. Ensuring that we fully identify and meet the needs of all our customers.
2. Examining our service provision processes and identifying areas for improvement and taking the necessary action to ensure improvement.
3. Everyone understanding how to do their job and doing it right first time.

To ensure that the policy is successfully implemented, staff will be responsible for identifying customer requirements, and ensuring that the correct procedures are followed to meet those requirements.

The company's quality policy provides a framework for establishing and reviewing its quality objectives.

To meet these objectives Datum Engineering Solutions Ltd is committed to providing training and support to all staff.

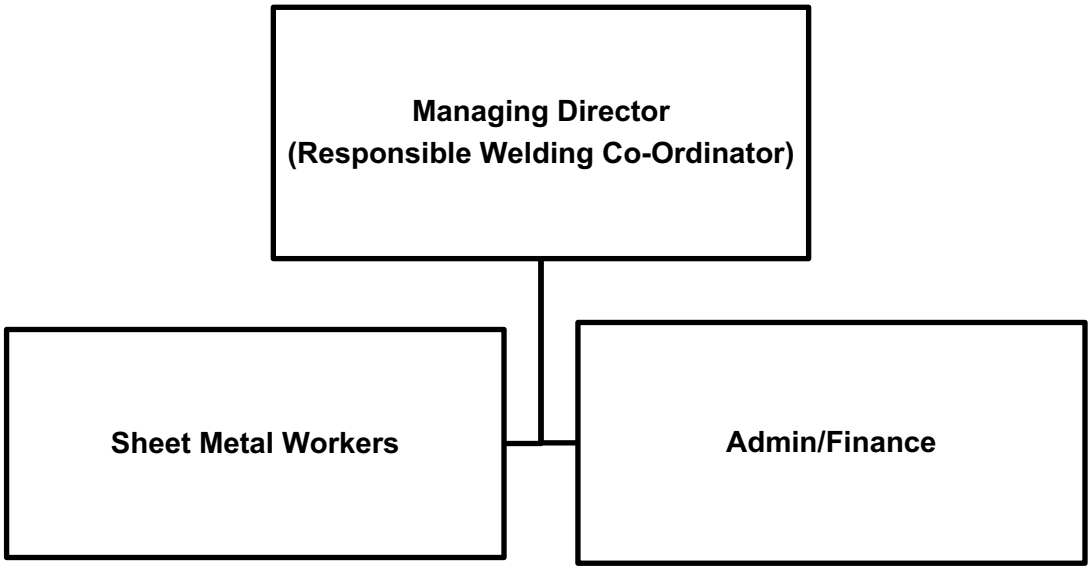
This quality policy, together with all relevant sections of the quality manual, are issued to all employees of Datum Engineering Solutions Ltd.

Whilst the Managing Director accepts ultimate responsibility for setting the main goals and achievements of the Company, it is the duty of all staff to ensure implementation of procedures.

This quality policy is frequently reviewed (at least annually) to ensure its continuing suitability.

5.3 Role, Responsibilities and Authorities

Datum Engineering Solutions Ltd organisation chart: -



The senior management has assigned responsibilities and authorities for all relevant roles in the company. These are communicated through the combination of the organisation chart**.**

In addition, the following overall QMS responsibilities and authorities are assigned as follows:

Responsibility	Assigned To
Ensuring that the management system conforms to applicable standards	Managing Director
Ensuring that the processes are delivering their intended outputs	Managing Director
Reporting on the performance of the management system and providing opportunities for improvement for the management system	Managing Director & External Consultant
Ensuring the promotion of customer focus throughout the organization	Managing Director
Ensuring that the integrity of the management system is maintained when changes are planned and implemented	Managing Director
Responsible Welding Co-ordinator	Managing Director
Ensuring that activities are conducted in line with processes / procedures within the QMS	All employees

The Managing Director has overall responsibility for the Datum Engineering Solutions Ltd quality system, and will be supported by a suitably qualified external consultant to develop, implement and internally audit the QMS.

Responsible Welding Coordinator: Responsibilities include:

- Overall responsibility for welding activities
- Welding Procedure Specifications
- Qualification of Welding Procedure Specifications
- Inspection and testing to correct specification
- Welding personnel
- Specification of materials (where relevant)
- Technical review of requirements
- Sub-contracting
- Welding operators
- Welding equipment
- Welding consumables
- Production planning
- Work instructions
- Management of materials
- Inspection before welding
- Inspection during welding
- Inspection after welding
- Non-Conformance and corrective actions
- Calibration of inspection, measuring and test equipment
- Solving low-level complex problems
- Manage in detail the welding applications and related professional activities or projects
- Transfer information from drawings to product
- Give understandable instructions
- Take responsibility for decision making in low-level complex work or study context
- Take responsibility to define the tasks of welding
- Management professional development of individuals or groups

Welding Operator: Responsibilities include:

- Observe Welding Procedure Specifications
- Observe work instructions (verbal and/or written)
- Complete Job Cards
- Report non-conformance
- Maintain production equipment
- Maintain inspection, measuring and test equipment

6. Planning

6.1 Addressing Risks & Opportunities

Datum Engineering Solutions Ltd considers risks and opportunities when taking actions within the management system, as well as when implementing or improving the management system; likewise, these are considered relative to products and services. Risks and opportunities are recorded in a Risk and Opportunities Register.

6.2 Quality Objectives

As part of the adoption of the process approach, Datum Engineering Solutions Ltd utilizes its process objectives as the main quality objectives for the QMS. These include overall product-related quality objectives; additional product-related quality objectives may be defined in work instructions or customer requirements.

The process objectives have been developed in consideration that they:

- be consistent with the quality policy;
- be measurable;
- take into account applicable requirements;
- be relevant to conformity of products and services and to enhancement of customer satisfaction;
- be monitored;
- be communicated;
- be updated as appropriate.

Process quality objectives are defined in the minutes of management review per section 9.3 below.

6.3 Planning for Change

The quality management system is planned and implemented in order to meet our business objectives and the requirements of ISO 9001:2015. The planning process involves establishing and communicating our policies, objectives and associated operational procedures.

This document constitutes our overall plan for establishing, maintaining and improving the quality management system. For each instance of management system planning, the output is documented and retained accordingly and changes are conducted in a controlled manner. The management review and the internal audit processes ensure that the integrity of the QMS is maintained when significant changes are planned which may affect key processes.

Whenever quality management system changes are planned, senior management ensures that all personnel are made aware of any changes which affect their process, and that subsequent monitoring is undertaken to ensure that QMS changes are effectively implemented.

