
 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>1 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

**Table of Contents**

- 1. OUR MISSION: SAFE, RELIABLE, AND BUILT TO LAST ..... 3
- 2. PURPOSE AND SCOPE..... 3
- 3. SUPPLIER QUALITY POLICY ..... 4
- 4. DEFINITIONS & ACRONYMS ..... 5
- 5. ROLES AND RESPONSIBILITIES ..... 7
- 6. LANGUAGE ..... 9
- 7. QUALITY SYSTEM ..... 9
- 8. ZERO DEFECTS MINDSET .....10
- 9. DOCUMENT CONTROL AND RECORD RETENTION .....11
- 10. SUBCONTRACTING / SUB-SUPPLIER CONTROL.....11
- 11. SUPPLIER SELECTION – APPROVED VENDORS LIST.....12
- 12. SUPPLIER PERFORMANCE EVALUATION .....13
- 13. MANAGEMENT QUALITY REVIEW (MQR) .....14
- 14. SUPPLIER CORRECTIVE ACTION REQUEST (SCAR) .....16
- 15. CONTINUOUS IMPROVEMENT.....17
- 16. QUALITY PLANNING AND CONTROL .....17
- 17. CRITICAL PARAMETERS/SPECIAL CHARACTERISTICS (CTQs, CDs, SCs & CCs).....18
- 18. INSPECTIONS AND TESTS.....18
- 19. CERTIFICATE OF COMPLIANCE/FACTORY ACCEPTANCE TESTS (FATs).....19
- 20. MACHINE, TOOLING, GAUGING & MEASURING EQUIPMENT CONTROL .....19
- 21. EQUIPMENT MAINTENANCE REQUIREMENTS .....21
- 22. PRODUCTION VERIFICATION PROCESS -ALSO KNOWN AS FIRST ARTICLE INSPECTION (FAI).....22
- 23. PRODUCTION PART APPROVAL PROCESS (PPAP).....23
- 24. SUPPLIER IDENTIFICATION AND TRACEABILITY OF MATERIALS .....26
- 26. CONTROL OF POWIN SUPPLIED (CONSIGNED) PRODUCT.....28
- 27. PROCESS CONTROL PLANS.....28
- 28. NON-CONFORMING PRODUCT/PROCESS.....28
- 29. CONTAINMENT.....30
- 30. MATERIAL SEGREGATION.....30
- 31. TEMPORARY DEVIATION NOTIFICATION (TDN).....31
- 32. CHANGE MANAGEMENT .....31
- 33. OBSOLESCENCE.....32


This document shall be considered "Uncontrolled" when printed as a hardcopy. Revision status shall be verified prior to use.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>2 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

<b>34. CRITICAL COMPONENTS (FROZEN PLANNING) .....</b>	<b>32</b>
<b>35. END OF LIFE (EOL) .....</b>	<b>32</b>
<b>36. SHELF-LIFE CONTROL (SUPPLIER PRESERVATION) .....</b>	<b>33</b>
<b>37. LABELING.....</b>	<b>33</b>
<b>38. SHIPPING &amp; PACKAGING .....</b>	<b>34</b>
<b>39. DELIVERY.....</b>	<b>35</b>
<b>40. GENERAL REQUIREMENTS.....</b>	<b>35</b>
<b>41. SUPPLIER DEBITS/COST RECOVERY.....</b>	<b>36</b>
<b>42. MUTUAL NON-DISCLOSURE AGREEMENT (MNDA) RIGHT TO ACCESS AND CONFIDENTIALITY .....</b>	<b>36</b>
<b>43. CRITICAL SUPPLIERS' QUALITY ASSURANCE REQUIREMENTS ACKNOWLEDGEMENT .....</b>	<b>36</b>
<b>APPENDIX A .....</b>	<b>38</b>
<b>SUPPLIER ACKNOWLEDGEMENT CERTIFICATE .....</b>	<b>39</b>
<b>REVISION HISTORY:.....</b>	<b>40</b>

---

This document shall be considered "Uncontrolled" when printed as a hardcopy. Revision status shall be verified prior to use.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>3 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

## 1. OUR MISSION: SAFE, RELIABLE, AND BUILT TO LAST

Powin, LLC (“Powin”) mission is to lead the sustainable transformation of the outdated electric grid through increased renewables penetration, non-wires alternatives, and power decentralization. Our safe and cost-effective energy storage solutions are revolutionizing the way energy is generated, transmitted, and distributed for utilities, Independent Power Producers (IPPs), and energy consumers worldwide.


## 2. PURPOSE AND SCOPE

2.1. The purpose of this document is to establish the minimum quality requirements expected by Powin, LLC, hereafter referred to as Powin, of its suppliers and/or subcontractors. The requirements defined in this document are mandatory and supplement any quality requirements, and terms and conditions of the purchase order (PO) and/or contract.

- Powin’s intent is to forge a strategic relationship with capable suppliers based on mutual trust and performance. Performance includes total cost, innovation, delivered product quality, and on-time delivery performance. There shall be a demonstrated commitment by both parties to support the success of each other during this relationship.
- This supplier quality document applies to all suppliers of production materials, parts, assemblies, and engineering designated special processes, for example welding, plating, and subcontractor assembly field services.
- All Powin suppliers are required to meet all Powin quality requirements identified in this document when defined in the PO/contract.
- Use of the words “shall” and “must” indicate the statement is a requirement.
- In the event of conflict between the requirements of this document and the requirements of the purchase order -which is an official binding contract, the purchase order requirement shall prevail unless otherwise agreed with Powin quality or procurement.

2.2. Powin’s Supplier Code of Conduct (“Code”) defines the basic requirements Powin places on its suppliers for ensuring social and environmental responsibility and ethical conduct throughout our supply chain. The principles outlined below serve as the cornerstone of Powin’s relationship with our suppliers, customers, and partners.

- Our suppliers are selected and evaluated beyond just the basis of economic measure and Powin will only do business with organizations that conduct their business with principles that are consistent with the code. We expect our suppliers to fully comply with applicable laws and to adhere to internationally recognized environmental, social, and corporate governance standards. Our commitment to these business standards of excellence includes business ethics and regulatory compliance, human rights and labor practices, health and safety, environmental regulations and protection,

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>4 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

responsible mineral sourcing, and confidential and proprietary information. Each supplier is responsible for developing policies consistent with this code, defining the operating principles for their own organizations and supply chains, and sharing these in a transparent manner

- The expectations outlined in this code do not replace specific requirements found in our contracts with suppliers. Rather, this code is intended to supplement the specific requirements in contracts. If a contractual term is stricter than the terms in this code, the supplier must meet the stricter contractual requirement.
- Diversity and Inclusion  
It is Powin’s policy to provide contracting opportunities regardless of race, color, religion, gender, sexual orientation, gender identity or expression, pregnancy, marital status, national origin, citizenship, covered veteran status, ancestry, age, physical or mental disability, medical condition, genetic information, or any other legally protected status in accordance with local, state, and federal laws.
- Business Ethics and Regulatory Compliance  
All Powin suppliers must conduct their business interactions and activities with integrity and must strictly comply with all laws and regulations related to bribery, corruption, money laundering and counterterrorism financing, and prohibited business practices. To see Powin’s Supplier Code of Conduct in its entirety go to [Powin Supplier Code of Conduct](#).

### 2.3. Quality Expectations:

A solid systems approach to quality management is essential to achieve the level of quality integrity required by today's demanding customers. Such an approach yields many benefits:


A common platform for quality management

- Improved communication due to shared systems
- Common format for training
- Systematic change control

## 3. SUPPLIER QUALITY POLICY

3.1. Our mission is to ensure Powin has a robust supplier management program that measures supplier performance and drives continuous supplier improvement. Powin and its suppliers are jointly involved in a continuous improvement process in the following areas to achieve optimal performance in product safety, quality, on-time delivery, and cost:

- Supplier & Product Qualification and Supplier Quality Performance: Suppliers shall ensure quality and service level per Powin requirements with the goal of selecting and approving suppliers, qualifying parts / products, and monitoring supplier performance.
- Temporary Deviation Notification (TDN): Suppliers (including sub-suppliers and subcontractors) should not make any changes to part designs, materials,


 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>5 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

manufacturing processes, manufacturing locations, or logistic flows without prior Powin written approval.


- **Continuous Improvement:** Suppliers shall monitor their processes and product quality performance and shall demonstrate continuous improvement with effective tracking methods.
- **Management System:** Suppliers should have certifications to demonstrate the capability of ISO9001 Quality Management System (QMS), ISO14001 Environmental Management System, and ISO45001 Occupational Health and Safety. In some cases, ISO certifications are not required but suppliers should demonstrate that they have, and follow a Quality Management System, Environmental Management System, and Occupational Health and Safety Policies and Procedures like the ISO standards.
- **Responsiveness and Customer Satisfaction:** Suppliers shall provide dedicated resources, commitment, maximum responsiveness and professionalism on the analysis and resolution of quality issues.
- **Cost Recovery and Accountability:** Suppliers shall have full responsibility for their parts, including the financial cost of all non-conforming materials/products and their direct and indirect impacts.

