INTRODUCTION

Under the Alstom Thermal Power Dedicated to Excellence (d2e) program, we are deploying our Quality Policy:

**OUR CUSTOMERS ARE WHY WE EXIST**

Parts and services from Suppliers contribute to the high quality products and services we would like to offer our Customers.
We recognize the very important role our Suppliers have in our own performance and processes and we are committed to establish and develop long term partnerships with our Suppliers.

Our Code of Ethics is essential in the relationship with our Suppliers. All Alstom Power employees share the same clear values and observe the same rules of personal and collective conduct that define Alstom Power as an ethical company. We expect the same conduct from our Suppliers.

Alstom Power’s Supplier Quality Management processes are outlined in this manual. The Supplier Quality Manual describes a standard approach and identifies the minimum basic requirements and tools.

The scope of this Supplier Quality Manual covers the products and services our Suppliers are delivering to our factories and to our Customers’ sites.

The implementation of these stated requirements are key to do continual business with us and will enable us to satisfy our Customers and to establish a common, sustainable growth with our Suppliers.

Bill Armstrong
Vice President Sector Quality

Kevin Cogo
Vice President Sector & Operations Supply Chain
1. OVERVIEW

1.1 Objective and Scope

The purpose of this manual is to inform Alstom Thermal Power Suppliers about our core requirements regarding Suppliers’ quality management systems, design requirements, quality planning, manufacturing process controls and services required for the purpose of doing business with Alstom Thermal Power.

This manual provides the general quality requirements for all external Suppliers (and their Sub-Suppliers where required by contract) providing direct material, products, processing and services to Alstom Thermal Power. It is structured in accordance with our 4 main processes:

- **Selection**: Panel entrance and management to qualify Supplier
- **Integration**: Product Qualification and Supplier involvement
- **Execution**: Advanced quality and quality control expectation
- **Monitoring & Improvement**: Supplier monitoring and performance improvement

The general requirements outlined herein do not supersede conflicting requirements in:

- the contract or the Purchase Order
- drawings, including applicable engineering and process specifications
- or applicable long term agreement(s).
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2. GENERAL SUPPLIER QUALITY REQUIREMENTS

2.1 Quality System

The Supplier must maintain a documented quality system to ensure control and conformance to the requirements of Alstom Thermal Power.

Alstom requires Suppliers to be certified by an accredited third-party certification body to the latest version of ISO 9001 Quality Management System standards or an equivalent applicable standard (as determined by Alstom Thermal Power).

Suppliers who are complying with the requirements, but are not yet certified, must develop a plan for certification to be reviewed and approved by the designated Alstom Supplier Quality Representative. Records will be maintained and feedback provided to the applicable sourcing functions.
2.2  Management of Sub-Suppliers

Where specified by contract, the Supplier shall purchase products, materials or services from Alstom-designated sources. However, the Supplier is fully responsible to:

- qualify and implement surveillance of all Sub-Suppliers according to Alstom requirements and notify Alstom of their qualification status when required
- flow-down all contractual and applicable technical and quality requirements
- ensure that items procured from such sources meet all applicable technical and quality requirements.

Alstom reserves the right to:

- review the Supplier’s process for selection, qualification, and surveillance of Sub-Suppliers
- approve, or disapprove, Sub-Suppliers
- audit and monitor the Sub-Suppliers’ processes and facilities when deemed necessary.


2. **GENERAL SUPPLIER QUALITY REQUIREMENTS**

2.3 **Risk Management & Business Continuity**

**Risk Management**

The Supplier shall establish a risk management process to effectively assess those elements in the various aspects of the business that could negatively affect the quality of the products, services and delivery. A copy of the Supplier’s risk management process shall be furnished to Alstom upon request.

In order to ensure that the parts and/or the equipment is adequately safeguarded throughout the various phases of transport, handling and storage, the Supplier must follow the applicable rules including regulations, contractual terms and conditions according to the place of origin, temporary and final destination and the mode of transport.

The Supplier should also notify Alstom in case of potential supply or capacity issues throughout their supply chain.
Counterfeit
Electronics Suppliers shall develop a counterfeit components avoidance programme that includes inspection and auditing procedures, purchasing practices, testing, and documentation of compliance.

Electronics refer to: electronic components, integrated circuits, hybrid microcircuits, semiconductors, transistors, diodes, capacitors, resistors, etc.