7 Support

7.1 Resources

7.1.1 General

Resources at Datum Engineering Solutions Ltd include human resources and specialized skills, infrastructure, technology, work environment and financial resources. The resource requirements for the implementation, management, control and continual improvement of the quality management system, and activities necessary to enhance customer satisfaction, are defined in the following sections of this QMS manual:

- Planning; Section 6
- Management review; Section 9.3
- Human resources; Section 7.1.2
- Infrastructure; Section 7.1.3
- Work environment; Section 7.1.4
- Planning of product realization; Section 8.1
- Determination of customer requirements; Section 8.2

7.1.2 People

Qualifications are reviewed upon recruitment, when an employee changes positions or the requirements for a position change. The Managing Director maintains records of employee qualifications. If any differences between the employee's qualifications and the requirements for the job are found, training or other action is taken to provide the employee with the necessary competence. The results of training are then evaluated to determine if it was effective.

All employees are made aware of the relevance and importance of their activities and how they contribute to the achievement of our policies and objectives. The company operates a training matrix to ensure that all employees within the organization are adequately trained to enable them to perform their assigned duties.

Staff training records are maintained to demonstrate competency and experience. The Managing Director maintains and reviews the training records to ensure completeness and to identify possible future training needs. Training records are maintained and include as a minimum; copies of certificates for any training undertaken to date, current job description and curriculum vitae.

7.1.3 Infrastructure

Datum Engineering Solutions Ltd is responsible for planning, providing and maintaining the resources needed to achieve product and process conformance, including buildings, workspace and associated utilities; process equipment (hardware and software); and supporting services (such as internal transportation and material handling systems and communications systems). The Managing Director has overall responsibility for managing our facilities and equipment maintenance programs which include:

1. Work equipment, maintenance and repair
2. Facilities management, maintenance and repair
3. IT infrastructure

7.1.4 Operational Environment

Datum Engineering Solutions Ltd ensures that our sites and office comply with relevant health and safety regulations. Senior management is committed to providing:

1. A place of work that is safe, including all equipment and methods of work

2. Training, instruction, information and supervision for employees
3. A means of safe handling, storage, use and transportation of equipment, materials and chemicals
4. Safe working environment with good lighting, ventilation, and welfare facilities.

7.1.5 Monitoring & Measurement

Datum Engineering Solutions Ltd has determined the monitoring and measurement activities to be undertaken, and the devices needed to provide evidence of validation to specified tolerances and measurement ranges. The frequency of maintenance and calibration is considered with reference to the risks associated with the process and in accordance with manufacturer's instructions. Where necessary, to ensure the validity of results, measuring and monitoring equipment is:

1. Calibrated or verified at specified intervals, or prior to use
2. Calibrated against measurement standards traceable to appropriate measurement standards
3. Software used for monitoring and measurement is validated using defined parameters prior to use
4. Protected from damage and deterioration during handling, maintenance and storage
5. Safeguarded from adjustments that would invalidate the measurement result
6. Identified to enable the unit's calibration status to be determined
7. Safeguarded from use when a unit is found to be out of calibration and the results revalidated
8. Adjusted or re-adjusted as necessary.

7.1.6 Organisational Knowledge

Datum Engineering Solutions Ltd recognizes that organizational knowledge is a valuable resource that supports our quality management activities and ensures continual product and service conformity. There is a strong link between organizational knowledge and the competence of our people.

To ensure that organizational knowledge is retained and transferred, we ensure that it is recorded in documented information, and is embedded in our processes, products and services. Examples of organizational knowledge include:

1. Documented information regarding a process, product or service
2. Previous specifications
3. The experience of skilled people and their processes and operations
4. Knowledge of technologies and infrastructure relevant to our organization

Sources of internal knowledge also includes knowledge gained from experience, lessons learnt from failures and successes, capturing and sharing undocumented knowledge and experience, and the results of improvements in processes, products and services.

Sources of external knowledge often include materials from training courses or conferences, or knowledge gathered from customers, stakeholders or other external parties. Datum Engineering Solutions Ltd determines and reviews internal and external sources of knowledge, such as:

1. Lessons learnt from non-conformities, corrective actions, and the results of improvement
2. Gathering knowledge from customers, suppliers and partners, benchmarking against competitors
3. Capturing knowledge existing within the organization, e.g. through mentoring;
4. Sharing knowledge with relevant interested parties to ensure sustainability of the organization
5. Knowledge from conferences, training courses, attending trade fairs, networking seminars, or other external events

7.2 Competence

Senior management identifies emerging competency needs during management reviews. Emergent competency needs are converted into job descriptions for the type and number of positions that need to be filled through internal or external recruitment.

Where required; competency training and monitoring is conducted in-house, although for more specialist skills, external training courses are utilized. The effectiveness of training is evaluated and recorded. The company induction includes an introduction to our policies and objectives. Future competency training needs are identified as part of the Management Review process.

7.3 Awareness

All employees are trained on the relevance and importance of their activities and how they contribute to the achievement of our policies and objectives. The company operates a formal system to ensure that all employees within the organization are adequately trained to enable them to perform their assigned duties.

Where required; awareness training and monitoring is conducted in-house, although for more specialist skills, external seminars or courses are utilized. The effectiveness of awareness training is evaluated and recorded. The company induction includes an introduction to our organization's policy statements and objectives. Future training needs are identified as part of the management review process.

7.4 Communication

7.4.1 Internal Communication

Datum Engineering Solutions Ltd communicates information internally regarding our QMS and its effectiveness, through documented training, internal audit reports and continual improvement processes.

Communications regarding how employees contribute to the achievement of objectives are also conveyed and reinforced during employee performance reviews. Issues pertaining to our QMS that may be communicated internally include:

1. Day-to-day operations and general awareness;
2. Quality policy;
3. Information on achieving objectives and targets;
4. Risk and opportunities.

Senior management are responsible for communicating the company policies as well as the importance of meeting customer, statutory and regulatory requirements to employees within their respective departments. They ensure the quality policy is understood and applied to the daily work of the organization through the establishment of measureable goals and objectives. Internal communication occurs on an on-going basis and is achieved through various mechanisms as appropriate:

- Regular discussions and briefings;
- Training sessions and training material;
- Display boards;
- Website and internal e-mails;
- Data analysis and audit results;
- Quality documents e.g. quality manual, policy and objectives;

7.4.2 External Communication

Datum Engineering Solutions Ltd determines the need to communicate information externally to our interested parties, as defined in Section 4.2, regarding the effectives of our QMS. In most instances, external interested parties (such as clients, supplier's staff, regulatory bodies etc.) are the main driving force for our organization to implement our QMS. The various processes or means of external communication may include as appropriate:

Interested Parties	Needs & Expectations	Possible modes of Communication
Clients	Price, reliability & quality	Tender documents, sales meetings, telephone conversations, emails, face-to-face conversations, customer testimonials
Suppliers	Beneficial relationships	Purchase orders, emails, telephone conversations
Staff & Managing Director	Training and information, management oversight, communications	Staff training, meetings, emails, telephone conversations, face-to-face conversations
Regulatory & statutory	Compliance & reporting	Compliance reports, meetings with regulators
Banks	Monthly management reporting, communication. Early warning of fiscal irregularity.	Quarterly monthly management accounts and periodic dialogue via telephone.
Insurers	Managed risk and compliance with regulations and insurance statute. Communication and early warning of non-conformities.	Meetings and documented exchanges via telephone regarding claims.
Landlord	Good management of property and prompt payment of rent	Emails, telephone calls, meetings

Datum Engineering Solutions Ltd ensures that all external communications are authorized prior to release. Where required, advice appropriate to the context of the communication may be sought concerning the content and dissemination of certain external communications. Responses to external communications are recorded if they are transmitted by email or letter. In each case the response is retained and controlled in accordance with the requirements for documented information.