#### 4. DEFINITIONS & ACRONYMS

- 4.1. **5S:** A systematic approach to workplace organization and standardization. It stands for Sort, Set in Order, Shine, Standardize, and Sustain
- 4.2. **8D (The 8 Disciplines) Form and Methodology:** A document using 8 disciplines team- oriented problem-solving methodology to find the root cause, devise a short-term fix and implement a long-term solution to prevent re-occurrence of an issue or nonconformance.
- 4.3. **APQP (Advanced Product Quality Planning)**
- 4.4. **AS (Aerospace Standard)**
- 4.5. **AVL (Approved Vendors List)**
- 4.6. **CDF (Constructional Data Form)**
- 4.7. **Containment:** Immediate actions taken to isolate and control defects or issues to prevent them from escaping and further affecting the product or service.
- 4.8. **Corrective Actions:** Measures taken to address and rectify identified problems or defects in a product or process.
- 4.9. **COTS (Commercial Off The Shelf)**
- 4.10. **DG (Dangerous Goods)**
- 4.11. **Discrepant/nonconforming material:** Material that does not meet product specifications (out-of-spec.)
- 4.12. **DOE (Design of Experiments)**
- 4.13. **EOL (End of Life)**
- 4.14. **Error-Proofing:** Designing processes or systems to prevent errors or defects from occurring

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>6 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			


- by implementing features that make it impossible or difficult for mistakes to happen.
- 4.15. **FAI (First Article Inspection):** A process that verifies that a new or modified production process produces parts that meet the manufacturing specifications.
  - 4.16. **FAT (Factory Acceptance Test)**
  - 4.17. **FMEA (Failure Modes Effects Analysis)**
  - 4.18. **FTP (First Time Pass)**
  - 4.19. **GRR (Gauge Repeatability and Reproducibility)**
  - 4.20. **HVM (High Volume Manufacturing)**
  - 4.21. **IATF (International Automotive Task Force):** Automotive Standard
  - 4.22. **IPP (Independent Power Producer)**
  - 4.23. **ISO: International Organization for Standardization**
  - 4.24. **ISTA (International Safe Transit)**
  - 4.25. **KPI (Key Process Indicator)**
  - 4.26. **Lean Manufacturing:** A production approach focused on minimizing waste and maximizing efficiency by streamlining processes, reducing excess, and continuously improving workflow to deliver higher value with fewer resources.
  - 4.27. **MQR (Management Quality Review)**
  - 4.28. **MSA (Measurement Systems Analysis)**
  - 4.29. **NIST (National Institute of Standards and Technology)**
  - 4.30. **OCAP (Out of Control Action Plan):** A defined set of tasks to be performed to contain out of control parameter, determine root cause and return process/equipment to an in-control state.
  - 4.31. **OEE (Overall Equipment Effectiveness)**
  - 4.32. **PCP (Process Control Plan):** Detailed process flow containing the process steps, equipment, process monitor parameters, and the frequency and method of monitoring.
  - 4.33. **PO (Purchase Order)**
  - 4.34. **PPAP (Production Part Approval Process)**
  - 4.35. **PPM (Parts Per Million)**
  - 4.36. **Preventive Actions:** Proactive measures implemented to identify and address potential issues before they occur.
  - 4.37. **PSW (Part Submission Warrant)**
  - 4.38. **QCP (Quality Control Plan):** Document that identifies and prevents sources of poor quality.
  - 4.39. **QMS (Quality Management System)**
  - 4.40. **Run at Rate (RAR):** A test conducted to verify that a manufacturing process can consistently produce products at the required production rate and quality level over a specified period.
  - 4.41. **SCAR (Supplier Corrective Action Request)**
  - 4.42. **SPC (Statistical Process Control)**
  - 4.43. **Supplier:** Any company or entity that Powin has entered written purchasing/contractual agreement with to provide products or services to Powin including contract manufacturers (CMs)

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>7 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- 4.44. **Sub-suppliers or subcontractors:** Any sub-tier provider that Powin’s direct supplier has entered into an agreement with or contracted to provide goods and services that will be used in products supplied to Powin.
- 4.45. **TDN (Temporary Deviation Notification)**
- 4.46. **The Code (Powin’s Supplier Code of Conduct)**
- 4.47. **Visual Management:** A technique that uses visual cues, such as charts, signs, labels, and color codes, to convey important information and status at a glance.


## 5. ROLES AND RESPONSIBILITIES

- 5.1. Supplier
- Provides all parts and services as outlined in the Purchase Order (PO), drawings, and/or specifications. Note: Unless otherwise specified, refers to the corporation, company, partnership, sole proprietorship, or individual with whom Powin places a PO.
- 5.2. Supplier Organization – Customer Service Representative
- Primary contact within the supplier’s organization for key communications with Powin, including any quality, delivery, or commercial issue resolution.
- 5.3. Supplier Organization – Quality Representative
- Supplier contact responsible for communicating qualification and production quality requirements with the supplier organization.
  - Serves as the key interface with Powin for quality aspects.
  - Communicates supplier performance, process changes, and test & inspection reports to Powin.
  - Responds to process improvement, non-conforming material disposition, corrective action, and surveillance auditing.
- 5.4. Supplier Organization – Technical Representative
- Reviews and implements process changes or improvements to meet Powin specifications.
  - Any communication with the Powin responsible engineer must be done with the knowledge of the Powin Supplier Quality Engineer (SQE).
- 5.5. Supplier Organization – Management Representative
- A person with executive responsibility or someone who reports directly to a person with executive responsibility, will serve as a contact for Powin under this manual, and oversee compliance to the requirements stated in this manual.
  - The quality management representative within the supplier’s organization is responsible for the implementation and maintenance of the supplier’s QMS. Powin expects the quality management representative to be able to effectively communicate quality issues with Powin’s SQE and/or other representatives.
- 5.6. Supplier Organization – Environmental, Health and Safety Representative

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>8 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- Communicates environmental, health, safety, and sustainability (EHSS) requirements with Powin.
  - Communicates environmental, social, governance (ESG) guidelines with Powin.
  - Serves as the key interface with Powin for EHSS and ESG aspects.
- 5.7. Powin Sourcing/Buyer/Procurement Representative
- Supplier’s main contact for commercial aspects – negotiates price, delivery expectations, and other terms & conditions.
  - Places the PO for qualification and production.
  - Note: The roles and responsibilities of the sourcing representative apply to a regional category manager, global category manager, buyer, or other business equivalent sourcing delegate.
- 5.8. Powin Supplier Quality Engineer (SQE)
- Communicates qualifications and production quality requirements to the supplier.
  - Serves as the key interface with the supplier for quality aspects.
  - Communicates supplier qualification acceptance to the supplier.
  - Coordinates process improvement, non-conforming material disposition, corrective action, and surveillance auditing.
- 5.9. Powin Responsible Engineer
- Approves nonconforming management, document changes, and qualification requirements.
  - Communication with supplier technical representative must be done with the SQE’s knowledge.
  - Note: For the purposes of this document the responsible engineer applies to the design engineer, materials engineer, applications engineer, or other engineering representative.
- 5.10. Powin Management Representative
- Powin contact with executive responsibility will serve as Powin’s management representative. Usually the VP of quality.
  - Powin’s management representative is responsible for overseeing the supplier management process and should be able to effectively communicate issues with suppliers and other representatives.
  - Supplier’s main contact for any escalation to Powin.
- 5.11. Powin EHSS Manager
- Communicates environmental, health, safety, and sustainability (EHSS) requirements to the supplier.
  - Communicates environmental, social, governance (ESG) guidelines to the supplier.
  - Serves as the key interface with the supplier for EHSS and ESG aspects.
  - Communicates supplier EHSS and ESG qualification acceptance to the supplier.




 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>9 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

## 6. LANGUAGE

6.1. Powin's official language is English. All official communication with Powin will be done in English. Documents may display the native language when integrated in parallel translation. In this instance, the English version is the only valid version. If documentation is presented in other languages the document will be rejected and returned to the supplier.

## 7. QUALITY SYSTEM

- 7.1. The supplier will provide and maintain an effective Quality Management/Inspection System that is compliant with ISO 9001:2015 or other certification body unless otherwise approved by Powin.
- 7.2. The supplier will confirm that all products and services conform to the full requirements of the specification/purchase order.
- 7.3. Process control must be established where applicable and identified by Powin.
- 7.4. Documentation and records necessary to demonstrate compliance with the requirements of the purchase order will always be maintained and made available for auditing by Powin representatives upon request.
- 7.5. The supplier will acknowledge that they received, understood, and implemented the requirements of this document.
- 7.6. If the supplier is unable to implement certain sections or paragraphs of this requirement, a written explanation with justification must be sent to Powin Vice President of Quality.
- 7.7. Powin considers ISO 9001 (latest version) third party certified accreditation to be the benchmark international standard for a supplier's Quality Management System (QMS). If a supplier is third party accredited to AS 9100 or IATF 16949, AS 9120 for Commercial Off The Shelf (COTS) suppliers for example, these Quality Management System requirements will meet and exceed ISO9001 (latest version) and are acceptable.
- 7.8. Powin at its discretion may accept an unexpired third-party accredited certificate in lieu of an audit to establish a new supplier.
- 7.9. The supplier must maintain their QMS system in good standing and have positive supplier performance, to maintain their approved supplier status with Powin.
- 7.10. If a third-party accredited supplier has poor performance, Powin will schedule the supplier for an on-site QMS audit.
- 7.11. A supplier shall maintain an effective quality management system that is at minimum self-compliant per ISO 9001 (latest version), unless otherwise approved in writing by Powin quality management, to a lesser or targeted ISO 9001 system requirement.
- 7.12. All suppliers that provide engineering configured products and are not ISO 9001 third party accredited, will be subject to a Powin onsite audit, initially and every 3


 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>10 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

years thereafter; unless the duration is extended based upon positive supplier performance, and the extension is approved by Powin quality management.

- 7.13. Approvals are site specific. Any change in a supplier's manufacturing location needs to be reported to the appropriate Powin buyer and supplier quality management.
- 7.14. An audit may be required for the new location, as determined by Powin supplier quality management.
- 7.15. Written QMS approval is required before commencement of production.
- 7.16. Suppliers should implement Key Process Indicators (KPI's) to monitor quality system health.

