



SUPPLIER QUALITY MANUAL



HVAC

Refrigeration

Fire & Security



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1. INTRODUCTION TO THE CARRIER WAY & QUALITY POLICY

Quality Policy - Carrier is a world class provider of quality HVAC, refrigeration, building controls, fire prevention, detection & suppression, and security solutions.

We are committed to providing our customers an exceptional life cycle experience with our products and services. We accomplish this through zero escape mindset, innovative quality designs, lean manufacturing processes, a strong supply base and responsive post-sales support. We are dedicated to provide our customers safe and compliant products, delivered on time, that meet or exceed their expectations. We develop our employees to embrace the Quality Policy by utilizing our continuous improvement tools and ethics-based culture.

Vision - Achieve best in class quality for all purchased components enabling product leadership for our customers

Carrier THE CARRIER WAY

VISION
Our aspiration; why we come to work every day.
Creating solutions that matter for people and our planet.

VALUES
Our absolutes; always do the right thing.
Respect Integrity Inclusion Innovation Excellence

CULTURE
Our behaviors; how we work and win together, while never compromising our values.

- Passion for Customers**
We win when our customers win.
We are passionate about our customers. We listen to them, act quickly to solve their problems, anticipate their needs, and go above and beyond to exceed their expectations.
- Play to Win**
We strive to be #1 in everything we do.
We want to be number one in everything we do. We set bold goals and bring passion, resilience, pride and our absolute best to everything we do, see possibilities instead of problems and go win as one team, while never compromising our values.
- Choose Speed**
We focus and move with a bias for action.
We find ways to move faster and work simpler. We align, prioritize the big movers and resist distractions, debate openly but decide quickly, and then we focus and execute with intensity. We simplify how we work, drive more action and less reporting, and we value pace, experimentation and iteration over perfection.
- Achieve Results**
We perform, with integrity.
We feel personally responsible and accountable to deliver on our commitment, and we own it when things go wrong. We are motivated by challenges, follow through on actions and persevere, especially when it's hard. We look ahead to anticipate issues, develop alternatives, remove barriers and find ways to overcome challenges, so we can always achieve our goals.
- Dare to Disrupt**
We innovate and pursue sustainable solutions.
We build on our legacy of innovators. We believe in a culture where we feel safe to take risks, try new things, push the boundaries and learn from things that succeed and fail. We allow ourselves to think big, bold and different, and we recognize that innovating means we are going to hit road bumps, and we embrace it as part of the process.
- Build Best Teams**
We develop diverse teams, and empower to move faster.
We hire and develop the best people. We trust and empower them to lead, execute and achieve both on a personal and an organizational level, and we make sure they are heard, recognized and valued. We are one team working towards a common purpose, we continuously challenge ourselves to know when it's time to lead, guide, or get out of the way. We know that being part of the best teams means we care for each other, we work with humility and authenticity, and we don't take ourselves too seriously.

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2. PURPOSE

This manual defines the requirements for supplier quality systems and performance. All Products supplied to Carrier will be in conformance with the product specifications, which include, but are not limited to, Supplier Quality Manual (SQM) and Production Part Approval Process (PPAP) standards. All products must satisfy Carrier's test and quality standards, meet applicable industry quality and performance standards, comply with all applicable legal and regulatory requirements, and be merchantable and fit for the purpose intended by Carrier. Supplier agrees to support and adhere to Carrier-required quality processes on an ongoing basis, with the objective of delivering zero (0) defects for all Products.

3. APPLICABILITY

This Supplier Quality Manual applies to all suppliers that provide production material, deliverable software, supplier designed products which are incorporated into a Carrier assembly/product, finished goods branded by Carrier and product related services to Carrier facilities. Further the SQM applies to internal suppliers within Carrier (i.e. Carrier owned suppliers and Joint Ventures (JV's)). Individual Carrier plants may have additional plant-specific requirements and will establish specific processes for carrying out these requirements. If a conflict exists between the requirements presented in this manual and individual plant requirement, the more stringent requirements will apply.

4. OWNERSHIP AND APPROVAL

The Vice President of Quality, Carrier Corporation, is the owner of this standard work instruction. All interpretations and changes require prior approval of the owner. Contact the owner or the Director of Supplier Quality for all questions regarding this standard work instruction.

5. EXPECTATIONS

Key performance indicators will be tracked monthly as part of the supplier performance scorecard and be made available to supplier to drive preventive and proactive quality improvement actions to deliver zero defects. Additionally, if requested, supplier will provide a monthly Pareto analysis of defects found with root cause identified and corrective action plan.

5.1. Communications

In general, the following contact points should be used:

Primary Contact – For all issue regarding supply chain and procurement activity contact your buyer

Product/Part Quality – For all issues regarding product quality, contact Supplier Quality Engineer (SQE) personnel at the using Carrier site.

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Ethics concerns – Carrier maintains a contact site for suppliers who have questions or issues related to the Code of Ethics or Carrier Supplier Code of Conduct. The site can be accessed through the supplier link on the Carrier.com homepage.

5.2. Purchased Products and Product Related Services

Purchased products and product related services shall comply with established specifications and requirements, including:

- Drawings that apply to the specific product or service.
- Engineering specifications and/ or reliability requirements that apply to the commodity or specific part.
- Material specifications that apply to the product or service
- Applicable Regulatory / Industry standards.
- Carrier approved changes or deviations.
- Established Commercial Agreements

5.3. Suppliers are required to:

- Demonstrate and maintain compliance to, all documented requirements, including design performance, reliability, process control, and capability.
- Provide resources to participate in product quality planning
- Have a change control system that reacts to changes in a timely and accurate fashion. In all cases, acquire written approval *prior* to implementing any change that may impact form, fit, function, interchangeability or reliability. This shall include manufacturing processes, quality standards for product acceptance, and testing requirements.
- Have a documented quality system in place which addresses all stages of product / process development, manufacturing and delivery. Suppliers must agree to on-site quality system assessments and validation as requested.
- Maintain process, product and service documentation.
- Deploy expectations and controls equivalent to those presented in this document to sub-tier supply chain.
- Be accountable for quality of all sub-tier suppliers including “directed-buy” sources.
- Maintain the expertise and resources to perform effective root cause analysis and implement timely corrective and preventive action.
- Provide notification of all situations that may negatively impact the supplied product’s quality, reliability, and safety; design and/ or production; or any other matter described in this manual.
- Be accountable for the impact of poor quality on Carrier and its customers.
- Notify Carrier of any condition or change that has impact on Carrier’s regulatory requirements.
- Fully comply with the Carrier Code of Ethics and Supplier Code of Conduct.
- Maintain a self-audit system which ensures compliance of all the above.