7.5 Documented Information

7.5.1 Management System Documents

Datum Engineering Solutions Ltd ensures that our QMS includes the documented information that is required to be maintained and retained by ISO 9001:2015, and additionally, any documented information identified by our organization that demonstrates the effective operation of our QMS.

Datum Engineering Solutions Ltd applies the following criteria to all types of documented information in order to assess whether the information is necessary for demonstrating the effectiveness of our QMS, and whether it should be formally controlled.

1. Communicates a message internally or externally;
2. Provides evidence of process and product conformity;
3. Provides evidence that planned outputs were achieved;
4. Provides knowledge sharing.

Should any of the above criteria apply, Datum Engineering Solutions Ltd ensures that this information is retained and/or maintained as a form of 'documented information'.

7.5.2 Creating & Updating

Datum Engineering Solutions Ltd ensures that when we create documented information it is appropriately identified and described (e.g. title, date, reference / version number) and is available in an appropriate format (e.g. language, software version, graphics, etc.) and on appropriate media (e.g. paper, electronic). All documented information is reviewed and approved for suitability and adequacy.

7.5.3 Controlling Documented Information

Documented information is retained to provide evidence of conformity to the requirements specified by ISO standards, customer requirements, and regulatory requirements and of the effective operation of our QMS.

Datum Engineering Solutions Ltd uses standard forms and templates that are accessed via a local area network computer system. An electronic document management system, which is backed up and updated as required, is used to retain documented information ensuring only the current versions are available to users.

8 Operation

8.1 Operational Planning & Control

Datum Engineering Solutions Ltd has established documented quality plans and procedures that describe processes and controls to be applied and the records required. During this planning phase, management will identify:

- The quality requirements for all structural work undertaken
- Monitoring and inspection requirements
- Processes, documentation and resources required
- Criteria for product acceptance

The output of this planning includes documented quality plans (Job Cards), resource requirements, processes, equipment requirements and operational procedures.

8.2 Customer Requirements

8.2.1 Customer Communication

In accordance with our commitment to exceed our customer's expectations, Datum Engineering Solutions Ltd highlights effective customer communication as an essential element of delivering customer satisfaction. Appropriate handling of customer communication helps to reduce customer dissatisfaction and in many cases turn a dissatisfying scenario into a satisfying experience. Customer communication occurs through the following formats, events and processes: -

- Web site
- Tender documents
- Enquiries, quotations and order forms, invoices and credit notes
- Confirmation of authorized orders and amended orders
- Delivery notes
- E-mails, letters and general correspondence
- Customer testimonials and complaints

The Managing Director is responsible for establishing methods of communication with our customers to ensure enquiries, contracts or order handling; including amendments, customer feedback and complaints are handled expeditiously and professionally.

8.2.2 Determining Requirements

During the intake of new business Datum Engineering Solutions Ltd captures: -

- requirements specified by the customer, including the requirements for delivery and post-delivery activities
- requirements not stated by the customer but necessary for specified or intended use, where known
- statutory and regulatory requirements related to products or services
- any additional requirements determined by Datum Engineering Solutions Ltd

8.2.3 Review of Requirements

Once requirements are captured, Datum Engineering Solutions Ltd reviews the requirements prior to its commitment to supply the products and services. This review ensures that Datum Engineering Solutions Ltd is able to: -

- meet all requirements specified by the customer, including requirements for delivery and post-delivery activities
- meet any requirements not stated by the customer, but which Datum Engineering Solutions Ltd knows as being necessary
- meet all requirements determined necessary by Datum Engineering Solutions Ltd itself
- meet all related statutory and regulatory requirements
- meet any contract or order requirements differing from those previously expressed (e.g. from a previous client quote)

8.2.4 Changes in Requirements

Datum Engineering Solutions Ltd ensures that all relevant documented information; relating to changes in product or service requirements, is authorized and amended where necessary, and that all relevant personnel are made aware of the documented requirement changes.

8.3 Design & Development

8.3.1 General

The design and development activity transforms the inputs requirements into conforming product or service outputs. Datum Engineering Solutions Ltd has implemented a design and development process to allow for effective product or service provision

The design and development process is carried out under controlled conditions, while all activities are planned and documented. Design and development activities targeted at controlling risk are supported by documented information.

All designs are reviewed at appropriate stages and, where applicable, are validated. The design and development output is verified before it is released to production. Our design and development practice incorporates appropriate review activities where required, including; standard/code review, peer review, creator self-review, or independent review.

8.3.2 Planning

At the start of the design process Datum Engineering Solutions Ltd reviews the available requirements and specifications, and identifies the key stages of the design process. Design and development stages including organization, task sequence, mandatory steps, significant stages and methods of configuration control are established. Where appropriate, our organization considers and implements to the following activities:

1. Assigning responsibilities and authorities for the design and development process;
2. Determining and scheduling required design review meetings;
3. Verification and validation activities appropriate to each stage;
4. Determining the nature, duration and complexity of the design and development activities;
5. Identification of internal and external resources;
6. Determining the need to control interfaces between personnel involved;
7. Identification of multi-disciplinary interfaces whose input is required;
8. Determining the need for involvement of customers and users in the process;
9. Determining the requirements for subsequent provision of products and services;
10. Determining the level of control expected by customers and other relevant interested parties;
11. Determining the documented information needed to demonstrate that requirements have been met.

By structuring the design effort into significant elements and by analyzing the elements and the necessary resources for design and development, Datum Engineering Solutions Ltd identifies responsible personnel, design content, input data, planning constraints and performance conditions. The input data specific to each element is reviewed to ensure consistency with customer requirements.

8.3.3 Inputs

Design inputs such as customer data, drawings, specifications, standards, regulations, etc. are checked to confirm they are adequate and unambiguous. Any conflicting or ambiguous requirements are discussed and resolved with the originator and the outcome retained as documented information. Datum Engineering Solutions Ltd also considers the following:

1. Functional and performance requirements;
2. Information derived from previous, similar designs;
3. Statutory and regulatory requirements;
4. Commitments to implement any standards or codes practice;
5. Consequences of failure due to the nature of the products or services.