## 8. ZERO DEFECTS MINDSET

- 8.1. The expectation for supplier performance is 0 Parts Per Million (PPM) or zero defects.
- 8.2. Product received into Powin facilities and sites that does not conform to the drawing, specifications and/or agreed upon standards will be counted against a supplier's PPM record. Quantities will be reported in the units of measure in which they are purchased. This applies to production parts/saleable units.
- 8.3. The following are PPM assignable:
  - Production parts which do not meet drawing specifications or dimensional, functional, or appearance standards as called out in the specifications or from an agreed-upon boundary sample.
  - Out-of-spec parts that require rework/repair before they can be used.
  - Production parts that are damaged from inadequate packaging or transportation for which the supplier is responsible.
  - In cases where the supplier may be shipping prior to Production Part Approval Process (PPAP) with an approved customer deviation, any defects outside of the boundaries defined by the deviation.
  - Out-of-spec parts shipped prior to PPAP approval without an approved customer deviation.
- 8.4. The following are NOT PPM assignable:
  - Parts that meet all drawing specifications and/or boundary sample requirements but are not useable.
  - Parts that meet all specifications and/or standards but have been rejected by a Powin customer.
  - Parts that have not been released and approved for production and/or have no released drawing (i.e., launch parts, sample/trial parts, Design of Experiments (DOE) parts, pre-productions parts, etc.).
  - Parts that are outside the production system will be addressed through prototype quality measures.
  - Parts that have an approved deviation for an out-of-spec condition cannot

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>11 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

be assigned PPM for rejects associated with the deviated characteristic.


- Parts that have been received with a delivery-related issue, such as part information errors, delivery errors, and quantity errors should be rejected, but not count against PPM.
- In any of the above situations, it may be appropriate for an 8D/SCAR to be requested or containment to be initiated.

## 9. DOCUMENT CONTROL AND RECORD RETENTION

- 9.1. Suppliers must have a documented process to ensure that quality system documents, design specifications, and other product related documents are maintained and controlled in a secure, confidential, environment. The supplier document control system should also specify the way documents are reviewed and approved before release. Every supplier should be able to demonstrate the effectiveness of its document control policy.
- 9.2. The documentation control system should include document change management of process documentation, manufacturing records, and inspection/ test records to prevent unauthorized changes and provide adequate verification of accuracy.
- 9.3. Suppliers must maintain quality system documents, design specifications, results of inspections, tests, Temporary Deviation Notification (TDN) approvals, and product, process and equipment qualifications and other product related documents so that they remain legible and retrievable on demand.
- 9.4. All suppliers and their sub-suppliers shall retain all production and quality records associated with the Powin purchase order (PO) for a minimum of seven years after production date, unless specified otherwise in the Powin PO or contract. No records will be disposed of without written authority from Powin.
- 9.5. Any approvals for deviations, processes, product, or other approvals regarding Powin product shall be maintained on file with other document control records and follow the same rules outlined above.

## 10. SUBCONTRACTING / SUB-SUPPLIER CONTROL

- 10.1. Powin's customers require Powin to ensure that our quality systems meet their needs and that Powin's suppliers also conform to these requirements. Similarly, Powin expects that each supplier will also ensure that their sub-suppliers have quality systems in place appropriate to ensure parts and materials can be produced that meet the required specifications.
- 10.2. If supplier subcontract work is required, the supplier must obtain written approval from the Powin Vice President of Quality or their delegated authority.
- 10.3. Powin reserves the right to evaluate and audit any sub-supplier. Any such action


 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>12 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

will not relieve the supplier of their responsibility to ensure the quality of any product/ service obtained.

- 10.4. The supplier, in all applicable purchasing documents to all their sub-tier suppliers and subcontractors, shall flow down the Powin purchase order requirements and the Powin supplier quality requirements specified on the Powin purchase order or contract.
- 10.5. This is applicable for all materials, outsourced processes, inspection and testing, packaging, and shipping, as well as documentation and records related to the Powin purchase order or contract.
- 10.6. The direct supplier to Powin remains fully responsible for communicating all flow down requirements in the supplier's purchasing documentation, ensuring all Powin requirements are satisfied in sub-tier products and services.

## 11. SUPPLIER SELECTION – APPROVED VENDORS LIST

- 11.1. Powin uses an Approved Vendors List (AVL). This involves several steps to ensure that the vendors that Powin selects meet specific criteria and are eligible for business transactions. The following eight steps are cited below:
  - Needs Assessment and Criteria Definition:
    - Define the criteria that vendors must meet to be considered for approval (e.g., financial stability, quality standards, compliance with regulations).
  - Vendor Research and Identification:
    - Research potential vendors based on Powin's needs.
    - Factors considered are product/service quality, pricing, reliability, and reputation.
  - Vendor Application and Documentation:
    - Vendors to submit their information.
    - Powin collects necessary documentation, including business licenses, insurance certificates, tax identification numbers, and references.
  - Initial Screening and Evaluation:
    - Powin reviews vendor applications and documentation.
    - We evaluate vendors against the predefined criteria.
    - We eliminate vendors who do not meet the minimum requirements.
  - Site Visits and Initial AVL Audit
    - Conduct site visits or interviews with shortlisted vendors.
    - Assess their facilities, processes, and capabilities.
    - Verify the accuracy of the information provided.
  - Due Diligence and Background Checks:
    - Powin performs background checks on vendors.
    - Check for any legal issues, financial irregularities, or negative history.
    - Verify their financial stability.
  - Approval Decision and Notification:

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>13 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- Based on the evaluation, Powin decides to approve or reject each vendor.
- Notify approved vendors and provide them with the necessary documentation.
- List Maintenance and Review:
  - Regularly review and update the AVL.
  - Remove vendors who no longer meet the criteria or fail to maintain standards.
  - Add new vendors as needed.

## 12. SUPPLIER PERFORMANCE EVALUATION

- 12.1. Powin will monitor approved suppliers continuously to assess their ongoing suitability by measurement of quality, cost, delivery performance, corrective action, and overall responsiveness through surveillance audits.
- 12.2. Powin reserves the right to perform periodic on-site assessments of the supplier's facility, quality systems, records, and inspection of products ready for shipment. A Powin representative or Powin appointed third-party will conduct a site assessment at the initial qualification, on-boarding at the time when product is being produced for final release to Powin, inspections such as process inspection, final product inspection, pre-dispatch inspection, and as well as when there are nonconformances detected that require corrective action verification.
- 12.3. The purpose of supplier performance measurement is to identify or measure the supplier's conformance to Powin standards. The expectation is for parts and services furnished to Powin to meet quality requirements and provide timely delivery.
  - Procurement and supplier quality will be establishing acceptable target performance measurement levels.
  - A performance report or scorecard will be available to suppliers on a schedule determined by procurement.
  - If the supplier's performance does not meet the expectations of Powin, and Supplier Quality Engineering has documented a lack of correction, the supplier could be placed on new business hold or removed from the Powin Approved Vendors List (AVL).
- 12.4. Suppliers are required to achieve the following:
  - Quality: Percent acceptance  $\geq 90\%$ 
    - Factory Acceptance Test (FAT) On Time
    - FAT Quality
    - Production Part Approval Process (PPAP) submitted on time
    - Acceptable audit scores ( $> 80\%$ )
    - Defect Rate
    - First Time Pass (FTP) Yield – 99%
  - On time delivery  $\geq 90\%$
  - Supplier Corrective Action Request (SCAR) acceptance - corrective actions response is


 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>14 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

defined as percentages of supplier corrective action requests that are responded to with corrective action plans acceptable to Powin  $\geq 90\%$


- Overall Supplier Responsiveness - Assesses the timeliness and effectiveness of suppliers' responses to inquiries, requests and issues raised by the purchasing organization. Responsive suppliers contribute to smoother operations and better collaboration. Should be  $\geq 90\%$ .
- 12.5. Should a supplier's performance rating fall below an acceptable standard of 90%, the supplier may be notified in writing and the following steps will be undertaken by Powin:
- Suppliers with a score less than 90% on either On Time Delivery, Quality, or 8D/SCAR response may be notified about the problem via Supplier Corrective Action Request (SCAR).
  - Suppliers with a score of less than 90% in more than two consecutive reviews are evaluated for suspension, disqualification, request for self or on-site audit, or escalations to supplier's senior management.
  - Quality Roadmap: suppliers are expected to maintain a quality roadmap documenting current quality performance at Powin and action plans to improve performance.
  - Suppliers that fall below acceptable levels as defined above are required to provide a copy of the most recent supplier scorecard or performance evaluation and corrective action plan to Powin's procurement and supplier quality personnel.
- 12.6. Powin, at its sole discretion, at any time may notify the supplier of the decision or intention to revoke the qualification approval granted to a supplier or place a supplier under a probation period with conditions Powin will determine. The following factors may result in disqualification of a supplier:
- Quality nonconformance reports and Supplier Corrective Action Requests (SCAR)
  - Responsiveness: unsatisfactory response, late response from supplier, or failure to respond to Corrective Action Requests or other legitimate Powin requests.
  - Changes in supplier's manufacturing or process capability that leads to quality and reliability issues.
  - Any unauthorized changes – i.e., change in facility, moving production equipment, changes to product or process, change in sub-supplier
  - Unsatisfactory or insufficient results following an audit.