Business Continuity
The Supplier should have a business continuity plan which allows for the safeguarding, storage and recovery of documentation pertaining to any contract including engineering drawings, electronic media, and production tooling in the event of damage or loss of product. This plan should also contain contingency plans to satisfy Alstom’s requirements in the event of significant or repeated utility interruptions, labour shortages, equipment failure or field returns.
2. GENERAL SUPPLIER QUALITY REQUIREMENTS

2.4 Alstom Collaboration Tools for Suppliers

Business Tools
Many Alstom entities currently use and are continually expanding the use of electronic business tools to facilitate day-to-day activities within Alstom internal operations as well as with Alstom Suppliers and Customers. Contracts, delivery schedules, notifications of product rejections, requests for Corrective Action, etc. may be transmitted to Suppliers electronically. Alstom expects that Suppliers will adopt these tools to reduce errors and improve efficiency.

Electronic Documents
The accuracy and authenticity of electronic documents and forms submitted to Alstom is of highest importance. The following rules apply and may be subject to review by Alstom at Suppliers’ facilities:

- The issue of electronic documents and application of electronic signatures must be under the direct control of the individual whose name appears on the electronic document.
- The electronic signatures may only be applied at the place where the individual is located and the individual must have direct access and responsibility for the products or services described in the electronic document.
- The application of the electronic signature certifies that the signature (individual) represents an authorised company official.
Record Retention
The Supplier shall have a written procedure for the documentation and retention of quality and product records for products and services supplied to Alstom. The record retention period shall be in accordance with the GT&C as stated in the PO unless otherwise specified by Alstom. Records include, but are not limited to, product quality, inspection and test plans and results, material specifications, qualification documentation and certificates of conformance.

At any given time, Alstom shall have access to all quality records related to the Alstom product and to the internal records of the Supplier related to the quality system to ensure traceability.
3. **SUPPLIER SELECTION**

The Supplier Selection Process aims to identify Suppliers that will form a Target Panel for specific Commodities.

### 3.1 Target Panel

Alstom Thermal Power considers these elements when integrating a Supplier into the Target Panel:

- the Supplier’s capabilities in meeting Alstom Thermal Power’s requirements in areas such as technical expertise (e.g. design, engineering, manufacturing), quality management, and specifically Environment, Health and Safety
- the Supplier’s positioning on the key cost drivers of the considered Commodity
- the Supplier’s competitiveness, supporting Alstom Thermal Power’s objectives
- the Supplier’s approval according to the Alstom Thermal Power Qualification Process
3.2 Target Panel Management

The Target Panels are reviewed regularly to assess a Supplier’s performance and the potential Supplier’s attractiveness on the above elements.

A Supplier’s performance is periodically assessed with respect to a set of criteria which results in the Supplier being retained in/added to/removed from the Target Panel. The assessment encompasses the following areas:

- Financial strength:
  - The Supplier’s financial situation is assessed on a regular basis based on published data and information provided by the Supplier.
- Quality Management System
- Operational Excellence:
  - demonstrated performance with respect to Environment, Health and Safety
  - cost competitiveness and level of proactive involvement in jointly meeting and improving upon common targets (including cost, time, technology and quality), especially in the project tendering phase
  - maintaining an excellent quality level
  - permanently improving on-time delivery and proposing lead times that support Alstom Thermal Power’s businesses
  - proactively proposing technological solutions aimed at improving Alstom Thermal Power technology leadership and standardisation.
- Technical know-how, including special processes, and co-development capabilities, if necessary
- Capacity verification, if necessary.
3. **SUPPLIER SELECTION**

### 3.3 Commercial Qualification Process

All Suppliers must be approved by Alstom Thermal Power prior to the signature and/or issuance of contracts or purchase orders according to the current Alstom Thermal Power Qualification Process and as may be further modified or amended.

Supplier must complete and submit the information questionnaire to Alstom Thermal Power for review.

An Alstom representative will conduct a site assessment to evaluate:
- the Quality System
- other records.

Audit result and Profile questionnaire analysis determine approval or rejection.

**Supplier Profile Information Questionnaire (SPIQ)**
3.4 Financial Risk Assessment

The Supplier’s financial situation is assessed by Alstom Thermal Power on a regular basis. A set of key financial indicators will be checked to ensure the financial stability of the Supplier. If necessary, a more thorough financial audit can be carried out. The Supplier should transparently provide the basis for this analysis.
4. **SUPPLIER INTEGRATION**

4.1 **Product Qualification**

Once a Supplier is commercially qualified, the Supplier must have their products or services qualified according to Alstom-specific processes for the related part or Commodity family.