If the project involves modifying an existing company design then the impact of the changes on component parts, stocks and delivered products is also evaluated.

8.3.4 Controls

Datum Engineering Solutions Ltd controls the design and development process to ensure that the results to be achieved are defined and that corrective action is taken where problems or changes are identified during design reviews and verification or validation activities.

Our designs are verified by reference to similar, proven designs, or by carrying out alternative calculations to ensure that the input requirements are met. Verification is usually carried out as part of the design review process, the results of which are retained as documented information.

Design and development validation is performed to ensure that resultant the products or services are capable of meeting the requirements for the specified application or intended use, where known, prior to release for delivery or implementation.

Where it is impossible to perform full validation prior to delivery or implementation, partial validation is performed to the extent applicable. Where tests are necessary for verification and validation, tests are planned, controlled, reviewed and documented to ensure and prove the following:

1. The correct configuration of the product is submitted for testing;
2. The requirements of the test plan and the test procedures are observed;
3. The acceptance criteria are met.

At appropriate stages, the design is reviewed to ensure it meets the specified input requirements and identifies and resolves any problems. These actions are recorded. The review includes all relevant stakeholders. Records of key decisions are retained. The design review includes the:

1. Evaluation of results to determine whether they fulfill requirements;
2. Identification of problems and proposals for corrective actions;
3. Authorization to progress to the next design and development stage.

8.3.5 Outputs

The outputs of the design and development process are retained as documented information and expressed in terms of requirements, calculations, analysis, or other means that can be verified against input requirements. The resulting outputs satisfy the design requirements, provide adequate information on production and service operations, make reference to acceptance criteria and specify characteristics essential for safe and proper use of the product.

8.3.6 Changes

Datum Engineering Solutions Ltd ensures that changes made during or after the design and development requirements are identified and retained as documented information. Any changes are reviewed, verified, validated and approved. The review of design development changes includes evaluating the adverse effects of those changes upon constituent products already delivered.

8.4 Control of Suppliers & External Processes

8.4.1 General

The purchasing process is essential to our organization's ability to provide our customers with products and services that meet their requirements. Datum Engineering Solutions Ltd ensures that all purchased products or services that are incorporated in to our final products; conform to our specified requirements.

Datum Engineering Solutions Ltd accomplishes this by closely working with a network of external suppliers. Supplier performance and capability are assessed through performance analysis and inspection or verification of the supplied products or services.

The type and extent of control applied to our suppliers and the purchased product is dependent upon the effect that the outsourced product or service may have on our final product or service. The following considerations are taken in to account by:

1. Ensuring that we understand the capabilities and competencies of potential outsourcing suppliers
2. Ensuring that we clearly communicate the roles and responsibilities of the outsourcing supplier
3. Defining the quality requirements for the outsourced process, activity, or product
4. Establishing upfront the criteria for and review of deliverables, frequency of inspections and audits
5. Selecting and qualifying appropriate outsourcing suppliers

It is the responsibility of the Managing Director to evaluate and select suppliers based on their ability to supply products or services in accordance with specified requirements. This is documented via an Approved Supplier List.

8.4.2 Purchasing Controls

Purchased items are checked against the purchase order to confirm identity and quantity. Satisfactory items are placed in stock. In the event that items are rejected on receipt, a non-conformance report is raised and the supplier contacted to arrange replacement or credit.

Datum Engineering Solutions Ltd has established and implemented a process of inspection to ensure that purchased products conform to:

1. Purchase orders and delivery notes
2. Product specifications
3. National or international standards

Where appropriate, risk control measures are applied to outsourced process or products. Risk control measures, and their importance, are documented within the purchasing data and are clearly communicated to the supplier.

8.4.3 Purchasing Information

Datum Engineering Solutions Ltd uses purchase order emails to describe the product or service to be purchased. Purchase orders are recorded in a purchase order book. Each purchase order includes where appropriate:

- Identification of product or service to be delivered, quantity, delivery date, and cost
- Requirements for approval or qualification of product, procedures, processes or equipment
- Requirements of the quality management system and the qualification of personnel

8.5 Production & Service Provision

8.5.1 Control of Production & Service Provision

In order to control the planning, administrative support and implementation of work, our organization's policy is to describe the work methods, the controls applied and the records required. The process control activities are quality with many aspects that also relate to quality control. The following controlled conditions are applied where applicable:

- Quality control checks are performed
- Handling, storage and transportation
- Evidence of completed QA activity
- Work instructions and technical specifications
- Criteria for quality and competence

8.5.2 Identification & Traceability

In order to preserve the conformance of products to customer requirements during internal processing and delivery, Datum Engineering Solutions Ltd identifies the product throughout the product realization process via a jobs number.

8.5.3 Third Party Property

We identify, verify, protect and maintain customer property provided for use. The Managing Director ensures that lost, damaged or unsuitable customer property is recorded and immediately reported to the customer.

8.5.4 Preservation

Datum Engineering Solutions Ltd ensures that all products and materials are handled and stored appropriately at all stages of the development cycle to prevent damage or deterioration:

8.5.5 Post-delivery Activities

Datum Engineering Solutions Ltd determines customer requirements before acceptance of an order. Customer requirements include the following:

- Previous customer requirements which pertain to current orders
- Requirements not stated by the customer but necessary for specified use or intended use
- Statutory and regulatory requirements related to the product
- Requirements required for delivery and post-delivery activities.
- Any additional requirements determined by Datum Engineering Solutions Ltd.

8.5.6 Control of Changes

Changes to the design and development requirements are identified and recorded. Any changes are reviewed, verified, validated and approved. All results relating to the review of changes are retained as documented information.

8.6 Release of Products & Services

The Managing Director has overall responsibility for planning and implementing the inspection and test activities needed to verify that product requirements are met at appropriate stages of the product realization process.

Finished work is not released until they are inspected as conforming to requirements which is checked via a visual inspection.

8.7 Control of Non-conforming Outputs

It is our organization's policy to detect, control and rectify any aspect of an output that does not conform as quickly and efficiently as possible. Where necessary, any product or service output that does not conform to requirements is properly identified and controlled to prevent unintended use or delivery. The non-conformity is recorded and the cause(s) are investigated via the NCR log.

9 Performance Evaluation

9.1 Monitoring, Measurement, Analysis and Evaluation

9.1.1 General

Datum Engineering Solutions Ltd applies suitable methods for determining which aspects of the quality management system and its processes are to be monitored, measured and evaluated. The frequency and methods by which our processes are monitored, measured and evaluated is determined and informed by:

- Statutory and regulatory requirements
- Customer feedback and specification requirements
- Process and QMS requirements
- Process performance and audit results
- Level of risk and types of control measure
- Trends in non-conformities or corrective actions

All monitoring, measuring and evaluation outputs are documented and analyzed to determine process effectiveness and to ensure their effectiveness in achieving in-tolerance results, and to identify opportunities for improvement.