### 13. MANAGEMENT QUALITY REVIEW (MQR)

- 13.1. Management Quality Review (MQR) meetings are held to analyze and review the current issue situation (quality, delivery, or other issues). Supplier accountability and response will be the focus. There are three "escalation" levels on which a MQR meeting may be held:
- MQR1 – Engineer & Manager Level
  - MQR2 – Quality Director Level

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>15 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- MQR3 - VP Level and above
- 13.2. An MQR may be arranged if a supplier is considered responsible for an issue that results in:
- Product safety characteristic as defined on the print does not meet requirements
  - Production suspended due to supplier's product quality or part shortage
  - A sort or rework at Powin sites and/or customer site completed due to supplier's product quality
  - Supplier being one of the poorest performing suppliers
- 13.3. Management Quality Review 1 (MQR1) Communication/Expectations
- The purpose of an MQR1 is to emphasize and prioritize high-risk problems. A supplier will be notified by a Powin quality contact, by phone call, or email of any MQR1 which is required.
  - Suppliers must formally communicate the following, in written 8 Discipline (8D/SCAR) format to the quality contact, within 24 hours of problem notification:
    - Details of containment actions implemented, verification of effectiveness and results obtained (quantity of defects found by location, etc.).
    - The plan to identify root cause (to include projected timing).
    - A weekly (written) 8D/SCAR status report sent to your quality contact until problem/issue closure.
    - The supplier may be required to present problem resolution (in 8D/SCAR format) to Powin quality management and procurement management at an MQR1 review.
- 13.4. A supplier with a pattern of chronic issues (especially with a recent trend deterioration) will be invited to an MQR2 meeting.
- The intent of the meeting is to bring additional focus to the top issues facing the organization to bring about the necessary improvement.
  - Management Quality Review 2 (MQR2) Communication/Expectations
    - Confirm MQR2 attendance
    - Provide Discrepant Material Report to the Quality Director
    - The supplier is expected to present the following at the MQR2 meeting:
      - Most recent quarterly supplier rating report.
      - Be prepared to explain any deficiencies in the areas of the supplier performance rating: Quality, Delivery, and Responsiveness.
      - Be prepared to present an 8D/SCAR that addresses the company's efforts to improve the systems which affected supplier performance rating in any of the categories listed above.
    - The supplier must include all 8D/SCARs written to address specific issues

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>16 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

that affected the overall rating, i.e., 8D/SCARs written for MQR1, previously rejected material, discrepant material reports, etc.

- Note: This meeting is not meant to be a brainstorming session. All items listed above are expected to be completed and forwarded to the Powin buyer 72 hours prior to the meeting.
- The following personnel must attend MQR2 meetings:
  - Supplier Plant Manager
  - Supplier Quality Manager
  - Supplier Account Manager


#### 13.5. Management Quality Review 3 (MQR3) Communication/Expectations:

- If performance continues to be poor after having an MQR2 meeting and agreed upon period for correction has passed the supplier may be required to participate in an MQR3.
- This will require attendance from Supplier Quality Director and Supplier VP levels and any relevant affected areas to present to Powin VP of Quality and potentially executive leadership team depending on the circumstances.
- All the requirements from the MQR2 apply with the additional requirement of presenting the supplier's glidepath to improvement with all supporting documentation.
- If an MQR3 becomes necessary, the supplier is automatically placed on new business hold and critical supplier list with the potential of losing current business.
- Note: Powin reserves the right to skip to an MQR3 level depending on the severity of the issues (i.e., safety critical issues, unethical business practices, contract violations, etc.).

### 14. SUPPLIER CORRECTIVE ACTION REQUEST (SCAR)

- 14.1. The supplier will be issued a Supplier Corrective Action Request (SCAR) for a nonconformance noted in the deviation record or found during construction and post construction phase. Corrective/preventive actions must be put in place thirty (30) business days after being notified by Powin unless otherwise agreed.
- 14.2. The supplier's quality system shall include a documented procedure that determines root causes, identifies, and implements corrective and preventive actions, and can validate preventive actions. It is the supplier's responsibility to document and maintain the corrective and preventive actions. The supplier shall make these documents available upon Powin's request. Corrective and preventive actions may be initiated from:
  - Internal non-conforming reports
  - Powin or customer inspections



 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>17 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			


- Customer complaints
  - Customer quality and delivery rating reports
  - Internal audits
  - Customer audits
  - Third party audits
  - Failure Mode Effects Analysis Process (FMEA)
- 14.3. The 8D/SCAR Problem Analysis Report is Powin's preferred problem-solving format for use by all suppliers. Each supplier is responsible for appropriate and timely application of the 8D/SCAR, and for the knowledge and skill level of their organization to solve problems.
- 14.4. Unresponsiveness to a SCAR will have a negative impact on the supplier's performance rating (consequences could include stop shipment and/or supplier disqualification). Suppliers should have the below to close a SCAR issued by Powin:
- The supplier corrective and preventative action process shall include recording and reporting the below information:
    - Problem Statement
    - Root Cause Analysis and Results (at a minimum 5-Why, Fish Bone, etc.)
    - Solution (Corrective and Preventive) and associated implementation plan
    - Verification of implementation and effectiveness

## 15. CONTINUOUS IMPROVEMENT

- 15.1. Suppliers to Powin are expected to drive continuous improvement activities throughout the whole organization. Besides the basic standards of high-level housekeeping (5S) or similar, visual management, error-proofing tools, and good problem-solving methods; it is also recommended to implement and maintain a lean manufacturing philosophy. Supplier performance will be updated monthly to monitor improvement.

## 16. QUALITY PLANNING AND CONTROL

- 16.1. The supplier shall establish a structured approach to implement new processes. It is recommended that the supplier utilize the Advanced Product Quality Planning (APQP) approach. This structured approach to new product planning will enable the supplier to effectively launch new products and ensure controls are established to achieve the highest levels of quality.
- 16.2. The supplier shall develop a Quality Control Plan (QCP) prior to production. The plan shall provide for the monitoring and control of all supplier manufacturing processes and sub-tier activities, throughout the production cycle. This plan shall also provide for any initial quality control part verification, test, and in-process inspection activities, to ensure that all critical

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>18 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			


product characteristics meet engineering specifications and drawings. This can also be in the form of the Process Failure Mode Effects Analysis (PFMEA).

## 17. CRITICAL PARAMETERS/SPECIAL CHARACTERISTICS (CTQs, CDs, SCs & CCs)

- 17.1. Critical parameters are parameters which are critical to quality or critical to fit, form or function of the Powin product. These details are included by Powin in its drawing or specification as Critical to Quality (CTQ) features or Critical Dimensions (CDs). They may also be referred to as Significant Characteristics (SCs) or Critical Characteristics (CCs) and must be more closely monitored and controlled in the supplier's process compared to the other part features.
- Suppliers are required to study and capture these critical parameters and identify/incorporate them in the control plan through a clearly defined method such as:
    - Process Capability Study to demonstrate the process is in control and capable
    - Statistical Process Control (SPC) to monitor and control the critical parameters/special characteristics.
    - Go/No-Go gaging or Poka-Yoke device with a documented calibration and maintenance program and records.
- 17.2. Control of critical parameters will be reviewed with supplier quality personnel. These control methods are considered formally agreed upon when the supplier receives full PPAP approval. Occasionally, Powin or its customer(s) may require that the supplier submit more frequent capability studies or SPC data. Specific critical parameters/special characteristics may be identified on an individual basis. If these are not specified, the supplier is responsible for contacting Powin's supplier quality personnel for direction prior to PPAP submission.

## 18. INSPECTIONS AND TESTS

- 18.1. The supplier appropriately places inspections and tests in the process to assure conformance to requirements at each major stage (e.g., incoming, in process, outgoing, etc.). They maintain quality records to provide evidence of appropriate, effective inspections or tests.
- 18.2. The supplier fully documents all inspections or tests (e.g., work instructions) to assure consistency regardless of inspector.
- 18.3. If the supplier uses sampling plans, the plans are statistically based and appropriate to the inspection (e.g., attribute sampling plan for pass / fail, variable sampling plan for direct measurement, etc.).
- 18.4. The supplier documents inspection and testing procedures which assure

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>19 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

conformance to specification (e.g., top-level product tests needed to assure specification is met).


- 18.5. Inspection and testing procedures use available data sources (e.g., FMEA, etc.) to eliminate or mitigate issues, failures, or nonconformances prior to customer shipment.

## 19. CERTIFICATE OF COMPLIANCE/FACTORY ACCEPTANCE TESTS (FATS)

- 19.1. Suppliers shall ensure that any raw materials and components used in product for Powin are self-certified with a corresponding certificate of compliance unless it is a Commercial Off The Shelf (COTS) component. The supplier assumes all risks associated with material and component performance to Powin requirements.
- 19.2. Factory Acceptance Tests (FATS) are expected to be completed for all production parts shipped to Powin sites. Note: product is not deemed complete without an FAT report.
- 19.3. FAT reports should be submitted via upload to Powin’s SharePoint site in accordance with the timing outlined in Powin’s FAT Procedure [PRO-QA-0006](#)
- 19.4. Suppliers should utilize the appropriate report format for their FAT reports ([FM-QA-0006](#) for Energy Segments and [FM-QA-0007](#) for Collection Segments).
- 19.5. Failure to pass FAT shall keep the unit from shipping until the issue is corrected and passes the FAT.
- 19.6. If there are any questions regarding FATS or Certificates of Compliance contact the Powin supplier quality contact directly via e-mail or phone.

## 20. MACHINE, TOOLING, GAUGING & MEASURING EQUIPMENT CONTROL

- 20.1. Suppliers shall summarize every machine that is allocated for Powin product and ensure that the same is utilized during production. The supplier must ensure that the relevant machine details (machine number, line number / bay number, etc.) are entered in the QCP. Any changes in these machines shall be communicated through the TDN process and written approval shall be obtained from Powin.
- 20.2. Suppliers shall summarize the tools, jigs, and fixtures that are allocated for Powin production and inspection and ensure that the same is utilized during the production process. Suppliers must ensure entry of all the details are maintained in a jig and fixture list and communicate the same to Powin. Any changes shall be communicated through the TDN process and approval shall be obtained from Powin.
  - The calibration, validation report and maintenance schedule along with records for the previous five years shall be maintained at the supplier for all tools, jigs, and fixtures. These documents and records shall be made

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>20 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

available to Powin during factory visits, MQRs, and upon request.