The Product Qualification Process for products, systems and services allows the Supplier to demonstrate high-quality ability to provide parts in accordance with the requirements and expectations of Alstom.

4.1.1 **Applicability**

The Product Qualification Process is applicable to Alstom Designed and Performance/Functional Specification Products of Levels A and B. For more information on these product types and levels, please refer to the Terms & Definitions.
4.1.2 Process Initiation and Completion

a) Initiation of the Product Qualification Process: Product Qualification is required in, but not limited to, the following cases:

- A new or existing Supplier is manufacturing a product for Alstom for the first time.
- A design or process change has occurred at the Supplier or at Alstom, changing the material, processing, fit, form or function of the product.
- An existing Supplier or critical Sub-Supplier changes their manufacturing location, including an identified critical process within a Supplier’s existing location.
- Quality issues arise at the Supplier putting current qualifications into question.
- As required by Alstom.

b) Completion of the Product Qualification Process: Once the Qualification requirements have been fulfilled to the satisfaction of the Alstom Qualification Team and the Supplier has received the signed Product Qualification Approval, the Supplier is then considered qualified to provide the specific product, process, part or Commodity family.

There are three categories of Product Qualification which are strictly connected and run in sequence:

- **IPR**: Initial Production Release (for a sample or trial part, Alstom Designed Products only)
- **LPR**: Limited Production Release (for the first production or first purchase order)
- **FPR**: Full Production Release (for a stable production or purchase orders without conditions)
4. **SUPPLIER INTEGRATION**

4.1.3 **Location of Product Qualification**

Product Qualification is Supplier-specific and is performed at the Supplier’s locations. The Supplier shall therefore provide access to their production sites for the Alstom Qualification Team.

4.1.4 **Requirements and Responsibilities within Product Qualification**

a) **Alstom Qualification Team:** Product Qualification requirements are defined and documented by Alstom. The Alstom Qualification Team oversees the Product Qualification Process and reviews and approves relevant documentation.

b) **Supplier:** The Product Qualification Process is performed in collaboration with the Supplier. The Supplier is responsible for fulfilling Alstom’s requirements and setting documentation at the disposal of the Alstom Qualification Team according to the structure below:
### Performance/Functional Specification Product

More detailed requirements on the most important documents mentioned in this checklist are described in Chapter 5.1 Quality Plan.

<table>
<thead>
<tr>
<th>Qualification Status</th>
<th>Level A Requirements</th>
<th>Level B Requirements</th>
</tr>
</thead>
</table>
| **LPR**              | • Technical Assessment Check List (performed by Alstom Qualification Team)  
• Manufacturing Process Assessment Audit (performed by Alstom Qualification Team)  
• List of Sub-Suppliers  
• Design FMEA and engineering review documentation  
• Process FMEA  
• Measurement System Analysis (MSA)  
• Definition and evaluation of Critical Product Characteristics (CPCs) (fit, form, function)  
• Evaluation of Critical Process Parameters (CPPs) on manufacturing process parameters  
• Review of Quality Control Plan (QCP)/Inspection and Test Plan (ITPL) at Supplier (performed by Alstom Qualification Team)  
• Product Reference List | • Technical Assessment Check List (performed by Alstom Qualification Team)  
• Manufacturing Process Assessment Audit (performed by Alstom Qualification Team)  
• List of Sub-Suppliers provided by Supplier  
• Product Reference List |
| **FPR**              | • Documents listed above already provided in LPR  
• End of Manufacturing Report (EOMR)  
• Review of metrics: NCR and OTD analysis (performed by Alstom Qualification Team) | • Documents listed above already provided in LPR  
• EOMR  
• Review of metrics: NCR and OTD analysis (performed by Alstom Qualification Team) |
4. **SUPPLIER INTEGRATION**

**Alstom Designed Product**

More detailed requirements on the most important documents mentioned in this checklist are described in Chapter 5.1 Quality Plan.