- In-process checks relate to both quality control and productivity checks
- Provision is made for the identification and resolution of non-conformances
- The emphasis is to prevent any problems which might affect customer satisfaction;
- In-process checks are performed and documented
- Where specific inspection points are required these are identified at the contract planning phase

Where applicable, test and inspection records are retained as documented information for a minimum of three years.

9.1.2 Customer Satisfaction

The Managing Director monitor information and trends relating to customer perception as to whether the organization has fulfilled the customers' requirements. Customer complaints, whether received in writing, verbally or electronically through our complaints system are immediately forwarded to the appropriate personnel for action. If the problem cannot be resolved, the complaint is escalated to a Director for resolution.

The level of customer satisfaction is monitored using various sources of customer data:

- Product returns
- Repeat customers and trends in market share
- Analysis of customer complaints
- Analysis of customer satisfaction feedback e.g. testimonials

9.1.3 Analysis and Evaluation

The Managing Director collects and analyzes data using appropriate techniques to determine the suitability and effectiveness of key quality management system processes applicable to their area(s) of responsibility and to identify opportunities for improvement. At a minimum, data is analyzed to assess achievement of the corporate level objectives and customer requirements.

In order to identify strengths, weaknesses, threats and opportunities in our quality management system, Datum Engineering Solutions Ltd monitors and analyzes trends using the following quality data points:

- Characteristics of processes, services and their trends
- Conformity to services, customer and legal requirements
- Customer satisfaction data
- Supplier and external provider performance data
- Results of actions taken to address risks and opportunities
- Effective implementation of QMS planning
- Improvement opportunities identified during internal audits and management reviews

Control limits for process and product performance are expressed as objectives and disseminated via documented information as appropriate. Datum Engineering Solutions Ltd undertakes corrective action when the data shows a trend toward the defined control limit.

9.2 Internal Audit

Internal audit results are critical inputs that help to assess the effectiveness of our quality management system. Our internal audits use risk based thinking and the notion of continual improvement as the main drivers. Internal audits are conducted at planned intervals to determine whether the quality management system conforms our organization's planned arrangements and to the requirements of ISO 9001:2015.

The internal audit program is based upon a strategy that considers the status and importance of each process that comprises our quality management system. The audit frequency is based upon process performance trends, results from previous audits, levels of customer satisfaction, rates of non-conformity and corrective action, etc. to ensure that our organization focuses on the aspects that affect product and process conformity the most.

The criteria, scope, frequency and methods of each audit are defined in our audit plan. The selection of trained auditors and their subsequent impartial conduct ensures objectivity throughout the audit process, Internal Auditors ensures that:

1. The results of each are reported to the Managing Director
2. That timely appropriate corrective action undertaken where required;
3. They retain documented information such as audit checklists and audit reports as evidence of the effective implementation of the audit program in respect of each audit.

9.3 Management Review

9.3.1 General

To ensure the continuing suitability, adequacy and effectiveness of our quality management system in meeting our organization's strategies, senior management conducts formal management review meetings at planned internals.

9.3.2 Inputs

The primary inputs that are reviewed comprise data from conformance and performance measurements that are gathered at key quality data points from various processes. Subsequent recommendations for improvement are based on the evaluation of such measurements. Conformance is primarily assured through internal audits and demonstrated through a review of audit results and our demonstrated ability to detect, correct and to prevent problems. Performance is primarily assured through the deployment of corporate and operational level objectives, and through the review of our demonstrated ability to achieve desired results.

9.3.3 Outputs

The primary outputs of management review meetings are management actions that are taken to make changes or improvements to our quality management system. During management review meetings, senior management will identify appropriate actions to be taken regarding the following issues:

1. Improvement of the effectiveness of the quality management system and its processes
2. Improvement of product related to customer requirements
3. Opportunities and risks
4. Resource needs

The primary outputs of management review meetings are the actions necessary to make changes or improvements to our quality management system and the provision of resources needed to implement these actions. Responsibilities for required actions are assigned to members of the management review team. Any decisions made during the meeting, assigned actions and their due dates are recorded in the management review minutes.

10 Improvement

10.1 General

In order to determine and select opportunities for improvement or to implement any necessary actions to meet the requirements of customers and relevant interested parties, or to enhance customer satisfaction, Datum Engineering Solutions Ltd drives improvement via the analysis of relevant data. The data inputs for the improvement process include:

1. Risk and opportunity evaluations
2. Assessment of the changing needs and expectations of interested parties
3. The conformity of existing products and services
4. The effectiveness of our QMS
5. Supplier and sub-contractor performance
6. Levels of customer satisfaction, including complaints and feedback
7. Internal and external audit results
8. Corrective action and non-conformance rates
9. Data from process and product characteristics and their trends

Datum Engineering Solutions Ltd also ensures that opportunities for improvement from daily feedback on operational performance are evaluated by the Managing Director which are typically implemented through the corrective action system. Opportunities for improvement from analysis of longer-term data and trends are evaluated and implemented through the management review process and are prioritized with respect to their relevance for achieving our quality objectives.

The overall effectiveness of continual improvement program (including corrective actions taken as well as the overall progress towards achieving corporate level improvement objectives) is assessed through our management review process.

10.2 Non-conformity & Corrective Action

Evidence of non-conformance, customer dissatisfaction or process weakness is used to drive our continual improvement system. Since problems may already exist, they will require immediate correction and possible additional action aimed at eliminating or reducing the likelihood of its recurrence.

Management with responsibility and authority for implementing corrective action are notified promptly of product or process non-conformities. Investigating and eliminating the root cause of these failures is a critical part of our continual improvement process.

Datum Engineering Solutions Ltd takes action to eliminate the cause of non-conformities in order to prevent their recurrence. Corrective actions are appropriate to the effects of the non-conformities encountered. The Corrective Action Process defines the requirements for:

1. Reviewing non-conformities, including customer complaints and product returns
2. Determining the causes of product non-conformities and process deficiencies
3. Evaluating the need for action to ensure that non-conformities do not recur
4. Determining and implementing action needed
5. Recording and reviewing the results of actions taken

Follow-up audits are conducted in accordance with the internal audit process to ensure that effective corrective action is taken and that the action is appropriate to the impact and nature of the problem encountered. In addition, the Managing Director summarizes and analyzes corrective action data to identify trends in order to assess the overall effectiveness of the corrective action system and to develop related recommendations for improvement.

The resulting corrective actions are reviewed for effectiveness and are reported to the Managing Director in order to determine if changes to the QMS are required, or whether any new risks or opportunities need to be considered during planning. Documented information concerning the nature of any non-conformances and their resulting corrective actions is retained.

The corrective actions are considered effective if the specific problem was corrected and data indicates that the same or similar problems have not recurred. Results of data analysis and subsequent recommendations are presented to senior management for review.