- 20.3. All gauging and measuring equipment shall be identified by a unique serial number and a record maintained of the initial and subsequent dimensional and operational inspection examination of such equipment.
- 20.4. All equipment shall be subject to an annual calibration check against a national standard and subsequent checks will be conducted on each item of equipment, the frequency of which shall be based on objective evidence of stability and continuing accuracy.
- 20.5. The supplier or their commercial calibration facility shall calibrate their test equipment in accordance with recognized measurement standards traceable to the National Institute of Standards and Technology (NIST), such as ISO 17025 or ANSI Z540.
- 20.6. Applicable inspection measuring, process instrumentation, and test equipment, including production tools and fixtures used as a medium of inspection, must themselves be inspected and calibrated at established intervals.
- 20.7. Calibration performed by a commercial facility and/or in-plant shall be supported by reports or data sheets certifying the date and accuracy of each instrument. Suppliers/subcontractors must maintain these reports on file and make them available for review upon Powin's request. See document control and record retention (section 9 of this document).
- 20.8. Where the calibration status of equipment is not clear, it shall not be used until the calibration has been verified.
- 20.9. Calibrations, inspections, measurements, and tests shall be performed under controlled conditions of temperature, cleanliness, and humidity, based on the type of product provided. Service conditions should be similarly controlled to ensure accuracy of measurement.
- 20.10. Controlled documents specify metrology quality system expectations and requirements.
- 20.11. The supplier schedules calibrations for all metrology equipment (includes non-stationary assets such as hand-held digital multimeters, oscilloscopes, torque wrenches, etc.).
- 20.12. A preventive maintenance system covers relevant metrology equipment.
- 20.13. The system identifies metrology calibrations which are due and monitors compliance to the recommended frequency.
- 20.14. The supplier maintains records which capture metrology calibration date, successful calibration completion, any adjustments made, and who performed the work. This includes calibrations performed by third party vendors.
- 20.15. Measurement Traceability: the supplier's organization shall determine if the validity of previous measurement results has been adversely affected when

measuring equipment is found to be unfit for its intended purpose and shall take appropriate action, as necessary.

- Tools found to be out of tolerance at calibration intervals will require an analysis.
  - If shipped product is negatively impacted, the supplier will IMMEDIATELY notify Powin quality and procurement management.
  - Negatively impacted shipped product may result in the recall of product.
- 20.16. The supplier conducts Gauge Repeatability and Reproducibility (GRR) or Measurement Systems Analysis (MSA) studies on critical metrology equipment at regular specified intervals.


**Guidelines for GRR Acceptance**

% Tolerance (% Study Variation)	% Contribution	System
< 10%	< 1%	Ideal
10% - 20%	1% - 4%	Acceptable
21% - 30%	4% - 9%	Marginal
>30%	> 10%	Unacceptable

- 20.17. Procedural safeguards prevent the use of out-of-calibration and out-of-tolerance metrology tools in production.
- 20.18. The change control system captures major changes to critical metrology equipment configuration, calibration, maintenance procedures, capability, and stability.
- 20.19. Metrology software controls, where applicable, ensure that the correct recipe and equipment settings are in place on each tool.
- 20.20. The system ensures only trained operators run metrology tools when used to generate inspection data.
- 20.21. Metrology standards are traceable to national or industry standards, or internally generated standards have documented methodologies for re-qualification upon standard changes.

**21. EQUIPMENT MAINTENANCE REQUIREMENTS**


- 21.1. The Preventive Maintenance (PM) system covers support equipment (e.g., consumables and other non-process equipment) in addition to critical production equipment.
- 21.2. Procedural controls prevent equipment from running production after the PM due date, unless extended via a documented process with written approval from Powin supplier quality management. The process also ensures that the supplier completes the PM prior to the extension expiring.
- 21.3. Procedural controls prevent equipment from running in production if it is

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>22 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- down for maintenance.
- 21.4. Work instructions include steps or activities to validate that critical equipment is fit for release back to production after maintenance.
  - 21.5. The supplier maintains critical spares and consumables inventory to mitigate the risk of production output interruptions related to maintenance.
  - 21.6. The supplier validates PM frequencies to accommodate typical variation in production utilization (e.g., as volume increases time-based PMs may need to convert to usage-based PMs to comprehend increased wear).
  - 21.7. The change control system captures major and minor changes to critical and support equipment configurations, PM frequencies, maintenance procedures and frequencies, and equipment consumables.
  - 21.8. Return-to-service protocols define specific activities and acceptance criteria for critical equipment after extended shutdowns, holidays, power outages, etc.
  - 21.9. Indicators or KPIs are stable and meet specified goals, and actions are taken to investigate when KPI's and goals are not met.

## **22. PRODUCTION VERIFICATION PROCESS -ALSO KNOWN AS FIRST ARTICLE INSPECTION (FAI)**

- 22.1. The supplier shall implement production process verification activities to ensure the production process can replicate products that meet engineering requirements.
  - Commercial Off the Shelf (COTS) items that are not built to a Powin engineering drawing do not require a documented First Article Inspection.
  - First Article Inspection is required on all incoming products that are built to a Powin engineering drawing.
- 22.2. The supplier shall use a representative sample from the first production run of a new part or assembly to verify that the production processes, production documentation, and tooling are able to consistently produce parts and assemblies that meet engineering requirements. The sample size shall be based off of AQL Level 1.5 or as agreed upon by Powin.
- 22.3. For incoming supplier manufactured product, the same documentation and physical verification requirement applies for incoming inspection acceptance. It is the responsibility of Powin suppliers to ensure the FAI is completed to Powin's standards.
- 22.4. This activity shall be repeated when changes occur that invalidate the original results (e.g., engineering changes, production process changes, tooling changes).
  - If fit, form, or function changes, a First Article Inspection is required that addresses the drawing changes.
  - If no changes occur, the current First Article remains in effect.
- 22.5. First Article Inspection Report (FAIR) or Production Part Approval Process

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>23 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

documentation (PPAP) are acceptable forms of documents to record the part verification process.


- Supplier First Article Inspection Report templates need to be submitted to Powin for approval.
- The supplier shall submit the completed documentation to Powin supplier quality personnel for acceptance prior to product shipment.
- The supplier shall retain the accepted documents following Powin’s record retention requirements, see Section 9 of this document.
- NOTE: the FAIR will result in a stop shipment if dimensions, BOM items, drawing notes or any other requirements are either incorrect or not met.

### 23. PRODUCTION PART APPROVAL PROCESS (PPAP)

23.1. The Production Part Approval Process (PPAP) is a crucial procedure to ensure that supplier-manufactured parts meet engineering design and product specifications. The stages of this process are:

- **Planning Stage:**
  - Collaboration: The supplier and customer work together to create a PPAP submission.
  - Submission Content: The submission includes a detailed part description, manufacturing process specifics, and quality control plans.
- **Production Stage:**
  - Manufacturing: The supplier produces the parts according to the agreed-upon specifications.
  - Sample Parts: A sample set of parts is selected for testing.
  - Measurement and Testing: Actual measurements are taken from the produced parts, and various test sheets are completed as part of the PPAP process.
- **Post-Production Stage:**
  - Submission: The supplier submits the PPAP package, which includes all relevant documentation and test results.
  - Approval: The customer reviews the submission and grants approval if all requirements are met.
  - Record Keeping: PPAP provides a record of part conformance at launch, allowing for measurement of any deviations from the original specifications.

23.2. The Production Part Approval Process (PPAP) consists of thirteen essential elements that may be required for the approval of production-level parts. These elements ensure that supplier-manufactured parts meet engineering design specifications and quality requirements. These elements include:

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>24 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			


- Design Records: These include detailed drawings and specifications for the part.
- Authorized Engineering Change Documents: Any changes to the design or process are documented and approved.
- Design Failure Modes and Effects Analysis (DFMEA): Identifies potential failure modes and their effects on the part.
- Process Flow Diagram: Illustrates the manufacturing process steps.
- Process Failure Modes and Effects Analysis (PFMEA): Analyzes potential failure modes in the production process.
- Control Plan: Describes how the part will be produced and controlled.
- Measurement Systems Analysis (MSA): Ensures accurate measurement methods.
- Dimensional Results: Actual measurements of the produced part.
- Material Performance Results: Material properties and performance data.
- Sample Production Parts: Actual samples from production.
- Checking Aids: Tools used for inspection.
- Customer-Specific Requirements: Any additional requirements specified by the customer.
- Part Submission Warrant (PSW): A formal document confirming compliance with all requirements.

\*\* Note: Not all elements are required for every submission. There are different PPAP submission levels based on customer requirements/needs. Please work directly with your Powin Supplier Quality Engineer regarding any questions on what is required for your specific PPAP submission.


23.3. The Production Part Approval Process (PPAP) has five submission levels, each indicating the extent of documentation and data required for approval:

- **Level 1:**
  - **Part Submission Warrant (PSW) only:** This level involves submitting the PSW document to the customer. It includes basic information about the part.
  - *Note:* Some customers may also include an **Appearance Approval Report** at this level.
- **Level 2:**
  - **PSW with product samples and limited supporting data:** In addition to the PSW, the supplier provides actual product samples and minimal supporting data.
  - This level ensures that the customer can physically inspect the parts.
- **Level 3 (Default Level):**
  - **PSW with product samples and complete supporting data:** At this level, the supplier submits comprehensive supporting data along with the PSW and product samples.