<table>
<thead>
<tr>
<th>Qualification Status</th>
<th>Level A Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPR</td>
<td>• Process FMEA</td>
</tr>
<tr>
<td></td>
<td>• Manufacturing Process Assessment Audit (performed by Alstom Qualification Team)</td>
</tr>
<tr>
<td></td>
<td>• Manufacturing Process Plan (MPP) (Manufacturing Change Request (MCR) is required for change of the frozen process), including review of ITPL steps in the MPP</td>
</tr>
<tr>
<td></td>
<td>• MSA</td>
</tr>
<tr>
<td></td>
<td>• List of Sub-Suppliers</td>
</tr>
<tr>
<td></td>
<td>• Review of ITPL (performed by Alstom Qualification Team)</td>
</tr>
<tr>
<td></td>
<td>• Evaluation of CPCs on Critical Product Characteristics (fit, form, function), CPCs defined by Alstom Qualification Team</td>
</tr>
<tr>
<td></td>
<td>• Evaluation of CPPs on manufacturing process parameters</td>
</tr>
<tr>
<td></td>
<td>• Product Reference List</td>
</tr>
<tr>
<td>LPR</td>
<td>• Documents listed above already provided in IPR</td>
</tr>
<tr>
<td></td>
<td>• First Article Inspection Report (FAIR)/EOMR</td>
</tr>
<tr>
<td></td>
<td>• Review and release of MPP in case of changes since IPR (mark frozen processes on MPP)</td>
</tr>
<tr>
<td></td>
<td>• SPC analysis (not applicable to single part production)</td>
</tr>
<tr>
<td>FPR</td>
<td>• Documents listed above already provided in IPR/LPR</td>
</tr>
<tr>
<td></td>
<td>• SPC analysis (not applicable for single part production)</td>
</tr>
<tr>
<td></td>
<td>• Review of metrics: NCR and OTD analysis</td>
</tr>
</tbody>
</table>
4.1.5 Special Processes

Suppliers who perform Special Processes shall flow-down the following requirements to their Sub-Supplier sources and ensure due compliance with them.

Suppliers shall:

- have specific, documented and controlled procedures for each Special Process performed and demonstrate conformity to Alstom requirements for capability
- include methods for monitoring and control of Special Processes and initiate the specified reaction plan when:
  - the process becomes not statistically capable or
  - CTQs (in the Control Plan) become not statistically capable or are unstable
These reaction plans shall include containment of product and 100% inspection as appropriate. A Corrective Action plan shall then be completed to assure that the process becomes stable and capable. The plans shall be reviewed with and approved by Alstom when requested.
- ensure only qualified personnel are allowed to execute Special Processes. The Supplier must maintain a list of qualified personnel by Special Process, records of training and certification status. Qualified personnel must maintain their certifications as required by the Supplier or governing body for certification.

<table>
<thead>
<tr>
<th>Level B Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>- On special request &gt; see LPR documentation of Level B Alstom Designed Product</td>
</tr>
<tr>
<td>- Manufacturing Process Assessment Audit (performed by Alstom Qualification Team)</td>
</tr>
<tr>
<td>- List of Sub-Suppliers</td>
</tr>
<tr>
<td>- Review of ITPL</td>
</tr>
<tr>
<td>- Product Reference List</td>
</tr>
<tr>
<td>- Documents listed above already provided in LPR</td>
</tr>
<tr>
<td>- FAIR/EDMR (If IPR is done, FAIR to be provided in LPR)</td>
</tr>
<tr>
<td>- Review of metrics: NCR and OTD analysis</td>
</tr>
</tbody>
</table>
4. SUPPLIER INTEGRATION

4.2 Integration into Alstom Gated Processes

Three gated processes are at the core of Alstom Thermal Power’s products and services. They mostly run sequentially, but are very closely intertwined.

- **Technology Development Quality (TDQ):** This process ensures the full commitment to Customer requirements throughout the development of technology at Alstom.
- **Product Development Quality (PDQ):** This process ensures the full commitment to Customer requirements when developing new products at Alstom.
- **Project Execution Quality (PEQ):** This process ensures the full commitment to Customer requirements during the entire life-cycle of a project.

Within each of these processes, gate reviews at specific stages of the process ensure quality and commitment to Customer requirements. Supplier deliverables contribute to gate and functional reviews in the TDQ, PDQ or PEQ process. Therefore Suppliers are asked to collaborate closely with Alstom Thermal Power throughout these processes to meet Customer requirements.