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5.4. New Supplier Information

New suppliers to Carrier must provide general information including:

- DUNS number by factory qualifying for production
- A list of key supplier contacts by qualifying factory location
- A copy of their 3rd party Quality System certificate

6. SUPPLIER QUALIFICATION REQUIREMENTS

Suppliers shall establish and maintain a Quality Management System that ensures production meets all customer requirements and expectations.

6.1. Quality System

- All suppliers shall maintain an effective documented quality system that communicates, identifies, coordinates and controls all key activities necessary to design, develop, produce, deliver and support quality products or services.
- All suppliers must be certified/ registered to the latest version of one of the following international quality management standards by a recognized independent certified 3rd party registrar: ISO 9001: Quality Management Systems Requirements or IATF 16949S Quality Management Systems.
- Exceptions to maintaining 3rd party registration will be managed on a case by case basis. A Carrier Quality Manager, with concurrence from all other Carrier sites using this same supplier location, may waive 3rd party registration. In such cases, an onsite Carrier Quality System audit must be completed. Suppliers may be required to reimburse Carrier for the cost of conducting these audits.
- Note: Suppliers must notify Carrier immediately if their third-party registration expires or is revoked.
- Carrier reserves the right to:
 - Verify Supplier quality systems with an on-site audit
 - Verify a supplier's compliance to an applicable quality standard
 - Conduct a Carrier Quality System audit in lieu of, and/ or in addition to, third party certification
 - Disqualify, suspend and/or terminate suppliers based on substandard performance. In such cases, full requalification will be required prior to resuming business.

6.2. Carrier Quality System Assessment

Carrier Quality System is the quality systems assessment/ survey used by Carrier. It consists of a self-assessment and an on-site audit conducted by Carrier. Both the Carrier Quality System Self-Assessment and Survey criteria are intended to assess a

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supplier's quality system, process control capability, as well as assist the supplier to identify strengths, weaknesses, and/ or areas requiring improvement.

6.2.1. Carrier Quality System Self-Assessment

When required, the self-assessment shall be completed by suppliers independently and evaluated by Carrier. The criteria generally follow ISO 9001 adding specific requirements to ensure effective process control and quality results. Suppliers completing self-assessments shall submit action plans to improve any section not meeting minimum requirements. Carrier reserves the right to perform an on-site Carrier Quality System audit based on the results of self-assessments.

6.2.2. Carrier Quality System Survey

This on-site survey consists of various quality system and process control categories and is intended to provide a fair appraisal of the supplier's quality system, process controls, and commitment to quality at the time of the survey. From time to time Carrier will revise this survey to incorporate new quality system requirements.

6.3. Process Audits

Carrier may conduct a process qualification audit at the supplier's manufacturing facility. This audit focuses on the specific process quality controls that the supplier has in place for the products being manufactured for Carrier, as well as part/commodity specific process requirements. Additionally, Carrier reserves the right to conduct such an audit at sub-tier suppliers. Such audits shall not relieve the supplier's responsibility to produce and deliver defect-free parts.

6.4. Contingency Planning

Supplier shall conduct a risk assessment of their operations that support Carrier's production facilities, quality requirements, and delivery schedules. Each assessment should consider, at a minimum, the impact arising from:

- Natural disasters
- Geo-political hazards
- Supply chain disruptions
- Intellectual property claims
- Personal concerns
- Equipment problems
- Facility or system issues

Supplier shall prepare contingency plans to ensure continuity of its operations and minimize any disruption of the supply of goods and/or services to Carrier. Supplier shall communicate any critical risk scenario without a contingency plan that may

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result in a disruption. Supplier shall provide the contingency plans to Carrier when requested.

7. PRODUCTION PART & PROCESS QUALIFICATION REQUIREMENTS

Part Qualification ensures that the part is capable of meeting technical/ performance requirements. Process Qualification ensures that the specific manufacturing processes in place will produce a part of consistent and acceptable quality.

7.1. PPAP Submission Requirements

All production part sample submissions shall be in accordance with the AIAG – PPAP manuals. These templates & forms can be found in the PRISM system. Alternatively, a supplier can download the form from Carrier’s corporate website www.corporate.carrier.com/suppliers.

PPAP submission should be made as far in advance of production start-up as possible, working to a date agreed to with the Carrier plant / site.

NOTE:

- Commercial off-the-shelf items (COTS), when meeting the definition provided in section 13, will require at least a Level 1 PPAP
- Check with your using Carrier Business Unit for any specific timing guideline for PPAP submission

7.2. Shipment Approval

Suppliers shall not ship production parts until a full or interim approval is received from Carrier via a signed Parts Warrant (PSW) (Attachment 1). In the case where Full approval is not granted, Carrier will advise the supplier of the areas of concern and determine necessary corrective actions. At Carrier’s discretion, any or all the PPAP items may be reviewed on-site at the supplier’s facility as part of a process qualification audit.

7.3. PPAP Warrant Validity

Unless otherwise specified on the PSW, approval is valid until there is a revision to the part or process or until revoked by Carrier. Additionally, should one of the following conditions occur, the supplier must notify Carrier *prior* to first production shipment:

- Correction of a discrepancy on a previously shipped part.
- Product modified by an engineering change to design records, specifications, or material on an approved Product Change Authorization (PCA)
- Use of an optional process or material other than was used in a previously approved part

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- Production from new or modified tools (except perishable tools), dies, molds, patterns, including additional or replacement tooling
- Production following refurbishment or rearrangement of existing tooling or equipment
- Production following any change in process or method of manufacture to include changes in lubricants, mold release agents, or other process solutions
- Production from tooling and equipment transferred to a different plant location or from an additional plant location
- Change of source for subcontracted parts, materials or services (for example, heat treating, plating)
- Product re-released after the tooling and equipment have been inactive for volume production for twelve (12) months or more
- Any changes to software, firmware or any programming incorporated into the product sold directly to or through Carrier
- Following a Carrier request to suspend shipment due to a supplier quality concern
- Any other activity that will result in a change to the supplier's Control Plan (CP)
- Loss or revocation of 3rd. party quality system registration

The supplier will utilize QLY-15FM1 Supplier Change Deviation Request (SCDR) to notify Carrier should any of the above events occur. The SCDR will be reviewed by Carrier; a full or partial PPAP resubmission may be required. Should resubmission be required, the using Carrier site will communicate the level to be submitted. **Full or interim approval, in writing, must be granted prior to first production shipment.**

7.4. Production Part Approval Process (PPAP) Level

Carrier requires part approval to different levels (1-5) depending on the purpose for the PPAP submission.