 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>25 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- The data includes detailed measurements, process documentation, and other relevant information.
  - **Level 4:**
    - **PSW and other requirements as defined by the customer:** In addition to the PSW and supporting data, any specific requirements specified by the customer are included.
    - These requirements could be unique to the project or industry.
  - **Level 5:**
    - **PSW with product samples and complete supporting data available for review at the supplier's manufacturing location:** The customer reviews the data directly at the supplier's facility.
    - This level allows for on-site verification and validation.
- The appropriate submission level depends on the specific project, customer requirements, and the complexity of the part being approved.***
- 23.4. Any supplier part that will be produced for use at Powin sites must be PPAP approved BEFORE the product is shipped to Powin. Any exceptions to this must be agreed upon and authorized in writing by Powin supplier quality personnel PRIOR to shipment and documentation of such approval must be provided along with the material/product.
- Any material that is approved by Powin supplier quality personnel to be shipped less PPAP approval/Powin signed PSW must be appropriately labeled to show that it is non-PPAP material approved for shipment
  - NOTE: this requirement applies to ALL sub-supplier material as well.
- 23.5. It is the supplier's responsibility to maintain records of all their PPAP documentation, including the signed Part Submission Warrant (PSW) per the record retention policies outlined in section 9 of this document. These documents should be made available upon request. This includes test data, dimensional data, control plans and any other documentation provided as part of the PPAP submission.
- 23.6. Run at Rate (RAR)\*
- Run at Rate samples are pre-High-Volume Manufacturing (HVM) production samples manufactured using the machinery, tools, and process that was allocated (or) designated for Powin HVM. The supplier shall manufacture a limited quantity of said product and inspect 100% per the Powin drawing /specification. The results should be submitted to Powin for review and approval. Once verified and found satisfactory, run at rate samples should be sent to the location requested by Powin. The quantity for run at rate samples shall be based upon AQL Level 1.5 unless otherwise mutually agreed between the supplier and Powin SQE. Powin quality personnel may require statistical process control (SPC) data in addition to

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>26 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

inspection results.

- **Note:** Only processes allocated (or) designated for Powin HVM should be used and no deviations are allowed in the product or process during run at rate samples manufacturing.
- When required by Powin procurement and/or the quality department, suppliers must submit a “run at rate” summary sheet with their PPAP submission. The supplier will be required to use the Powin specific form.
- Powin procurement and the quality department may visit the supplier to view the run at rate to confirm the supplier can demonstrate their ability to meet customer demands/capacity in a timely manner with trained production personnel and processes.
- Run at rate samples shipped to Powin will be validated and relevant test results will be shared. Run at rate results should be documented as OK or NOK with any critical observations noted. Specific criteria for acceptance will be established by Powin supplier quality management. The supplier shall take action to correct the reported NOK observations. Once the correction is implemented and verified, the supplier shall send the information and verification results to Powin for review and approval. Upon approval from Powin and if the results are satisfactory, Powin will issue a PO for high-volume production and the supplier can move ahead with HVM.

*\*NOTE: More detailed explanation of how to calculate the indicators for run at rate are located in Appendix A of this document.*

## **24. SUPPLIER IDENTIFICATION AND TRACEABILITY OF MATERIALS**


- 24.1. Where applicable, all material obtained by the supplier to meet an order must be traceable to the manufacturing source and identifiable to the manufactured item. The supplier must ensure that in the event an error is discovered, it will be possible to identify and isolate the defective products and therefore limit the quantities and period affected by the problem.
- 24.2. Traceability must be maintained throughout all stages of the supplier’s manufacturing process, including the maintenance of inspection and test records.
- 24.3. These records must include rework or action required by a Supplier Corrective Action Request (SCAR) or 8D.
- 24.4. For any given Powin product, the supplier must maintain the ability to retrieve a sequential record of its production, including manufacture, assembly, inspection, and test.
- 24.5. The supplier must ensure that in the event of a non-conformance, the supplier’s traceability system will have the capability to ensure that any suspect product is identified, contained, and isolated from current production, while the

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>27 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

investigation is ongoing.

## 25. PRODUCT CONTROL

- 25.1. Manufacturing and production workers have access to basic documentation (e.g., specifications, basic workmanship standards, high-level work instructions, etc.).
- 25.2. The supplier, as applicable, documents environmental controls for the incoming raw materials, production work areas and Work In Progress (WIP) or product storage areas (shelf-life requirements, temperature, humidity, particle controls/cleanliness, light intensity, Electro-Static Discharge (ESD), etc.).
- 25.3. The supplier uses basic WIP tracking as needed.
- 25.4. The supplier uses first-in-first-out (FIFO), Kanban, or other structured WIP management system.
- 25.5. The supplier understands critical manufacturing process constraints that could limit their ability to meet customer needs and mitigate the risks.
- 25.6. The factory uses an effective shop floor system or electronic production planning (e.g., Manufacturing Execution System) tool.
- 25.7. Detailed procedures prevent mixing of product in manufacturing (where appropriate).
- 25.8. A system ensures the supplier uses only qualified equipment for production.
- 25.9. Operators routinely monitor all key equipment settings and parameters.
- 25.10. The supplier clearly labels and separates questionable and discrepant material and product from the production WIP.
- 25.11. The supplier clearly and physically identifies non-conforming material and other "On Hold" material to effectively prevent the unauthorized movement or shipment of this material without proper disposition.
- 25.12. The supplier can trace product and WIP to key manufacturing details, including process steps, equipment used, operators, key raw materials, timelines, and rework history as needed.
- 25.13. All major process steps have basic data entry as defined in the Process Control Plan (PCP).
- 25.14. The supplier can link production lots to manufacturing data for traceability and root cause analysis as needed. This should include data not limited to equipment ID, critical jigs and fixtures, operator ID, production dates, and incoming raw material batches.
- 25.15. The supplier uses a documented record retention policy for manufacturing, process, and product parameter electronic data. A retention policy covers manual log sheets, lot travelers and other non-electronic manufacturing related records. These retention periods meet the customer's requirements.
- 25.16. The supplier can support customer requests for critical material and manufacturing data within a reasonable period. Ownership and escalation are defined to ensure customer support during vacations and extended plant

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>28 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

shutdowns.

- 25.17. The supplier conducts risk assessments prior to using the production processes to proactively identify and mitigate risks (e.g., Process Failure Modes and Effects Analysis - PFMEA). The supplier reviews the risk assessment or FMEA at minimum annually and/or when there is a change to the product through the Powin ECO process.
- 25.18. Indicators or KPIs have been implemented to monitor quality system health.

## **26. CONTROL OF POWIN SUPPLIED (CONSIGNED) PRODUCT**


- 26.1. If Powin provides a product for its incorporation into the supplier's product or related activities, the supplier shall establish and maintain documented procedures for the control, verification, storage, and maintenance of Powin owned product.
- 26.2. Any product that is lost, damaged, or is otherwise unsuitable for use, shall be recorded and reported to Powin procurement for inventory adjustment and/or supplier reimbursement.
  - The supplier is to retain documented information on what has occurred.
  - Powin's property can include materials, components, tools and equipment, premises, intellectual property, and personal data.

## **27. PROCESS CONTROL PLANS**


- 27.1. Where a Process Control Plan document is required from the supplier, this will be submitted to Powin supplier quality within the agreed upon period.
- 27.2. The supplier uses statistically based control limits for appropriate control parameters.
- 27.3. The supplier uses OCAPs to respond to Out of Control (OOC) and abnormal events and documents the actions taken as part of a quality record.
- 27.4. The process ensures critical production equipment produces acceptable output based on statistical matching criteria (where applicable).
- 27.5. Response time to OOCs ensures customers are notified in the event of shipment disruption.
- 27.6. The supplier uses defect rate trend charts with valid control limits, where appropriate. Pareto analysis of defect sources is used to drive continuous improvement.
- 27.7. Indicators or KPIs are stable and meet specified goals, and actions are taken to investigate when goals are not met.

## **28. NON-CONFORMING PRODUCT/PROCESS**

- 28.1. The supplier shall have a system for the control of non-conforming product/process as defined as:
  - Discrepant (non-conforming): see the definitions.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>29 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

- Any material discovered to be discrepant must be immediately identified, segregated, and contained pending a disposition decision. The supplier shall document their internal disposition decision including their risk assessment and actions taken. The supplier disposition records shall be retained and available for Powin review upon request.
  - Non-conforming material may be identified during incoming inspection, assembly, processing, audit, customer notification, commissioning, or reliability testing.
- 28.2. Discrepant material shall not be released to Powin until the supplier has notified Powin and received a documented disposition decision of acceptance which means that engineering disposition will be coming from Powin.
- 28.3. The system must include provisions for:
- Identification of non-conforming material or parts
  - Segregation of such material or parts from acceptable items
  - Documentation defining the nature of the defect and what remedial / corrective action has been authorized and undertaken to ensure permanent corrective actions. The document must clearly state the defective parts by number and serial / batch number, quantity shipped, and to what sites (in case any nonconforming material escapes the supplier's facility) and give a target date for the completion of actions.
  - Periodic review of product/process non-conformity.
  - Evidence to demonstrate that appropriate action has been taken to prevent recurrence.
- 28.4. The supplier has NO authority to rework, scrap, or use "as-is" (disposition) any discrepant consigned (Powin supplied) material without Powin written approval.
- 28.5. If any nonconforming material escapes the supplier's facility, it is the supplier's responsibility to notify Powin Supplier Quality Director and Procurement Director, in writing to ensure timely containment of discrepant product. This communication should include the following information:
- Packing slip for returning material
  - Accounting debit memo authorization
  - Quality record for generating PPM
  - Supplier response request (8D/SCAR)
  - Communication of issues to procurement
  - Record to support adjustment of supplier's cumulative shipment history
- 28.6. Supplier Non-Conforming Material Expectations:
- Suppliers must send their appropriate Powin supplier quality contact a written interim containment plan within 24 hours of problem notification using the 8D/SCAR methodology.
  - When requested, within seven calendar days, the supplier is expected to

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>30 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

communicate in writing the problem-solving results utilizing the 8D/SCAR approach. If the supplier is unable to resolve the quality issue within the seven-day period, a weekly updated 8D/SCAR must be provided to Powin until problem resolution is achieved, unless otherwise specified by Powin.