The following schematics outline the basic idea of the most important gates in all processes and state requirements for Suppliers.
Scope & Business Case
- Equipment and Supplier List
- Commercial Qualification Status
- Commercial Qualification Plan
- Commercial Qualification Execution

Product Specification
- Co-Design Plan
- Co-Design Supplier Selection

Conceptual Design
- Design Suppliers Selection

Product Design
- Design Reviews with Suppliers
- Co-Design & Design Suppliers

Test & Verification of Prototype
- Verification Reviews with Suppliers
- Co-Design & Design Suppliers

Validation of Pilots by limited Release

For each Supplier/Equipment
- IGR
- SGR
- CGR
- DGR
- RGR
- FGR

CTQs Definition
- Critical Processes, Risk/PFMEA

First Article Inspection & Test
- Quality Control Plan
- MSA
- Process Capability Measure

Manufacturing Process Plan

NCRs, CAPAs
- Inspection
- Process Monitoring

PDQ
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   5.3 Nonconformance Management
   5.4 Audit & Compliance

6. SUPPLIER MONITORING & CONTINUOUS IMPROVEMENT
   6.1 Performance Monitoring & Visual Management
   6.2 Continual Improvement
Project Start:
- Integration into cross-functional teams
- Planning and schedule synchronisation
- Resource Mobilisation

Bid Submission:
- Quick answer to bid request
- Price, delivery and Terms & Conditions commitment

Procurement & Logistics Start for Critical Components:
- Long lead items
- Delivery commitments

Engineering Start with external Partners:
- Requirement and Specification clarification
- Design & Validation review plan
- Supplier documents

Manufacturing – At Start:
- Aligned manufacturing & delivery plan
- Supplier documents
At End:
- Supplier documents
- Quality control before shipments

Manufacturing – At Start:
- Aligned manufacturing & delivery plan
- Supplier documents
At End:
- Supplier documents
- Quality control before shipments

Commissioning Start:
- Planning
- Resource Mobilisation for issues & Nonconformance correction
- Prepare warranty and service phase

Site Opening:
- Planning
- Resource Mobilisation

Project Close-Out:
- Lessons learned

PEQ
4. SUPPLIER INTEGRATION

4.3 Change Management

4.3.1 Alstom Change Requests

The technical changes required by Alstom will be provided to the Supplier and confirmed by an addendum order from Alstom.
### 4.3.2 Supplier Change Requests

Before implementing the change, the Supplier must perform a risk assessment of any changes describing the impact on performance and on the contractual requirements, and must submit the improvements/changes to Alstom for approval. If the change request occurs after implementation, it should be treated as a nonconformance.

<table>
<thead>
<tr>
<th>Change Type</th>
<th>Requirement Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deviation</td>
<td>Requirement modification for limited time</td>
</tr>
<tr>
<td>Engineering Change</td>
<td>• Specification change</td>
</tr>
<tr>
<td></td>
<td>• Design change</td>
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<tr>
<td></td>
<td>• Technology change</td>
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<tr>
<td></td>
<td>• Test requirement change</td>
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<tr>
<td>Supply Chain Change</td>
<td>• Lead time impact</td>
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<tr>
<td></td>
<td>• Sub-Supplier change</td>
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<tr>
<td></td>
<td>• Transport change</td>
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<tr>
<td></td>
<td>• Packing change</td>
</tr>
<tr>
<td>Manufacturing Change</td>
<td>• Location of production site</td>
</tr>
<tr>
<td></td>
<td>• Production process</td>
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<tr>
<td></td>
<td>• Tools</td>
</tr>
<tr>
<td></td>
<td>• Materials</td>
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<tr>
<td></td>
<td>• Sub-Supplier</td>
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<tr>
<td></td>
<td>These changes should appear in a review of the MPP when applicable.</td>
</tr>
</tbody>
</table>

### 4.3.3 Configuration Management

The configuration management of these products is the responsibility of the Supplier. The Supplier must manage and control the changes according to the following information:

- Serial number of the product and its critical sub-assemblies
- References of the Supplier product
- Date of production
- Status of hardware and software configurations (including revision levels and the index changes)
- Number of Alstom modifications
- References of the remarks raised and accepted by Alstom

The Supplier must inform Alstom if the product becomes obsolete.
4. **SUPPLIER INTEGRATION**

4.4 **Packing, Labelling and Delivery**

Preservation, packing, labelling, and shipping methods must comply with Alstom requirements specified in the contract.

**Packing**

The Supplier must adequately plan for packing to prevent product contamination, deterioration or loss and to eliminate shipping damage. If applicable, the Supplier should provide expendable packing or returnable containers that provide for sufficient density and protection from any damage that may occur. Expendable materials and packing must meet local and national standards for safe disposal and/or recycling.