PPAP level definitions

Level 1	Part Submission Warrant (PSW) only submitted to the customer.
Level 2	PSW with product samples and limited supporting data.
Level 3	PSW with product samples and complete supporting data.
Level 4	PSW and other requirements as defined by the customer.
Level 5	PSW with product samples and complete supporting data available for review at the supplier's manufacturing location

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- Level 3 is the default level unless otherwise specified
- Dependent upon program requirements, the using business unit may require a Run-at-Rate capacity study to be completed. The program Supplier Quality Engineer will provide the specifics should a Run-at-Rate study be required.

7.5. Annual Product Revalidation

- All suppliers on a yearly basis must complete a full dimensional verification to specification, Process certification (ProCert) summary for all identified key characteristics and obtain current material certification(s). Suppliers shall retain these records for release to the Carrier using site if requested. Refer to section 15.3 regarding process certification data submissions as requested by Carrier Quality representatives.
- When specified by Carrier, a complete annual layout inspection and PPAP data package submission is required. Suppliers shall revalidate parts/ components/ materials and be able to provide results to the requesting Carrier site within one (1) work week of the request. [Should tests be required taking longer than one (1) work week, arrangements must be made with the site requesting the revalidation] Those characteristics, notes and tests that will be part of the revalidation must be designated at the time of PPAP approval.

8. CHANGE MANAGEMENT

Supplier will not make any changes during the term of the order and shall not deviate from the PPAP approved product/process without prior written notification and approval from Carrier. This requirement also applies to sub-tier suppliers. Refer conditions stated in Section 7.3. Supplier will provide Carrier a minimum of six (6) months prior written notice of any intent to change or check with your using Carrier Business Unit for any specific advance timing guidelines for change notification.

Carrier may request additional time to complete qualification of a proposed change, and Supplier must allow for this contingency in its change implementation timing. Should Supplier fail to conform this process, Supplier will reimburse Carrier direct and indirect cost associated in re-qualifying the unauthorized changes made, not limited to engaging Carrier's designees for onsite activities.

Sub-Tier supplier qualification and quality performance monitoring shall be the responsibility of the primary supplier to ensure high-quality standards are practiced. Carrier retains the authority to monitor, review, and/or approve sub-tier supplier processes quality data, engineering/process changes and facilities when deemed necessary.

Carrier primary suppliers shall be responsible for evaluating and selecting suppliers and subcontractors based on their ability to consistently deliver products to their specification and services that meet Carrier Quality standards. The manufacturer shall select suppliers

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and subcontractors in accordance with its established supplier / subcontractor management program.

8.1. Supplier Change/Deviation Request (SCDR)

QLY-15FM1 (SCDR) form is used to communicate both temporary (deviation) and permanent changes, when a supplier/Carrier site identifies such needs and/or when any of the conditions stated in Section **Error! Reference source not found.** occurs.

- A deviation request is a temporary or short-term request to use product that departs from the design or process defined from the latest approved PPAP submission until permanent improvements, corrective actions or a return to the approved PPAP condition takes place. Deviation requests must be recognized as an unfortunate necessity in situations that do not offer other alternatives. This type of change will have the affected quantity of parts, batch number, or serial number range declared on the SCDR form and will expire after such quantity, batch, or serial number is reached.
- A permanent change is a result of systemic improvement made to the original approved PPAP condition to improve performance, quality, and/or reduce process variation. Example: changes in production equipment/tooling, critical sub-tier suppliers, etc.
- Supplier shall submit SCDR package in advance to the Carrier Supply Management contact according to the following:
 - If a single Carrier using site is affected, the SCDR will be submitted to the local purchasing contact
 - If more than one Carrier using site is affected, the SCDR will be submitted to the responsible Category manager (regional/BU or WHQ)

Note: for all supplier production location moves refer to Work Transition Management Policy (MFG-05), this event will require minimum 6 months advance notification or per contract agreement

8.2. SCDR package

8.2.1. SCDR package shall consist of the following minimum requirements:

QLY-15FM1 SCDR form with supplier and part information, the current process, proposed change request and its traceability identification/markings, and reason for the change requested and the following:

8.2.2. Deviation request

- Risk assessment (DFMEA/PFMEA preferred) for potential impact to fit/form/function. Additional product or process checks, and controls of

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deviated parts may be required by Carrier and will be specified in the SCDR approval.

- 8D is required if the change request is due to an escape
- A supply mitigation plan as applicable

8.2.3. Permanent change request

- Risk assessment (DFMEA/PFMEA preferred) for potential impact to fit/form/function
- Supplier's proposed qualification/validation schedule and plan to re-PPAP the change requests
- Supplier's proposed safety stock to supply to affected Carrier site(s) until change is approved and mass production supply is resumed.

8.2.4. Written approval from Carrier is required prior to shipping any parts with change-request.

8.2.4.1. Deviation (does not require PSW)

The written approval document for part shipment is the approved-SCDR from Carrier. The supplier shall identify the affected parts/shipment per agreed traceability marking.

8.2.4.2. Permanent change (requires PPAP & PSW)

- PPAP is required by Carrier for a Permanent Change Request and the PPAP requirement will be communicated e.g. via PPAP Request Sheet
- Supplier must receive approved-SCDR from Carrier prior to executing the change.

Note: approved-SCDR is an acknowledgement that Carrier agree to proceed execute the change for qualification/validation data collection. This is not a document allows for part shipment

- Upon qualification/validation data completely collected, reviewed and approved by a supplier, this package can then submit to Carrier together with the Part Submission Warrant (PSW)
- The approved-PSW is the written approval document for part shipment. Supplier shall identify the parts/shipment per agreed traceability marking

8.3. Unauthorized Changes to Product

Shipment of any change/deviation request parts without written approval from Carrier will be rejected and returned to the supplier at the supplier's expense. All additional incurred costs including, but not limited to, handling, shipping and any impact to Carrier Operations and/or customers will be the responsibility of the supplier.

In the event of any unauthorized changes to product without prior consent from Carrier, Carrier reserves the right to

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- report the issue to the supplier's designated management representative and/or ISO/IATF registrar;
- place the supplier under Controlled Shipping at supplier's cost (refer to paragraph 10);
- require a new PPAP of other currently supplied components; or
- reduce supplier's Carrier Supplier Excellence status to Probation or Underperforming (see 11).

8.4. Change & Deviation Management Record

Change & deviation management record not limited to change request package and PSW shall be retained by the supplier throughout the supply life of the affected part(s).