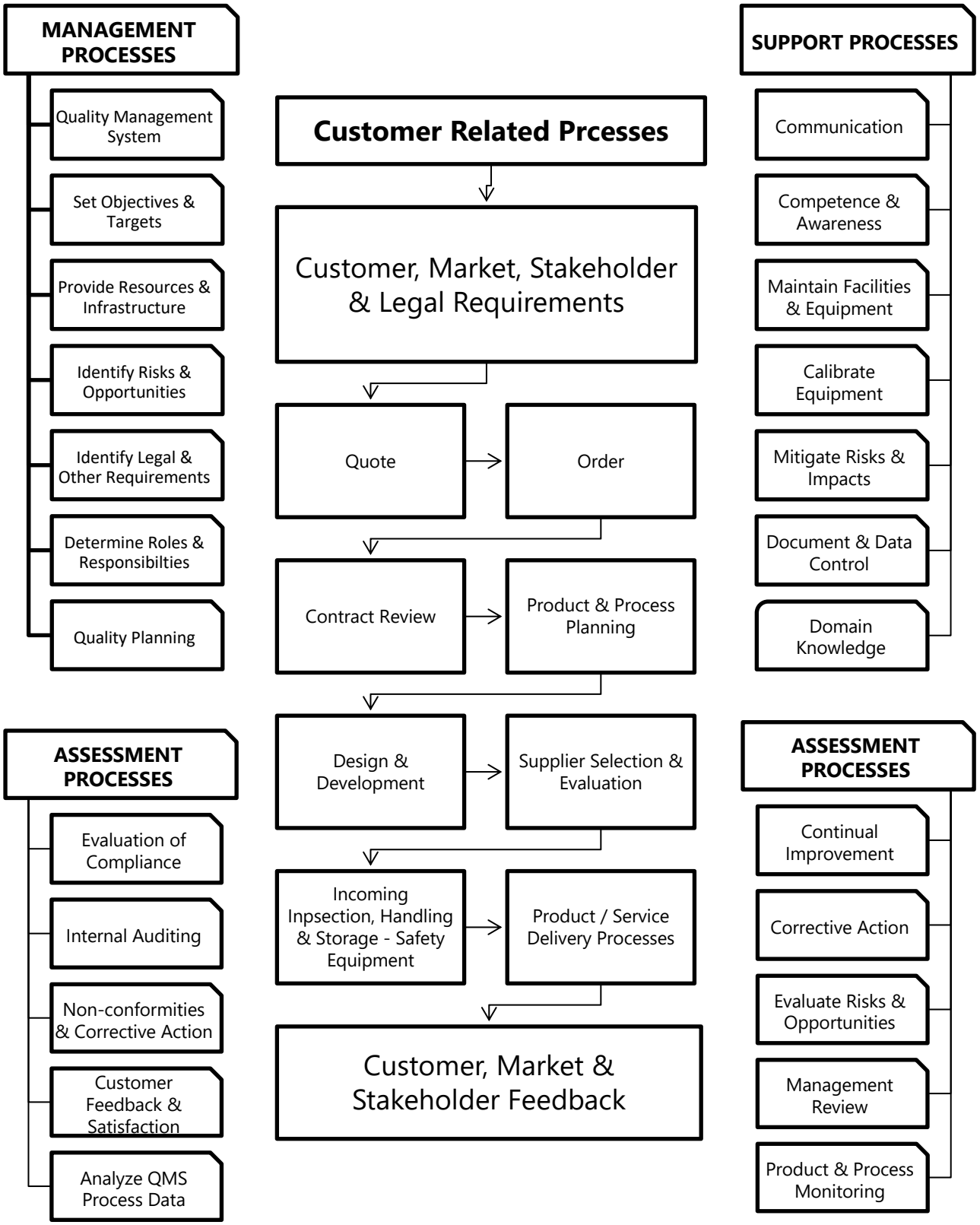
10.3 Improvement

Datum Engineering Solutions Ltd continually improves the effectiveness of its quality management system through the effective application of the corporate policies, objectives, auditing and data analysis, corrective and preventive actions and management reviews.

The continual improvement process begins with the establishment of our corporate policies and objectives for improvement, based on objectives contained in our business plan and customer targets and goals. Customer satisfaction, internal audit data, process and product performance data, and the cost of poor quality or risk control are then compared against objectives or KPIs to identify additional opportunities for improvement.

The overall effectiveness of continual improvement program, including corrective actions taken, as well as the overall progress towards achieving corporate level improvement objectives, are assessed through our management review process.

Annex 1 Sequence & Interaction of Processes



Annex 2 Welding Procedures

General

Datum Engineering Solutions Ltd ensures that its management of welding quality complies with the requirements of ISO 3834 Part 3 (Standard Quality Requirements) to fabricate structural steel to Execution Class 2 and below and ISO 14731 (Welding Coordination – Tasks and Responsibilities). Appropriate professional Engineering judgment in selecting the Execution Class is the responsibility of the customer (and/or his sub-contracted Structural Engineer organisation).

If an Execution Class is not defined by the customer/Structural Engineer, (but is required), the job is declined pending confirmation of the required Execution Class.

If the Execution Class is level 3 or 4, the job is declined.

Review of Requirements and Technical Review

Review of Requirements

Upon notification of contract award, the Managing Director will compare Datum Engineering Solutions Ltd' relevant tender document against the contract document for the following:

- Price match
- Delivery date(s)
- Specifications
- Scope/Execution Class
- Required quality level (in accordance with EN 5817)
- Dimensional tolerances (in accordance with EN 1090-2 Annex D)

Customer designs are reviewed for manufacturability and ability to meet specifications.

Technical Review

Where welding of structural components is a feature included within the contract, the Responsible Welding Coordinator is required to review the contract requirements prior to its acceptance to ensure that the appropriate (qualified) Welding Procedure Specification(s) is available and current, the capability of Datum Engineering Solutions Ltd to meet the prescribed requirements and the product standard to be used, together with any supplementary requirements.

Datum Engineering Solutions Ltd employ a Responsible Welding Coordinator (RWC) to oversee the management of all welding activities within the factory and on-site.

The following elements are included in all technical reviews:

- The parent material(s) specification and welded joint properties
- The joint location with relation to the design requirements
- Quality and acceptance requirements for welds
- The location, accessibility and sequence of welds, including accessibility for inspection and non-destructive testing
- Other welding requirements e.g. batch testing of consumables, ferrite content of weld metal, surface finish, weld profile, etc.
- The dimensions and details of weld preparation and completed weld
- Standard fabrication and inspection details (to be identified on Job Card for each job)
- Customer satisfaction requirements (where specified)

The RWC signifies acceptance by signing the relevant section of the Contract Review Record.

Any differences between the tender document and the contract are resolved with the customer, prior to any work being carried out.