**Labelling**

Labelling and bar code requirements may vary among Alstom entities or contracts. Alstom will provide the Supplier with the necessary specifications based on the contract.
**Delivery**
The Supplier should systematically inform Alstom as early as possible of any delay under the contract and provide a recovery plan.

**Storage**
The Supplier shall provide proper and adequate environmental control at all places and periods of storage in compliance with the applicable rules and in light of the specific nature and characteristics of the product and its components.
5. **SUPPLIER ORDER EXECUTION**

5.1 **Quality Plan**

The type of documentation necessary to integrate a Supplier into Alstom has been listed in the previous chapter (Chapter 4.1.4 Requirements and Responsibilities within Product Qualification). Here the intent is to outline detailed requirements regarding this documentation.

Each piece of documentation described below is to be developed by cross-functional teams and maintained as living documents with all versions to be made available to Alstom upon request.

### FMEA

Suppliers must be able to provide two types of FMEAs, Design FMEA and Process FMEA. Overall FMEAs shall include as a minimum:

- selection criteria for identifying applicable product designs and manufacturing/assembly/transactional processes.
- KPIs which demonstrate FMEA coverage status
- prioritisation criteria for the completion of remaining products and processes requiring FMEA
- standardised Severity-Occurrence-Detection tables
- prioritisation criteria for mitigating or accepting identified risks.

An FMEA is not only required within the Product Qualification Process. It is also required when:

- the root cause of an NCR is found to be a product or process failure or
- following a change to the product or process.
Control Plan

Control Plans are used prior to producing the product and as a reaction to treat out-of-control conditions. They shall include as a minimum:
- clearly identified CPCs/CPPs
- proactive and reactive controls for production processes.

A Control Plan is reviewed and updated when any change occurs affecting:
- the product (incl. Design FMEA)
- the production process (incl. Process FMEA)
- any measurements
- logistics & supply sources.

A process to review the effectiveness of these controls shall be set up.

Manufacturing Process Plan (MPP)

In cases specified by the Alstom Qualification Team, the Manufacturing Process Plan may be combined with the Control Plan. Otherwise it is to be developed as a separate document. It shall include as a minimum:
- a list of all applicable drawings and specifications, ordering sheets, outline drawings, and Special Process specifications and instructions
- list of process Qualification records used in the manufacturing
- identification of all component parts and sources
- identification of all critical Sub-Suppliers and their manufacturing locations
- a sequence plan of all major and critical manufacturing and inspection steps with appropriate sign-off documentation.

Measurement System Analysis (MSA)

A MSA programme addresses all measurement systems and measurement processes associated with CPCs/CPPs. It shall include as a minimum:
- reports on the statistical studies related to a representative range of tolerances and features (including tightest tolerance measured) to analyse the variation present in the results of each type of monitoring/measuring and test equipment system
- a verification on whether the test equipment system is calibrated and traceable to international or national measurement standards
- identification of how the statistical studies are undertaken and lessons learnt.
Process Capability Management and Control

Process Capability Management and Control ensure the process is performing within expected parameters to prevent the need for additional inspections due to instability of a process. The frequency and status of tests or inspections already conducted should be recorded and traceable to products. It shall include as a minimum:

- a clear identification of products and their key features (especially CTQs)
- statistical measurement tools are recommended to characterise the Product conformity through Statistical Process Control (SPC).
  - KPIs such as Cpk* and Ppk
  - an analysis of any deviance from these KPIs
  - an identification of root causes followed by an improvement plan to optimize the process.

*For Cpk the following acceptance criteria shall be used for evaluating initial process study results of special characteristics for processes that appear stable:

<table>
<thead>
<tr>
<th>Results</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cpk &gt; 1.67</td>
<td>The process currently meets acceptance criteria.</td>
</tr>
<tr>
<td>1.33 ≤ Cpk ≤ 1.67</td>
<td>The process is marginally acceptable.</td>
</tr>
<tr>
<td>Cpk &lt; 1.33</td>
<td>The process is not acceptable.</td>
</tr>
</tbody>
</table>
5.2 Inspection Requirements

Inspections shall be carried out in order to ensure quality within day-to-day operations. Four elements are key when conducting inspections:

**Inspection Environment**
The Supplier shall:
- have dedicated and clearly-identified inspection areas that are clean and free from debris to protect the products
- ensure adequate levels of lighting are present
- have a clearly-identified segregation/quarantine area for nonconforming products
- implement and maintain a segregation/quarantine process
- have preservation and protection strategies in place to protect products from damage
- inspect under climate-controlled conditions, where required.