8.5. Change / Deviation Request

Change/deviation requests shall not be used on safety related noncompliance or to cover up or replace the lack of proper quality systems or controls at the supplier location. Carrier views excessive use of SCDRs for non-conforming material as an abuse and an indicator that a supplier may have a serious breakdown in their quality system.

9. PROCESS CERTIFICATION (PROCERT)

Process Certification is Carrier's methodology to achieve and sustain statistically controlled and capable processes for manufacturing, business, support, maintenance, assembly, and test. ProCert follows a prescribed methodology, employing a set of standard quality tools to stabilize process output, reduce its variation and drive continuous improvement.

9.1. ProCert Requirements

- Suppliers are required to implement ProCert in their manufacturing processes to address all key characteristics defined by Carrier. Other methodologies similar to ProCert may be used when approved by Carrier, providing they meet the requirements outlined in Appendix 2.

NOTE: Suppliers will be requested to submit ProCert data to Carrier; specific requirements will be communicated through the assigned Carrier Quality representative.

- Suppliers are encouraged to identify additional key characteristics beyond those defined by Carrier. This should take into consideration, finished part characteristics, upstream product characteristics and process parameter controls.
- Suppliers with design responsibility MUST identify key characteristics in addition to any identified by Carrier.

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- All identified key characteristics must meet the process certification requirements, or other similar approved methodologies, as defined in Appendix 2 – Process Certification.
- All KC's must achieve Milestone 4 (Certified KC's / KPC's) at time of PPAP submission. At a minimum Milestone 3 (Process Control) may be accepted at PPAP providing there is a Carrier approved containment plan in place.
- On-going control for all KC's must use Statistical Process Control (SPC) or approved mistake proofs. The type and frequency of SPC or mistake proof shall be documented on the Control Plan and agreed to with the using Carrier site.
- All gages used to evaluate, and control Key Characteristics must demonstrate a minimum of 20 % repeatability and reproducibility. Gage R&R must be performed at a minimum every 24 months.

9.2. Key Characteristic (KC) (see section 13 for all definitions)

A key characteristic is any feature of a material, process, part, assembly, or test, whose variation within or outside the specified requirement has a significant influence on product fit, performance, service life, manufacturability, information, service or other expected deliverable. Carrier will define the key characteristics which the supplier needs to certify. Key Product Characteristics (KPC's) will be communicated through various methods, including:

- Notations and/ or symbols documented on Carrier engineering drawings and specifications
- Written communication based on known process issues, production problems or field problems.

The various symbols used on Carrier documents to signify Key Product Characteristics are shown below:



- **SAFETY**- A feature is classified as Critical to Safety if it creates a substantial risk of injury, property damage, illness, product damage, environmental damage, and or contamination, if not produced within its prescribed acceptance limits. If a supplier does not maintain milestone 4 for any safety KPC, they must be certified 100% for that characteristic.



- **FUNCTION**- A feature will be classified as Critical to Function if it can lead to significant reliability problems, performance issues or probable cause for rendering unit inoperable or not meeting customer requirements, and expectations if not produced within its prescribed acceptance limits.

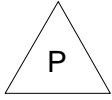
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- **PROCESS-** A product feature identified by manufacturing and determined to be of high risk due to number of producers or it's variation within prescribed limits has a significant impact on the ability of the part, component, unit, or options to meet fit, assembly, installation or test requirements.

Additionally, some older drawings may contain other symbols to denote key characteristics. Refer to Appendix 2.

NOTE: KCs identified on the drawing / design documents using symbols X, F and P are called KPCs (Key Product Characteristics). All ProCert requirements for KCs equally apply to KPCs

9.3. Alternate Means of Control (AMC)

AMC (Alternate Means of Control) are types of quality controls that might be required when noted on Carrier drawings or Carrier specifications. When drawings/ specifications identify features and/ or conditions that require specific AMC controls, the producer will be provided with detailed instructions from the Carrier ordering entity as to what is the required AMC method as well as how records and objective evidence of compliance is maintained.

Examples of AMC controls may include, but are not limited to:

- Traceability- Products, Components, Material
- Over-inspection (over-inspect)
- 100% Inspection by a Certified Operator or Inspector
- Certificate of Conformance or Material Certification
- In-process Mistake Proofs

The following are illustrative steps suppliers may be asked to complete as part of AMC:

- Measurement system analysis related to the item identified as requiring AMC
- Documentation of AMC as part of the control plan as well identification of Key Inputs that impact the quality results of the AMC.
- A validation of the control method for AMC
- A verification that the control method associated with the AMC is sustainable

9.4. Layered Process Audits

Suppliers shall conduct periodic internal process audits at a stated frequency to ensure continued conformance with standard work instructions, control plans and process stability / capability. (Ref AIAG CQ18 Process Layered Audit) Compliance with implemented process controls and verification of mistake/error proofing must be included in the audit. (Reference Layered Process Audits in section 13 definition.

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9.5. Safe Launch

Safe Launch is an agreed upon early product containment plan (Pre-Launch Control Plan). This PLCP guarantees the critical and agreed upon characteristics meets product specifications at start up and acceleration Failure to meet this control plan will extend the duration of time or numbers of parts shipped until demonstration of capability can be achieved. Ref AIAG Advanced Product Quality Plan and Control Plan Manual.

10. NON-CONFORMING PRODUCT

Non-conforming product is product that doesn't meet or fulfill its specified or defined requirements. A Non-conformance can occur in both product and process. Under no circumstances shall a supplier ship non-conforming product without first receiving written authorization from Carrier.

At Carrier, we define Supplier Responsible Escape (SRE) in three categories:

Category 1: Supplier Responsible Escape SRE's that were shipped to a customer. the defect is found after product has been shipped from the Carrier plant to its customers.

Category 2: Supplier Responsible Escape (SRE's) that are caught at Carrier. The number of escapes that were shipped to and caught at Carrier plants.

Category 3: Supplier internal SRE's that occur and are caught before leaving the supplier's plant. This category is internal to the supplier and has no effect on Carrier and are not part of Carrier escape metric.

For Categories 1 and 2, suppliers must complete the corrective action issued by the plant to identify root cause and prevent future escapes. Additionally, Carrier may impose Controlled Shipping Levels 1 and 2 (reference Paragraph 10) for repeat / significant escapes. Suppliers should reach out to their respective Carrier plants to learn more about escapes and report any discrepancies.

The following sections identify and explain key quality requirements that are applicable for non-conforming product.