- 28.7. The supplier shall document the escapes internally by creating an 8D or Supplier Corrective Action Request (SCAR), using problem solving tools, to ensure permanent corrective actions are the result. Powin may issue a Supplier Corrective Action Request (SCAR) at its discretion.
- 28.8. If the supplier is monitoring their production performance utilizing process control, the supplier must have an Out-of-Control Action Plan (OCAP) process in place.
- 28.9. Powin may, at its discretion, recover all costs from the supplier incurred by Powin, in taking action to recover, disposition, and rework “escaped” non-conforming material. An authorization number will be requested from the supplier for debit authorization of on-site scrap, rework, sort or return of material.


## 29. CONTAINMENT

- 29.1. All suppliers are obligated to notify Powin if they ship non-PPAP approved parts to any Powin facility without an approved quality alert, parts found to be out of specification or any engineering standards failure.
- 29.2. Containment is required when a quality notice or SCAR has been issued for a product concern. The supplier shall implement effective controls to contain the problem at their facility. This would include all inventories at the Powin locations, the supplier’s facility, and any product in transit. The supplier shall determine these controls.
- 29.3. During containment, the primary urgent objective is to quickly identify and segregate all suspect material without interrupting production. Where sorting is required, all supplier’s personnel (direct or indirect) shall be properly trained to perform the sort, have any necessary gauges, have written procedures as well as have and wear appropriate safety protection.
- 29.4. The product that is in containment shall utilize a certification label/sticker identifying the reason for the containment. The label/sticker shall indicate that the product has been determined to be 100% defect free. At a minimum, this label/sticker should include part number, quantity, and date shipped and be visible on all four (4) sides of the container. Powin may reject shipments received without the proper identification.

## 30. MATERIAL SEGREGATION

---

This document shall be considered “Uncontrolled” when printed as a hardcopy. Revision status shall be verified prior to use.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>31 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			


- 30.1. The supplier will provide secure facilities to ensure that material is not used until inspected or otherwise verified as conforming to specification. A clear distinction is required between material in quarantine and material accepted for use.
- 30.2. Materials will be controlled in such a manner to prevent loss of batch traceability and incorrect shipment throughout the supply chain.
- 30.3. Where material is procured or made specifically for Powin orders, necessary steps shall be taken to ensure that the designated material and only that material is used on the order.
- 30.4. Materials will always be stored and protected in such a manner to prevent damage and deterioration or loss of identification and traceability.

### 31. TEMPORARY DEVIATION NOTIFICATION (TDN)

- 31.1. There shall be no deviation from Powin drawings or specifications identified in the Powin PO or contract, without documented approval. No verbal approval, e-mail acceptance, or red-line changes are allowed.
  - When a discrepancy is discovered by the supplier, the supplier is to immediately notify the Powin buyer, requesting the Temporary Deviation Notification (TDN) template form [FM.QA-10.1](#).
  - The supplier will fill out the TDN form, and submit the completed form to the Powin buyer for Powin engineering disposition following the requirements of the Powin TDN procedure, [PRO.QA-10.1](#).
  - Nonconforming products cannot be shipped without approved TDN documentation.
  - The TDN is typically for (1) shipment only. Subsequent shipments will require an extension of the existing TDN or new TDN until the issue is resolved by the supplier and/or Powin engineering has made a documented change to product definition, correcting the deviation issue.
  - Only Powin Executive Management or designee can authorize shipment of non-conforming product prior to the TDN engineering disposition process being completed.

### 32. CHANGE MANAGEMENT

- 32.1. Suppliers are required to have a documented system/ process for change control management. Any modification that may impact form, fit, function, or reliability is considered a change. This includes but is not limited to changes in product provided to Powin, changes in raw materials, changes to manufacturing processes or changes to sub-supplier manufacturing materials, location, or manufacturing process. NOTE: The supplier should submit TDN form FM.QA-10.1 to the Powin buyer and supplier quality to obtain approval for any changes

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>32 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

BEFORE they are implemented.

- 32.2. Suppliers need to ensure that their change management system allows for the proper timely implementation of design changes from Powin or Powin’s customer. This includes having protocols in place to verify inventory of current design and approval of Powin for its disposition (i.e., continue use until build out or immediately discontinue use and move to the updated design).
- 32.3. Suppliers should also ensure timely communication with any sub-suppliers and contractors that would be impacted by such design changes.

### 33. OBSOLESCENCE

- 33.1. Suppliers are expected to build and deliver products adhering to the material release and scheduling requirements provided by Powin unless otherwise agreed upon. Any obsolescence resulting from a supplier failing to adhere to the release and schedule requirements will be the responsibility of the supplier, including any associated costs.
- 33.2. For obsolescence that occurs due to measures beyond the control of the supplier - claims, supporting documentation and information must be presented to the Powin materials department for review. Claims are subject to audit and must be held in safe storage until the claim is settled.


### 34. CRITICAL COMPONENTS (FROZEN PLANNING)

- 34.1. The product contained within any Constructional Data Form (CDF) for any part number that is contained within this approved regulatory document, is considered a critical component, and the engineering and planning is “frozen” after approval by the regulatory agency.
- 34.2. If any change occurs to the supplier’s location, manufacturing processes, sub-tier suppliers, approved technical data, raw material, for example, on any detail or assembly listed within the CDF, the Supplier is to “stop all production activities”, and immediately inform the Powin buyer, providing details of the change to be considered for Powin’s regulatory compliance approval. Production may only commence upon documented approval, by the regulatory agency.
- 34.3. The Powin buyer is to inform Powin’s compliance engineer and supplier quality assurance management of this change, seeking documented change approval from the regulatory body that provided the initial approval.

### 35. END OF LIFE (EOL)

- 35.1. End of Life process involves not only discontinuing the production of an existing product but also continuing to address the market needs that the product addresses – which might lead to the development of a new product.



 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>33 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			


Powin requires its suppliers to provide notice for a product at EOL or any new product to be introduced to the market. For the Powin projects/clients using the product, EOL concerns include disposing of the existing product responsibly, phasing into a different product, and ensuring that the disruption will be minimal during the transition, and that critical after sales support (as required by Powin/Powin’s customer and as indicated in the warranty terms) is sustained.

### 36. SHELF-LIFE CONTROL (SUPPLIER PRESERVATION)

- 36.1. Suppliers who provide shelf-life controlled products to Powin shall have a documented process within their business for shelf-life control of their products.
- 36.2. The supplier defines and maintains shelf-life requirements as applicable.
- 36.3. The supplier defines and maintains adequate environmental controls for environmentally sensitive materials and products.
- 36.4. Any product shipped to Powin that is subject to shelf-life controls must be identified with the shelf-life date clearly on the product or packaging, as applicable.
- 36.5. The supplier shall provide, at minimum, 75% of shelf life remaining upon receipt of the shelf-life controlled product.
- 36.6. The Certificate of Compliance must be provided that indicates the product name, date of manufacture, shelf-life, and/or expiration date, as applicable.
- 36.7. Any expired shelf-life controlled product shall be segregated, retested, or properly disposed of.

### 37. LABELING

- 37.1. All boxes, containers and pallets must be labeled to ensure proper identification and verification of the product, and the quantity shipped. Bar-code labels are required and must be visible from the opposite side. The supplier is responsible for obtaining approval for the label prior to shipments to a Powin facility.
- 37.2. Suppliers are required to properly identify shipments/containers that contain production parts, prototype parts, trial parts and engineering changes.
- 37.3. Six basic elements of traceability must be included:
  - Identification: Powin part number (including extensions and color coding where applicable).
  - Configuration: Revision from PO & drawing/specification. Software version with electronic products.
  - Vintage: Lot code, date code, heat number, serial number, etc.
  - Branding: Unique identifier for where the part was manufactured (not the

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>34 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

distributor or broker).

- Country of Origin: Country in which the product was manufactured.
- Pedigree: Documentation and records associated with the engineering/design revision of the part or batch of parts.
- Refer to Powin Packaging and Labeling Guidelines ([PRO-LOG-002](#)).