**Inspection Resources**
The Supplier shall ensure that personnel nominated to perform inspection and measurement system analysis activities are properly trained and competent in the use of the monitoring/measuring equipment and statistical analysis.

The Supplier should also make skills, training and competency records available for Alstom review upon request.

**Inspection Instructions**
The Supplier shall make documented inspection instructions available for personnel having the responsibility for the inspection of products or processes.

Inspection instructions shall be derived and cross-referenced to sources such as the ones mentioned in Chapter 5.1., i.e. FMEA and Control Plan.

**Inspection Equipment**
A MSA programme ensures statistical validation of all measurement equipment. Detailed information on MSA requirements can be found in Chapter 5.1.
5. **SUPPLIER ORDER EXECUTION**

5.3 **Nonconformance Management**

The Supplier is responsible for the quality of their parts, equipment, products and/or services provided to Alstom, according to the terms of the PO and GT&C’s. In the interest of a good collaboration, Alstom Thermal Power depends on their Suppliers to call attention to any nonconformance.

Whenever a nonconformance arises Alstom will classify it using the following criteria:

- Severity Level
- Detection Location
- Recurrence

### 5.3.1 Detection & Notification

When a nonconformance is detected by Alstom or the Alstom Customer, a nonconformance report (NCR) will be issued and the Supplier notified accordingly.

When a nonconformance is detected by the Supplier, the Supplier shall notify Alstom via the Alstom NCR database if the nonconformance will not be removed by subsequent processing of the product.
The Supplier is responsible for:
1) Correcting the nonconformance
2) Managing the containment of stock throughout the Supply Chain (up to the operations at Alstom, delivery to Customer, etc.)
3) Analysing the root causes.

### 5.3.2 Requirements for Problem-Solving

To ensure timely execution of the root cause analysis, Alstom will measure Supplier responsiveness against the following targets for selected stages:

**8D Problem-Solving METHODOLOGY**

<table>
<thead>
<tr>
<th>Contain &amp; fix the problem</th>
<th>Permanently resolve the problem</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem detection</strong></td>
<td><strong>D4</strong></td>
</tr>
<tr>
<td>NCR notification</td>
<td>Define and verify root causes</td>
</tr>
<tr>
<td>Establish the team</td>
<td><strong>D5</strong></td>
</tr>
<tr>
<td>Define the problem 5W/2H</td>
<td>Define and verify permanent Corrective Actions</td>
</tr>
<tr>
<td>Validate the containment and correction</td>
<td><strong>D6</strong></td>
</tr>
<tr>
<td><strong>D2</strong></td>
<td>Implement and validate permanent Corrective Actions</td>
</tr>
<tr>
<td><strong>D3</strong></td>
<td>Prevent recurrence</td>
</tr>
<tr>
<td><strong>Starting time</strong></td>
<td><strong>D7</strong></td>
</tr>
<tr>
<td>48 h</td>
<td>Formalize and share the Lessons Learned and closure</td>
</tr>
<tr>
<td><strong>D1</strong></td>
<td><strong>D8</strong></td>
</tr>
<tr>
<td>10 days</td>
<td></td>
</tr>
<tr>
<td>20 days</td>
<td></td>
</tr>
<tr>
<td>30 days</td>
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</tbody>
</table>
5. SUPPLIER ORDER EXECUTION

5.3.3 Decision Matrix (Minimum Requirements)

The following decision matrix outlines the minimum Alstom requirements for treatment of an NCR, e.g.:

- D3 only (containment and correction)
- or D6/D8 (Root Cause Analysis and Corrective/Preventive Actions).

Nevertheless, Suppliers should conduct a full problem-solving analysis up to and including the D8 stage for any nonconformance escape, in order to prevent recurrence.

Note: Your Supplier Quality contact may ask for stricter requirements for timelines and/or levels of investigation/root cause analysis, as deemed necessary to address the problem.
5.4 Audit & Compliance

Suppliers shall establish a rolling audit programme (with detailed annual schedules) for QMS, Product and Process audits including internal production and Sub-Supplier activities, to verify compliance to Alstom-related products or services. The audit programme should be prioritized based on:

- Sub-Supplier risk, product risk and process risk
- Importance of the process
- Results of previous audits.