10.1. Supplier Identified Non-Conforming Product

Carrier uses the Prism System to process all Supplier Change Deviation Requests (SCDR) and the Global 8D System to process relentless root cause analysis. Link: www.prismportal.net

The supplier may find products, through their quality control processes or from reports by other customers, which were produced outside of specifications. The supplier is expected to immediately:

- Segregate these products and determine if this error may have occurred, undetected, in earlier production that may have been shipped to a Carrier facility.

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- Prior to shipping any non-conforming product, the supplier must notify Carrier utilizing the Supplier Deviation Request (SCDR) in the 8D System. Product may not be shipped until the SCDR has been fully approved in the 8D system.
- Reasons for SCDR include, but are not limited to:
 - If the non-conformance affects form, fit, or function of the part or system
 - If the non-conforming product will affect deliveries to Carrier

The supplier is responsible for the segregation and quarantine of nonconforming material. Non-Conforming materials shall not be shipped unless until a deviation is approved by Carrier. Discrepant material received at Carrier without an approved SCDR will be rejected and returned to the supplier with all extra handling and shipping costs incurred by the supplier. No discrepant material will be processed until a deviation is approved by all required Carrier personnel in the Prism System.

10.2. Carrier Identified Non-Conforming Product

10.2.1. Non-Conformances Found Prior to Release to Customer

In the event supplier-responsible non-conformances are discovered by Carrier prior to release to the customer, the parts/ components in question will be identified and segregated to prevent further use. Carrier's evaluation of the non-conformance will determine whether:

- Defects are accumulated and returned to suppliers in accordance with plant procedures.
- Supplier sorts defects at Carrier or at a local off-site location.
- Supplier reworks defects at Carrier or at a local off-site location.
- Supplier contracts 3rd party to complete inspections at Carrier or at a local off-site location.
- Contingent on Commercial Agreement specifics, Carrier reworks defect and charges supplier for rework costs and/or 3rd party containment activities.

Suppliers are expected to reimburse Carrier for all costs associated with quality escapes including, but not limited to a minimum standard charge for processing each escape, or per the Commercial Agreement.

10.2.2. Field Failure

The warranty obligations of suppliers for non-conforming parts discovered in the field, as well as their disposition, shall be specified in the commercial contract in force between the supplier and Carrier. If a critical field failure issue has been identified, a determination of the next steps in the process will be made based on several criteria including the failure's criticality, quantity, cost, and other factors.

Based on this evaluation Carrier may require:

- Defective parts to be repaired/ replaced in the field by Carrier.

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- Defective parts be repaired/ replaced in the field by supplier.
- Product be recalled and repaired or replaced. In all cases listed above, suppliers are required to reimburse Carrier for all costs associated with correcting field failures, and for any other costs imposed on Carrier because of such failures.

10.3. Non-Conformance/Corrective Action Reports (CAR)

The need for a formal CAR will be evaluated in terms of potential impact upon production costs, quality costs, performance, reliability, safety, and customer satisfaction. Carrier requires suppliers to submit a formal written corrective action plan to address specific non-conformances identified at either a plant or in the field using the electronic Global 8D Corrective Action Reporting system. The supplier is responsible for keeping the appropriate contact information up to date within the Global 8D Corrective Action Reporting system. When Carrier issues a request for corrective action, the supplier will be notified via an e-mail link from our host server.

Supplier response to corrective action requests must include root cause determination, containment action (short-term corrective action), and permanent (long-term) corrective action. As part of the corrective action, a defined implementation plan with implementation dates must be included, as well as disposition of suspect material.

NOTE: it is expected suppliers consider mistake-proof solutions in all corrective actions

Containment action (steps D1-D3) shall be communicated to Carrier within 24 hours of receipt of corrective action request. Failure Analysis, leading to the root cause determination, shall be completed within a reasonable time period agreed to with the Carrier issuing site. The 8D will not be considered complete until proposed permanent (long-term) corrective action has been approved by Carrier.

10.4. Problem Resolution

Additionally, in the event that Supplier's PPM or defect rates increase to levels about what is set forth in paragraph 11 of this SQM as the minimum rate acceptable as an "Preferred"/"Approved" supplier in the Carrier Supplier Excellence Program for the supplier's category, Supplier will have a period of twenty four (24) hours from the date of notice by Carrier to take containment action and a period of fifteen (15) days from the date of notice by Carrier to take permanent corrective action. If the quality reports during the corrective fifteen (15) day period indicate that the defect rates have not been reduced to an acceptable level, then, in addition to the other remedies provided in the commercial agreement, Carrier may at its option reject shipments of the affected product, and reschedule or cancel all open orders for the affected product without further liability. In the event containment action is triggered Carrier shall have the right at Supplier's expense to secure replacements of the affected product (including any engineering expense to identify and obtain PPAP approval of

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a suitable replacement) and/or have a third party inspect Supplier's products for nonconformance and/or defects. Supplier will engage in continuous improved quality performance including but not limited to adherence to the following items:

- Delivery of zero (0) product defects improvement plan
- Document & Improve 8D corrective action response and closure time, current target is 45 days for closure
- Implement process/product capabilities with Statistical Process Control (SPC)
- New Product Introduction - 100% PPAP on time (at or prior to pilot)
- Timely closure of any open actions resulted from Supplier quality audit
- Process certification requirements, not limited to Pro-Cert
- Risk identification & mitigate potential issues using proactive quality tools & initiatives

10.5. CONTROLLED SHIPMENT (CS)

Controlled Shipment (CS) is put into place to protect Carrier manufacturing facilities and its consumers from receiving non-conforming parts / products that do not meet specification. The data obtained from this process is critical as a measure of the effectiveness of containment and corrective actions taken to eliminate the root cause of nonconformities.

Supplier is fully responsible & liable for all costs associated to reduce or mitigate the impacts of non-conforming product / parts passed on to our end customers. This process does not change any terms of Carrier's purchase orders or the applicable commercial agreement, nor modifies or limits in any way Carrier's remedies or rights of recovery from the supplier.

10.5.1. Controlled Shipment Levels

Carrier will determine when a supplier shall be placed into Controlled Shipping Level 1 (CS1) and/or Controlled Shipping Level 2 (CS2). Carrier may place a supplier immediately into CS2, bypassing CS1 if needed.

Level I Controlled Shipment (CS1): For CS1, the supplier must provide certified product to Carrier. The supplier shall provide CS1 inspection results at the specified frequency determined by Carrier. The supplier shall continue its problem-solving activities and corrective action implementation.

Level II Controlled Shipment (CS2): CS2 is implemented when there is evidence Supplier is not able to effectively contain and isolate the issue within Supplier's facility when in CS1. If CS2 is required, a meeting will be scheduled between key stakeholders within Carrier and the supplier. An approved third-party provider will be used to certify the shipments prior to use. The results from CS2 shall be directly provided to Carrier at the specified frequency.