Acceptance of the contract is signified by the Datum Engineering Solutions Ltd Managing Director, via email response to the customer.

The Contract Review Record is retained for a minimum period of 10 years.

Sub-Contracting

Where sub-contract services or activities are used, information necessary to meet the applicable requirements are supplied by Datum Engineering Solutions Ltd to the sub-contractor.

All sub-contractors are selected and managed via an approved supplier list (refer to section 8.4 above).

If a sub-contract company is working on-site on behalf of Datum Engineering Solutions Ltd, the sub-contractor will observe Datum Engineering Solutions Ltd's procedures and will complete all documentation specified therein.

Quality Management Plan

Policies and procedures for Factory Production Control have been established in a Quality Plan and in accordance with the requirements of EN 1090-1.

The Quality Plan includes, but is not limited to:

- Organisational Structure relating to conformity and quality
- Document Control procedure
- Control Procedures for Constituent Materials
- A list of the procedures by which conformity with the specification is to be maintained
- Process Control procedure
- Requirements for handling and storage of the product
- Schedule for monitoring the performance of the process
- Calibration and Maintenance procedure and schedule
- Inspection and Test procedure and schedule
- Control of Non-Conforming Materials procedure
- Inspection & Test Plan (incorporated into the Job Card)

Welding Personnel

General

Datum Engineering Solutions Ltd coordinates welding related activities through a Responsible Welding Coordinator having tasks, responsibilities and authority defined in accordance with ISO 14731:2019 Welding Coordination – Tasks and Responsibilities.

Welders and Welding Operators

Welders and Welding Operators are qualified by appropriate testing. The requirements for welding quality are based on ISO 3834:2005 Part 5 Table 1:

Arc Welding: ISO 9606-1, ISO 9606-2, ISO 9606-3, ISO9606-4, ISO9606-5, ISO 14732, ISO 15618-1 and ISO 15618-2.

Gas Welding: ISO 9606-1

Welding Coordination Personnel

Datum Engineering Solutions Ltd operates a single level of Welding Personnel:

Welding Operator/RWC

The requirements for Welding Coordination personnel are based on ISO 3834:2005 Part 5 Table 2:

Arc Welding: ISO 14731

Gas Welding: ISO 14731

The responsibilities and authorities for Welding Personnel are described below (unless otherwise specified by the relevant product standard or the contract). These responsibilities are also listed in the document Welding Coordination Activities and Responsibilities, reference F009.

Welding Operator/RWC – is responsible for following the relevant Welding Procedure Specification (WPS) as required by the contract and complying with the requirements of the Factory Production Control manual, for review of contract requirements (where welding is included), technical review of product against customer's specification and Welding Procedure Specifications, review of suitable sub-contract services (where welding is an activity), calibration and maintenance of welding equipment and personal protective equipment, ensuring that production information for traceability is maintained within the relevant production documentation, ensuring that environmental conditions for welding are adequate, ensuring that Welding Procedure Specifications are relevant and available for all types of weld being carried out, ensuring that handling and storage conditions for parent materials, fixings and consumables are adequate to prevent loss, damage or deterioration, inspections and tests during welding, inspections and tests after welding, coordination and correction of non-conforming product (including returns) and ensuring that Quality Records (with regards to welding activities and including sub-contract activities) are maintained according to this Factory Production Control manual.

The RWC also has overall responsibility for welding activities carried out by Datum Engineering Solutions Ltd, the allocation and qualification of welding personnel (including the suitability of Welding Operators and the validity of qualification certificates), arranging production test when required, methods and ranges for the qualification of welding procedures (including all essential and non-essential variables), preparation and qualification of Welding Procedure Specifications, assessing any special requirements over and above the standard Welding Procedure Specifications and the suitability for welding conditions.

Inspection and Testing Personnel

General

Datum Engineering Solutions Ltd ensures that sufficient and competent personnel for planning, performing and supervising the inspection and testing of its welding activities to specified requirements are available.

Non-destructive Testing Personnel

Non-destructive testing personnel are qualified in accordance with ISO 9712 (this function may be sub-contracted).

Equipment

General

The purpose of this procedure is to ensure that the welding equipment can be used as required by the Welding Procedure Specifications. Defective equipment will not be used.

This procedure applies to the description, acceptance, use and maintenance of equipment. The Essential Equipment List (document reference F002) is used to record the following details for each piece of equipment:

- Type and capacity
- Manufacturer, model and type
- Capability (for welding equipment)
- Plant number (internal reference)
- Acceptance test results
- Frequency and details of maintenance carried out

The overall responsibility for the calibration and maintenance of essential equipment lies with the Managing Director of Datum Engineering Solutions Ltd (including relevant documentation). Routine maintenance may also be sub-contracted to suitably competent maintenance organisations.

New or repaired essential equipment can only be put into production complete with the relevant, up to date calibration/acceptance certification. A welding test should also be performed to ensure that the equipment functions normally.

Welding and Related Activities

This procedure ensures that welding and related activities take place as planned.

The overall responsibility for welding activities lies with the Managing Director of Datum Engineering Solutions Ltd. This responsibility is subsequently delegated to the Responsible Welding Coordinator.

Preparation of Production Plan

Production planning is carried out as described in section 8.1 above.

Preparation of Welding Procedure Specifications

The requirements for Welding Procedure Specifications are based on ISO 3834:2005 Part 5 Table 4:

Arc Welding: ISO 15607, ISO 15610, ISO 15611, ISO 15612, ISO 15613, ISO 15614-1, ISO 15614-2, ISO 15614-3, ISO 15614-4, ISO 15614-5, ISO 15614-6, ISO 15614-7, ISO 15614-8 and ISO 15614-10

Gas Welding: ISO 15607, ISO 15610, ISO 15611, ISO 15612, ISO 15613, ISO 15614-1

The Responsible Welding Coordinator is responsible for preparing and issuing Welding Procedure Specifications for all types of weld being carried out by Datum Engineering Solutions Ltd and that all welding operators are trained in their use (including making reference to them in the relevant production documentation).

Each Welding Procedure Specification will include:

- Type of weld

- Settings and tolerances for each type of weld
- Type of product the procedure may be used for
- Method of qualification
- Requirements/constraints for welding consumables (e.g. customer's requirements)
- Special procedures
- Details of Responsible Welding Coordinator authorising the procedure

Qualification of Welding Procedure Specifications

The Welding Procedure Specifications in use at Datum Engineering Solutions Ltd are qualified by an independent laboratory to ISO 15612 (Standard Welding Procedure).

Each welding procedure has been tested and subsequently a Welding Procedure Qualification Record (WPQR) has been issued.