37.4. Most Common Label Issues:

- Container labels are missing lot information. Note: The lot number on the label is up to the supplier to determine.
- Incorrect part number
- Incorrect or missing vendor code

37.5. Master labels

- A master label should be used for material shipped in multiple containers on one pallet.
- Master labels are not required for single containers


37.6. Mandatory fields for scanning shipping labels are as follows:

- Part number
- Quantity
- Supplier Code assigned by Powin
- Lot number
- Serial number

37.7. The supplier retains shipping records per record retention policies.

### 38. SHIPPING & PACKAGING

- 38.1. The supplier documents and follows product-specific packaging and shipping requirements where applicable.
- 38.2. The supplier is responsible for protecting the product from damage throughout the manufacturing process, and during shipment.
- 38.3. Packaging must protect the product and permit easy removal of the contents without damage.
- 38.4. The supplier shall ensure product is packaged to maintain product integrity. Packaging containers shall be appropriate to the product and prevent product damage during shipping.
- 38.5. If damage to the product is determined due to poor packaging, the supplier will be responsible for the cost of repair or replacement of the damaged product.
- 38.6. See Powin’s Supplier Production Labeling and Packaging Guideline (PRO-LOG-002), for further aid in proper packaging and labeling.
- 38.7. In case of dangerous goods (DG), the supplier is responsible for ensuring packaging complies to the following standards, based on transport mode and country or origin and acceptance:

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>35 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

**Transport Mode**

International Air

International Vessel (Ocean)

United States Ground

International Ground

Canada Ground

**Regulatory Reference**

IATA DGR Packaging Instructions 966, 967, 969, 970  
Section II

IMDG Code Special Provision 188

49 CFR 173.185(c); UN38.3

ADR Special Provision 188

TDGR Regulations Special Provision 34


Note: The supplier is also responsible for adherence to the relevant packaging test protocol as per ISTA standard.

**39. DELIVERY**

- 39.1. The supplier will ensure that all parts are identified and delivered correctly, as required by the drawing and the PO.
- 39.2. Deliveries shall be correctly packaged to prevent damage, deterioration, corrosion, and other risks during transportation.
- 39.3. Certification and documentation requirements of the Powin order accompany each delivery as appropriate.

**40. GENERAL REQUIREMENTS**

- 40.1. This document shall be specified in the Powin Purchase Order (PO) and/or contract.
- 40.2. Where Powin requires a product to be manufactured to drawing, the supplier shall not change any sub-suppliers without the written approval from Powin.
- 40.3. All necessary information is to be provided to any supplier. It is the supplier's responsibility to ensure such information is understood and implemented by sub-tier suppliers prior to commencing any work.
- 40.4. Suppliers are monitored closely, and measures are established to achieve the highest level of performance.
- 40.5. Non-conformances, on time delivery, and corrective actions responses will affect supplier performance ratings.
- 40.6. It is the responsibility of the supplier to perform a review of all the PO and/or contractual terms and conditions prior to acceptance of the PO.
- 40.7. If an error or conflict is detected, the supplier shall immediately notify the Powin buyer.
- 40.8. The supplier shall stop all production activities until full acceptance of the PO is emailed to the Powin buyer.
- 40.9. The supplier is responsible for evaluating, selecting, and monitoring their sub-tier suppliers.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>36 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

40.10. The supplier shall create and provide Powin with an Approved Supplier List (ASL) upon request. The supplier cannot change sub-tier suppliers without written approval from Powin, this does not apply to Commercial Off the Shelf (COTS) items.

#### **41. SUPPLIER DEBITS/COST RECOVERY**


- 41.1. A supplier's defective part may cause scrap, sorting, Powin customer returns, and/or charge backs. These are all examples of the costs of poor quality. If it is determined that a supplier's defective part(s) is the root cause of these additional costs of poor quality, the supplier may have their account debited to cover these costs.
- 41.2. If the component/part is found to be defective, Powin may return the material to the supplier upon receipt of a return material authorization number (RMA). However, Powin reserves the right to commence the rework or sorting process, the cost of which will be charged back to the supplier.
- 41.3. If the supplier's defective material causes Powin's customer to scrap or rework, then the cost of the scrap or rework may be debited from the supplier's next payment.
- 41.4. If the supplier's defective material causes Powin's customer to issue a debit to Powin, then this amount may be debited from the supplier's next payment. This includes the costs of sorting conducted by Powin's customer at their location and any fines they impose.
- 41.5. If Powin personnel are required to travel to a customer facility due to a quality issue resulting from the supplier's defective material, then all travel expenses relating to the trip and problem resolution may be debited from the supplier's next payment.
- 41.6. The examples above are not all inclusive. Powin reserves the right to debit all costs resulting from its suppliers providing defective material, including premium freight.

#### **42. MUTUAL NON-DISCLOSURE AGREEMENT (MNDA) RIGHT TO ACCESS AND CONFIDENTIALITY**

- 42.1. The supplier shall ensure the confidentiality of Powin contracted products and projects under development, and related product information, as well as intellectual property shared due to the working relationship.
- 42.2. Prior to evaluation activities or sharing of proprietary information, an MNDA must be agreed upon and signed by Powin and supplier authorized personnel.
- 42.3. The supplier may not assign nor transfer the MNDA agreements without Powin **PRIOR** written consent.

#### **43. CRITICAL SUPPLIERS' QUALITY ASSURANCE REQUIREMENTS ACKNOWLEDGEMENT**

- 43.1. To minimize questions and concerns, improve the quality of delivered services, and reduce costs to Powin and its suppliers, Powin requires that all suppliers read and acknowledge the requirements contained in this Powin Supplier Quality Assurance Requirements Manual.
- 43.2. The supplier is required to read and comply with the policies contained within

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>37 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

this document, as a condition to doing business with Powin. Please respond by completing the acknowledgement certificate ([FM-QA-0013](#)) at the end of this document and email it to the Powin Director of Supplier Quality and the buyer.

---

This document shall be considered "Uncontrolled" when printed as a hardcopy. Revision status shall be verified prior to use.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>38 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

## APPENDIX A

### RUN AT RATE INDICATORS AND CALCULATIONS

An acceptable **Run at Rate (RAR)** is defined by the ability of the production line to meet or exceed the desired production targets while maintaining quality standards. Below are some general benchmarks:

1. **Production Rate:** The line should consistently produce the required number of units per hour or shift.
2. **Quality:** The products should meet all quality specifications with minimal defects.
3. **Overall Equipment Effectiveness (OEE):** A high OEE score, typically above 85%, is considered good.
4. **Cycle Time:** The time taken to complete one production cycle should be within the expected range.

**Overall Equipment Effectiveness (OEE)** is a key performance indicator in manufacturing that measures the efficiency and effectiveness of a production process. It is calculated by multiplying three factors: Availability, Performance, and Quality. See below for a breakdown of the calculation:

1. **Availability:** This measures the percentage of scheduled time that the equipment is available to operate. It is calculated as:  


$$\text{Availability} = \frac{\text{Run Time}}{\text{Planned Production Time}}$$
 where Run Time is the Planned Production Time minus any Stop Time (both planned and unplanned).
2. **Performance:** This measures the speed at which the equipment operates as a percentage of its designed speed. It is calculated as:  

$$\text{Performance} = \frac{(\text{Ideal Cycle Time} \times \text{Total Count})}{\text{Run Time}}$$
 where Ideal Cycle Time is the fastest possible time to produce one unit, and Total Count is the number of units produced.
3. **Quality:** This measures the percentage of good units produced out of the total units started. It is calculated as:  

$$\text{Quality} = \frac{\text{Good Count}}{\text{Total Count}}$$

Finally, OEE is calculated by multiplying these three factors together:

$$\text{OEE} = \text{Availability} \times \text{Performance} \times \text{Quality}$$

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>39 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

**SUPPLIER ACKNOWLEDGEMENT CERTIFICATE**

This is to certify that \_\_\_\_\_ (name of company), have read, understood, and agree to the requirements that Powin has stated in the Global Supplier Quality Assurance Requirements Manual.

Having reviewed the Powin’s Global Supplier Quality Assurance Requirements Manual,

\_\_\_\_\_ (name of company) will be responsible for quality assurance matters and hereby agree to the terms and conditions as of \_\_\_\_\_ (date).

The supplier has received a copy of Powin’s Global Supplier Quality Requirements Manual.

The supplier will take all the necessary measures to ensure that the manual is disseminated to all appropriate departments and personnel within the supplier’s organization, such that the requirements of the manual are adhered to at all relevant levels.

The supplier acknowledges that this manual may be modified and updated from time to time and agrees to take all appropriate measures to ensure that the supplier always remains in compliance with the most current revision of the manual.

The supplier will immediately notify Powin Supplier Quality Engineering of any failure on the part of the supplier to comply with the latest reversion of the manual.

This Certificate will remain effective until revoked in writing by the supplier.

List exception(s) taken to this document by paragraph number:

List reason for exception(s) taken:

Company: \_\_\_\_\_


Name: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

---

This document shall be considered "Uncontrolled" when printed as a hardcopy. Revision status shall be verified prior to use.

 <b>POWIN</b>	<b>Policies and Procedures</b>	Document #: <b>MAN-QA-0001</b>	Rev.: <b>1</b>
Title: <b>Global Supplier Quality Assurance Requirements Manual</b>		Page #: <b>40 of 40</b>	
This Document is owned by <b>Quality</b> , please contact document owner if changes/updates are needed.			

**Reference Document:** Supplier Qualification Process – [PRO-PROC-001](#)

**NOTE: This document replaces the following:**

- Global Supplier Management System Manual – MAN- PROC-001
- Supplemental Purchase Order Conditions (SPOC) Manual – QA-03
- Supplier Quality Assurance Requirements - PRO.QA-03

**REVISION HISTORY:**

Revision	Date	Description of Change	Approvers	
0	11/14/24	Initial Issue; replacing the following: <ol style="list-style-type: none"> <li>1. MAN-PROC-001 Global Supplier Management System Manual</li> <li>2. QA-03 Supplemental Purchase Order Conditions (SPOC) Manual</li> <li>3. PRO.QA-03 Supplier Quality Assurance Requirements</li> </ol>	VP, Quality	Kris Weaver
		Revised/Author by: Roshan Raines-Yilma		VP, Procurement
		1	1/22/2025	Updated Powin name and hyperlinks
Revised/Author by: Roshan Raines-Yilma	VP, Procurement			Matt Leneway

This document shall be considered "Uncontrolled" when printed as a hardcopy. Revision status shall be verified prior to use.