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All payments to the third-party provider for provision of CS2 is the financial responsibility of the Supplier. Any Supplier that is placed on CS2 will also be considered at the “underperforming” level subject to new business hold until Supplier has successfully completed the CS2 process. The supplier shall continue its problem-solving activities and corrective action implementation.

10.6. Warranty

Specific warranty obligations of suppliers are provided in the commercial contract in force between the Supplier and Carrier.

11. SUPPLIER EXCELLENCE PROGRAM

Carrier’s Supplier Excellence Program is a method to differentiate suppliers currently operating with operational excellence including high delivery, quality, and sustainability performance levels as well as maintaining cost excellence. It is a means of recognition for significant continuous improvement efforts and achievements of our suppliers who have achieved world-class levels of performance.

The program tracks four levels of performance. All suppliers in the program are expected to be at the “Approved” or “Preferred” levels. Suppliers who are not operating at least to the “Approved” level shall prepare an improvement plan for review with Carrier. Additional information may be obtained on the “Suppliers” page at corporate.carrier.com.

11.1. Supplier Categories

Category	Commodity Supplied
Category A	Glass
Category B	PCB (assembly), Motors, Fans, Blowers, Generators, Heat Exchangers, Control Boxes
Category C	Compressors, Grilles, Castings Forgings, Machined parts, Aluminum/Copper (fab/raw), Steel, Sheet Metal, Valves
Category D	Plastics, Refrigerants/Chemicals/Gasses, Electronics, Finished Goods, Electromechanical/fasteners/batteries, Packaging/Labels

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11.2. Supplier Metric Targets

		Preferred	Approved	Probation	Under-performing
PPM (as received in the factory)	Category A Suppliers	≤ 1000	≤ 2000	≤ 3000	> 3000
	Category B Suppliers	≤ 500	≤ 1000	≤ 2000	> 2000
	Category C Suppliers	≤ 250	≤ 500	≤ 1000	> 1000
	Category D Suppliers	≤ 20	≤ 100	≤ 250	> 250
Escape Count	Category A, B, C, D Suppliers	≤ 2	≤ 5	≤ 10	> 10
	On-Time-Delivery (%)	≥ 98%	98% > OTD ≥ 95%	95% > OTD ≥ 80%	OTD < 80%

Note:

- Targets are not volume dependent
- PPM/ OTD targets are based on a 12-month rolling average using actual volumes
- Progressing to a higher level will take a minimum of three months sustained performance in that level
- Escape targets are based on previous 6 months data

11.3. Reward Incentives

As a part of the Supplier Excellence Program, suppliers will be provided incentives and rewards for reaching and maintaining the preferred level status. More information regarding incentives and rewards is contained in Carrier's Supplier Excellence Paybook.

11.4. Supplier Excellence Playbook

All Suppliers are expected to participate in Carrier's Supplier Excellence program and to comply with the processes and practices outlined in Carrier's Supplier Playbook.

12. SUSTAINABILITY

As part of Carrier ESG 2030 goals, Carrier requires all its suppliers to participate and enable Carrier to meet these goals. These sustainability goals will be phased in over the coming

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years and all Carrier suppliers are required to meaningfully participate in Carrier's sustainability initiative and demonstrate continued progress. As a threshold requirement for both the preferred and approved levels in the Carrier Supplier Excellence program, suppliers must obtain an EcoVadis sustainability assessment score at least 50. To complete the assessment, please register on the EcoVadis platform at <https://invite.ecovadis.com/en/carrier/>.

13. DEFINITIONS

8D - A problem solving process developed by Ford Motor Company. The name "8D" originates from the fact there are eight disciplines associated with this problem-solving format. Carrier has adopted the 8D format to be used for both internal and external problem-solving activities.

Capability - The ability of a process to produce output within specified limits. "Improving process capability" involves taking steps to limit the amount of variation to defined acceptable limits.

Capability Index - The comparison of available tolerance to the portion of the tolerance consumed by a process in a state of statistical control.

Carrier Excellence - Carrier Excellence is the operating system for Carrier. Carrier Excellence is a customer-focused, process-based methodology for achieving higher levels of customer satisfaction and business performance.

Cpk - The capability index, which accounts for process centering and is defined as the minimum of CP Upper (C_{pu}) or CP Lower (C_{pl}). It relates the scaled distance between the process mean and the closest specification limit to half the process spread.

C_{pl} - Measures how close the process mean is running to the lower specification limit.

C_{pu} - Measures how close the process mean is running to the upper specification limit.

Commercial off-the-shelf items (COTS) - Standard commercial off the shelf or catalog items selected from a supplier's standard line of parts. Where Carrier does not have design control. Carrier does not have a dedicated drawing or purchased part specification. Parts not tooled specifically for Carrier. Parts are used by multiple industries/ customers. Examples include electronics (capacitors, diodes, and resistors), common fasteners (nuts, screws, washers, etc.).

Commercial Contract – The supply agreement or the other written contract in force between Carrier and the supplier governing the purchase and sale of Products subject to such agreement. If there is no written agreement does not expressly exclude their application, Carrier's Standard Term and Conditions of Purchase located at <https://www.corporate.carrier.com/supplier/terms-conditions/> shall apply.

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Corrective Action Report (CAR) - A formal request by Carrier to take action to eliminate the cause(s) of an existing nonconformity or other undesirable situation in order to prevent recurrence.

Control Plan (CP) - Methodology for controlling parts and processes to ensure all process outputs remain in a state of control. The plan is used and maintained throughout the product life cycle and is responsive to changing process conditions via written descriptions of the actions that are required at each phase of the process from receiving through shipping.

Critical Item - Any component, material, assembly or complete system which is selected for production and field traceability in order to satisfy safety reporting requirements or to support reliability analysis of high cost / high interest items. For example, a compressor model or certain electronic control modules might be designated as "traceable" items due to their high replacement costs. A furnace gas valve might be designated due to product safety reporting needs.

Deliverable Software - All software intended to be used in Carrier saleable product, including but not limited to software embedded in deliverable hardware and deliverable firmware. Refer to section 9 Change Management.

Directed-buy source - Any sub-tier supplier providing material, components, software or services which has been designated to be used by Carrier.

Failure Mode and Effects Analysis (FMEA) - A preventive analytical technique to methodically study the cause and effects of potential failures in a product or a process. The product or process is examined for all the ways in which a failure can occur. For each potential failure, an assessment is made of its effect on the system and its seriousness, and a review is made of the action being taken (or planned) to minimize the probability of failure or to minimize the effects of the failure.