Preparation of Welding Plan

For each structural job, a Welding Plan is prepared which includes:

- Relevant WPS(s) to be used
- Measures to be taken to avoid distortion (during and after welding)
- Sequence of welds
- Requirements for intermediate checking
- Requirements for turning of components (in connection with sequence of welds)
- Details of restraints to be applied
- Measures to be taken to avoid lamellar tearing
- Special welding consumables (if required)
- Requirements for acceptance criteria
- Requirements for surface treatment

If welding or assembly overlaps or masks previous welds, special consideration is needed concerning which welds are to be executed first and the possible need to inspect/test a weld before the second weld is executed or before masking components are assembled.

Work Instructions (Welding Specific)

Welding Procedure Specifications are used in production for welding instruction purposes. Other Work Instructions are also issued to maintain compliance with the Factory Production Control manual.

Storage and Handling of Welding Consumables

Datum Engineering Solutions Ltd ensures that all welding consumables are handled and stored in a manner that prevents loss, damage or deterioration (and in accordance with the relevant Safety Data Sheets). Specifically, we ensure that welding consumables are:

- Securely stored inside the building
- Identified (through their labelling)
- Kept in stores until they are needed
- Segregated and labelled accordingly if they are hazardous (e.g. Thinners)
- Regularly checked for signs of deterioration
- Stock-rotated to ensure that perishable items are used within their shelf-life

Handling methods for welding consumables are as described in the relevant Safety Data Sheets.

The methods used for ordering welding consumables is included as part of section 8.4 above.

The Managing Director of Datum Engineering Solutions Ltd is responsible for ensuring that where welding consumables are required to be CE Marked by the Standard and/or the Contract, only properly certified consumables are procured.

Storage and Handling of Parent Materials

Facilities are allocated to ensure that all stored records are identifiable and retrievable. Storage areas are free from damp and other agents that could cause premature deterioration. The Managing Director of Datum Engineering Solutions Ltd is responsible for ensuring that where parent materials are required to be CE Marked by the Standard and/or the Contract, only properly certified materials are procured.
Parent materials are checked upon their arrival at the factory (or site if relevant) and identified for the job that they relate to. This identification remains with the material until it is taken to be used in production (whereupon the Job Card is issued). Traceability of parent material is maintained (see section below).

Where records of parent materials are maintained on computer, optical/magnetic media, these are subject to “back up” at regular intervals, with the “back up” information being stored in an environment that ensures security from loss/damage of data.

Post-Weld Heat Treatment

Datum Engineering Solutions Ltd does not carry out any Post-Weld Heat Treatment on any of its products.

Inspection and Testing

During fabrication, the products are cut and assembled as detailed on the Job Card. Inspection points are identified on the Job Card, including; what is to be inspected, the method to be used, the frequency and the criteria to be used. This is the Inspection & Test Plan.

All welds are 100% visually inspected in accordance with EN 5817, quality level C (for EN 1090-2) by welding operators that are qualified in visual inspection. Welding dimensional checks are made using EN 1090-2 Annex D as the criteria. The Responsible Welding Coordinator will carry out additional inspection of welds at suitable intervals, (i.e. on a daily basis of 10% minimum of welds) and will record these inspections as specified in the relevant Welding Inspection Record

If any part of the process identifies a fault, a Non-Conformity is raised. Final Inspection checks are carried out and recorded on the Job Card. If failure is established, the non-conforming product is removed from production and quarantine procedure followed.

Where welding tests are required by the Standard or the Contract, instruction is obtained from a sub-contracted laboratory as to the methods of preparation for test pieces, e.g. size, weld type, etc. Results from these tests are maintained and made available to the customer upon request.

Inspection and Test Before Welding

The following aspects of the business are inspected/checked prior to welds being carried out:

- Welder’s qualifications (validity and suitability for the range of materials to be welded)
- Welding Procedure Specifications/Work Instructions (necessity and suitability)
- Parent material and material thickness
- Identity/traceability of parent material
- Traceability and condition of welding consumables
- Dimensions of joint preparations (method of operation, bevel angle, gap, length, depth of root face)
- Jigging and tacking

- Setting of weld parameters (current, voltage and wire-feed rate)
- Measurement of pre-heat temperature (where appropriate)
- Environmental conditions (e.g. temperature)
- Any previous/outstanding non-conformances

Inspection and Test During Welding

The following points are inspected/checked during each welding process:

- Control of welding parameters (current, voltage, travel speed, gas flow rate)
- Temperature measurements
- Use and handling of welding consumables
- Cleaning, shape and number of runs
- Welding sequence
- Back gouging
- Control of distortion
- Required intermediate examinations
- Control of non-conformances

Inspection and Test After Welding

The following points are inspected/checked after each welding process:

- Implementation/completeness of the Quality Plan (records)
- Test reports (written instructions and acceptance levels)
- Shape, profile and dimensions of the structure
- Follow-up/close out of non-conformances
- Validity/accuracy of the relevant Welding Procedure Specification(s)

Inspection and Test Status

The inspection status of the welded structure is identified using the appropriate Job Card. Test status is identified via the sub-contracted laboratory records (maintained on file by Datum Engineering Solutions Ltd).

Non-Conformance and Corrective Actions

The procedures for dealing with non-conformance (products, materials, welding and processes) are described in section 8.7 (above. If a Welding Procedure Specification has not been followed, the Welding Coordinator must be informed and the non-conformance recorded (as section 12.2 above).

Calibration and Validation of Inspection, Measuring and Test Equipment

The procedures for controlling calibration and validation of inspection, measuring and are described in section 7.5 above.

Identification and Traceability

The procedures for dealing with identification and traceability of product, materials and welds are described in section 8.5.2 above.

Quality Records

The procedures for identifying and controlling quality records are described in section 7.5 above.

Technical Knowledge of Responsible Welding Co-ordinator

With respect to the welding operations being supervised, welding coordination personnel shall have a technical knowledge according to EN 1090-2 tables 14 and 15.

[NOTE 1: Steel groups are those defined in ISO/TR 15608. Correspondence to steel grades and reference standards can be found in ISO/TR 20172. NOTE 2: B, S and C are respectively basic, specific and comprehensive knowledge as specified in EN ISO 14731.]

Initial Type Testing

Initial type tests are carried out in accordance with section 12.4.2.2 and Table 24 of EN 1090-2.
The first 5 joints made to any new WPSs from existing WPQRs are to be inspected by the RWC according to the requirements of sections 12.4.2.2 – a, b and c of EN 1090-2.

Equipment Used For Thermal Cutting

Equipment used for thermally cutting materials (mechanised and/or automated) must be validated at least annually.

Flame Straightening

Datum Engineering Solutions Ltd does not carry out flame straightening of products.

Hardness of Free Edge Surfaces

Datum Engineering Solutions Ltd does not carry out any processes that produce local hardness.

Execution of Holing

Datum Engineering Solutions Ltd carries out punching within the scope of EN 1090 execution class. Results of punching operation inspections are recorded on a Punch Inspection Record.