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2. GENERAL SUPPLIER QUALITY REQUIREMENTS
   2.1 Quality System
   2.2 Management of Sub-Suppliers
   2.3 Risk Management & Business Continuity
   2.4 Alstom Collaboration Tools for Suppliers

3. SUPPLIER SELECTION
   3.1 Target Panel
   3.2 Target Panel Management
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   4.1 Product Qualification
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6. SUPPLIER MONITORING & CONTINUAL IMPROVEMENT
   6.1 Performance Monitoring & Visual Management
   6.2 Continual Improvement
5. SUPPLIER ORDER EXECUTION

<table>
<thead>
<tr>
<th>Programme and Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Supplier shall:</td>
</tr>
<tr>
<td>• use internal or external auditors who are appropriately trained and competent to perform audits</td>
</tr>
<tr>
<td>• maintain records of audits, audit findings resolutions and management decisions/actions taken on the basis of those findings and make these available for review by Alstom upon request</td>
</tr>
<tr>
<td>• establish specific checklists to be used for each audit, where applicable.</td>
</tr>
</tbody>
</table>

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1. OVERVIEW
   1.1 Objective and Scope

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   5.1 Quality Plan
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6. SUPPLIER MONITORING & CONTINUAL IMPROVEMENT
   6.1 Performance Monitoring & Visual Management
   6.2 Continual Improvement
The Supplier shall:

- verify the implementation and effectiveness of Corrective Action and Preventive Action (CAPA) from previous audit findings
- audit products at appropriate stages of production using a representative product from the current production process to determine the following:
  - production method provides a record to demonstrate that all operations are complete
  - verification/inspection records demonstrate that all operations are appropriately verified
  - dimensional, functional and visual acceptability to product definition
- audit each manufacturing process to determine if the controls are effective and comply with the requirements
- increase audit frequencies and level of detail when internal/external nonconformities or Customer complaints occur
- take immediate containment action when an audit result identifies a product nonconformance
- take appropriate Corrective Action within 90 days for QMS findings or prior to shipment of product for product or process findings.
6. **SUPPLIER MONITORING & CONTINUAL IMPROVEMENT**

### 6.1 Performance Monitoring & Visual Management

#### 6.1.1 Alstom Supplier Performance Monitoring & Supplier Scorecard

During the order execution phase Supplier performance is monitored by Alstom. This performance is measured by the following two main indicators:

- **NCRs originated from the Supplier**: total number of NCRs raised in the last 12 months, where the Supplier is responsible for the cause of the NCR.
- **On-Time Delivery**: total number of PO schedule lines delivered on time in full/total number of schedule lines required (expressed as a percentage).

The result of this performance monitoring is summarized in a scorecard.

#### 6.1.2 Supplier Internal Performance Metrics & Monitoring

For quality performance, the Supplier shall develop production process performance metrics that monitor (but are not limited to) the following:

- Statistical Process Control
- Process Yield Rates (% Scrap, % Rework)
- Product First Pass Yield (%)
- Customer complaints
- Escaping defects

For delivery performance, the Supplier shall take appropriate Corrective Action when 100% delivery performance is not, or will not be, achieved.
6.1.3 Subcontractor/Sub-Supplier monitoring

The Supplier shall monitor Subcontractor/Sub-Supplier performance using the following indicators:
- delivered product quality
- Customer disruptions/Customer returns
- delivery schedule performance.

The Supplier shall maintain documentation supporting the aforementioned performance monitoring activities. This documentation shall be made available to Alstom for review upon request.

6.1.4 Recovery Plan

To address deterioration of performance from standard, a recovery plan shall be developed and agreed upon between the Supplier and Alstom.

6.1.5 Visual Management

Visual management should include, as minimum, the following:
- Status of NCRs
- Product First Pass Yield (%)
- Throughput
6. SUPPLIER MONITORING & CONTINUAL IMPROVEMENT

6.2 Continual Improvement

The Supplier shall have an integrated policy for Continual Improvement that drives the reduction of risk and variation associated with manufacturing and supporting processes. The Continual Improvement policy must be developed by a cross-functional team and documented.

As a direct output of the Continual Improvement policy, the Supplier shall develop a Continual Quality Improvement plan to meet Customer performance expectations, using inputs identified during the performance monitoring process.

The Supplier shall monitor the implementation of improvement plans and evaluate their effectiveness.

Improvement plans shall be made available for review upon request and shall be agreed with Alstom, where applicable.