Gage Repeatability and Reproducibility (Gage R&R) - The evaluation of a gauging instrument's accuracy by determining whether the measurements taken with it are repeatable and reproducible.

Key Characteristic (KC) - Any feature of a material, process, part, assembly, or test, whose variation within or outside the specified requirement has a significant influence on product fit, form, function or other expected deliverable, and thus must be controlled within prescribed acceptance limits via Process Certification practices.

Key Process Inputs (KPI) - A subset of the process inputs or their characteristics that are key to running the process and producing the right product/ output.

Key Product Characteristic (KPC) - KPCs are product features that are indicated on the drawing and or related documentation by engineering as described in 5.1.3. These are typically critical to safety, critical to function, and by exception critical to process features of the product that must be controlled within prescribed acceptance limits via Process Certification.

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Layered Process Audits (LPA) - A system of manufacturing process audits performed by multiple levels of management. Key process characteristics are audited frequently to verify conformance to processing standards and assure performance output is to expected levels.

Non-conforming product / service - Non-fulfillment of an intended requirement for reasonable expectation for use, including safety considerations.

On Time Delivery (OTD) - The number of purchase order line items delivered on time to the required date and quantity divided by the number of total purchase order line items required.

Part Family - Group of related products that pass through similar processing steps and over common equipment in a value stream.

Parts Per Million (PPM) - A measurement of the defect rate in a product, calculated as:
 $PPM = (\text{Total number of defective parts}) \times 1,000,000 / (\text{Total number of parts received})$.

Part Submission Warrant (PSW) - The warrant contains supplier, part information, required documentation, the supplier application warrant and Carrier disposition. The submission approval by Carrier authorizes the supplier to start production.

Process Capability - The range over which the natural variation of a process occurs as determined by the system of common causes. Process capability has three important components: design specification, centering of the natural variation, range or spread of the variation.

The importance of process capability is in assessing the relationship between the natural variation of a process and the design specifications. This relationship is often quantified by measures known as process capability indices. The most common is Cpk.

Process Certification (ProCert) - is Carrier's methodology to achieve and sustain statistically controlled and capable processes for manufacturing, business, support, maintenance, assembly, and test.

Production Material and Services - Includes parts, components or raw material that are directly used in the manufacture of Carrier products; supplier designed products that are incorporated into a Carrier assembly/product; and finished goods branded by Carrier.

Production Part Approval Process (PPAP) - A process which defines the generic requirements for production part approval. The purpose of PPAP is to determine if all customer engineering design record and specification requirements are properly understood by the supplier and that the process has the potential to produce product consistently meeting these requirements during an actual production run at the quoted production rate.

Carrier Quality System- A quality management standard whereby suppliers are rated at one of four levels of compliance.

Repeatability - Assesses the variation in a measurement system caused by the combined sources of measurement variation of a gage or test equipment when used by one operator or under one set of environmental conditions.

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Reproducibility - Variation in measurement averages when more than one operator or set of environmental conditions are imposed on the gage or piece of test equipment.

Run at Rate study - A formalized production capacity study that verifies proper cycle times, quality expectations and yields have been achieved in accordance with plan.

Supplier Deviation Request (SCDR) - A form submitted by the supplier that is used to document and request approval for any product or process deviation.

Work Transitions - Work transitions are any movement of production from one manufacturing plant to another.

14. REFERENCE MATERIALS

It is the responsibility of the supplier to ensure that they are working to the latest version of specifications referenced within this document as well as purchase order requirements. The following publications are available from the Automotive Industry Action Group (AIAG). These may be ordered on-line at: <http://www.aiag.org>.

- Advanced Product Quality Planning (APQP) and Control Plan (CP).
- Measurement System Analysis (MSA).
- Potential Failure Mode and Effects Analysis (FMEA).
- Production Part Approval Process (PPAP).
- Statistical Process Control (SPC).

The publications listed below provide additional information concerning quality assurance processes and techniques discussed in this manual as well as critical compliance expectations and are available to suppliers through their Carrier contacts.

- Business Gifts from Supplier
- Supplier Code of Conduct
- Human Trafficking Policy
- Conflict Minerals Policy
- California Transparency in Supply Chains

The following are forms referenced in this manual. To obtain blank forms, or for assistance in completing forms, suppliers should contact their designated Carrier point-of-contact.

- QLY-02FM1 - Appearance Approval Report (AAR)
- QLY-02FM2 - PFMEA*
- QLY-02FM3 - Control Plan*
- QLY-02FM4 - PPAP Request Sheet
- QLY-02FM4 - Production Part Approval- Dimensional Test Results*
- QLY-02FM4 - Production Part Approval – Material Test Results*
- QLY-02FM4 - Production Part Approval – Performance Test Results*
- QLY-02FM5 Parts Warrant (PSW)
- QLY-15FM1 - Supplier Change/Deviation Request (SCDR)

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- 8D Corrective Action Report (CAR)
- *with using plant consent, Suppliers may use their own internal documents/ forms if they contain all required information.

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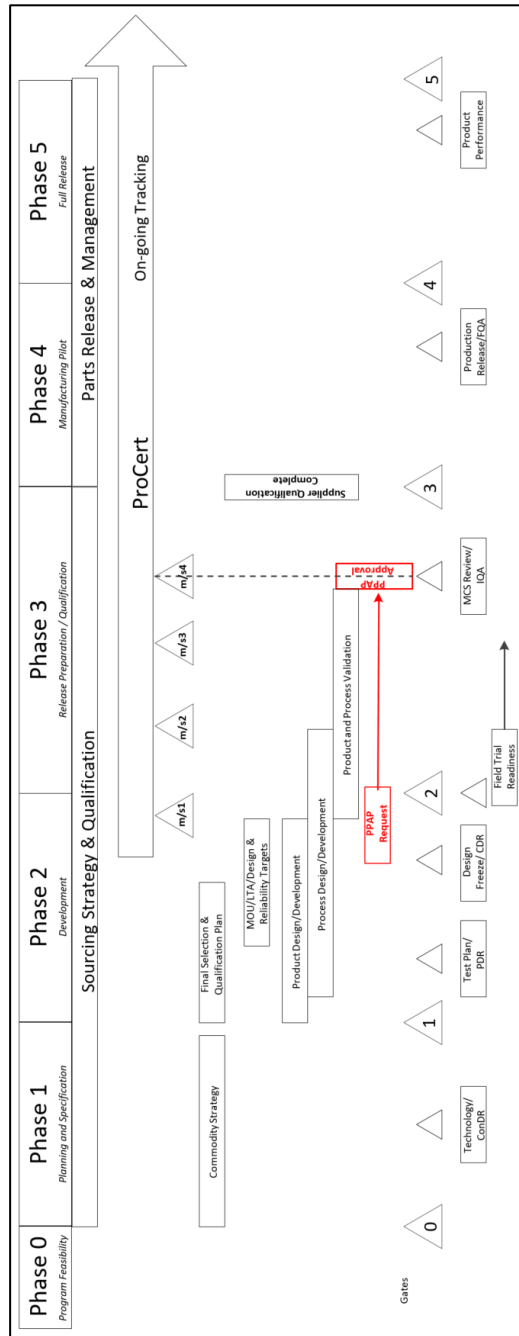
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15. APPENDICIES

15.1. Appendix 1 – PPAP Requirements

Below timeline reflects where PPAPs should be requested and approved in the New Product Development cycle.



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Below requirements table defines the documentation / data to be submitted to Carrier or retained by supplier.

PPAP Requirements / Submission Table

		Level 1	Level 2	Level 3	Level 4	• Level 5
1	Design Record	R	S	S	*	R
	for proprietary components	R	R	R	*	R
	for all other components/ details	R	S	S	*	R
2	Engineering Change Documents, if any	R	S	S	*	R
3	Customer Engineering approval, if required	R	R	S	*	R
4	Design FMEA	R	R	S	*	R
5	Process Flow Diagrams	R	R	S	*	R
6	Process FMEA	R	R	S	*	R
7	Control Plan	R	R	S	*	R
8	Measurement System Analysis Studies	R	R	S	*	R
9	Dimensional Results	R	S	S	*	R
10	Material, Performance Test Results	R	S	S	*	R
11	Initial Process Studies	R	R	S	*	R
12	Qualified Laboratory Documentation	R	S	S	*	R
13	Appearance Approval Report (AAR), If applicable	S	S	S	*	R
14	Sample Product	R	S	S	*	R
15	Master Sample	R	R	R	*	R
16	Checking Aids	R	S	S	*	R
17	Records of Compliance	R	R	S	*	R
18	Part Submission Warrant (PSW)	S	S	S	S	R

S = shall be submitted to Carrier. A copy shall be retained at the supplier location.

R = shall be retained by the supplier location and made available to Carrier upon request

***** = shall be retained by the supplier location and submitted to Carrier upon request

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15.2. Elements of PPAP Defined

15.2.1. Design Records

A printed copy of the drawing needs to be provided. If Carrier is design responsible, this is a copy of the specification or drawing that is sent together with the Purchase Order (PO). If supplier is design responsible this is a released drawing in supplier's release system. **Ballooned drawing/ specification:** Supplier must number each feature and requirement on the design record. Numbering must correspond with the documented inspection results (including notes, standard tolerance notes and specifications, and anything else relevant to the design of the part).

15.2.2. Authorized Engineering Change (note) Documents

If submission is required while a formal change is in process, an approved Supplier Deviation Request (SCDR) must be included.

15.2.3. Engineering Approval

If submission is required before Carrier engineering has approved all Engineering qualification tests, an approved Supplier Deviation Request (SCDR) must be included.

15.2.4. DFMEA

If the supplier is design responsible, a copy of the Design FMEA (DFMEA), reviewed and signed -off by Carrier

Engineering must be included. If it is agreed the DFMEA contains supplier control Intellectual Property (IP), the DFMEA may be reviewed with Carrier Engineering and Quality for approval. Where Carrier is design responsible the list of all Key Characteristics should be shared with the supplier, so they can be addressed on the PFMEA and Control Plan. This would typically take place during a design feasibility review meeting.

15.2.5. Process Flow Diagram

A copy of the Process Flow, indicating all steps and sequence in the fabrication process, including incoming components.

15.2.6. PFMEA

A copy of the Process Failure Mode and Effect Analysis (PFMEA), reviewed and signed -off by supplier and customer. The PFMEA should address potential failure modes in each step as outlined in the process flow document. [Including packaging and labeling]. All KC and KPC's must be included on the PFMEA.

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15.2.7. Control Plan

A copy of the Control Plan reviewed and signed-off by supplier and customer. The Control Plan follows the PFMEA steps. All KC and KPC's must be identified and included on the Control Plan.

15.2.8. Measurement System Analysis Studies (MSA)

MSA usually contains the Gage R&R for the Key Characteristics (KCs) and Key Product Characteristics. MSA is required for both variable and attribute features.

15.2.9. Dimensional Results

A list of every dimension noted on the ballooned drawing/ specification. This list shows the product characteristic, specification, the measurement results and the assessment showing if this dimension is "ok" or "not ok". Carrier will define the quality required for a dimensional layout, typically 3-5 pieces, however this may be adjusted in special circumstances such as multi-cavity tooling.

15.2.10. Records of Material / Performance Tests

A summary of every required test performed on the part. Requirements are usually agreed to by Supplier & Carrier during the design feasibility meetings. This summary lists each individual test, when it was performed, the specification, results and the assessment pass/ fail. Supporting data to be included as requested but may be submitted as tests are completed. In addition, this section lists all material certifications (steel, plastics, plating, etc.), as specified on the print/ specification. Actual materials certifications are to be included with the submission.

15.2.11. Initial Process Studies

Usually this section shows all Statistical Process Control charts affecting the most critical characteristics. The intent is to demonstrate that critical processes have stable variability and that is running near the intended nominal value. All Carrier defined KCs and Supplier defined KPC's must have studies included.

15.2.12. Qualified Laboratory Documentation

Copy of all laboratory certifications (e.g. ISO 17025, TS) of the laboratories that performed the tests reported on section 10.

15.2.13. Appearance Approval Report

A copy of the AAI (Appearance Approval Inspection) form signed by the customer. Applicable for components affecting appearance only. Requirements for any Appearance Approval Reports should be defined during the Design Review.

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15.2.14. Sample Production Parts

Carrier will define the number of samples to be submitted with the PPAP. Such samples must be produced as part of the PPAP production run. These samples are to be numbered to correspond to the measurement data submitted with the Dimensional Report (Item 9 above)

15.2.15. Master Sample

A sample [typically] signed off by customer and supplier, which usually is used to train operators on subjective inspections such as visual or for noise.

15.2.16. Checking Aids

When there are special tools for checking parts, this section shows a drawing of the template or tool and calibration records, including dimensional report of the tool. (CMM programing information may be requested)

15.2.17. Customer-Specific Requirements

Carrier customer may have specific requirements to be included on the PPAP package. It is a good practice to ask the customer for PPAP expectations before even quoting for a job.

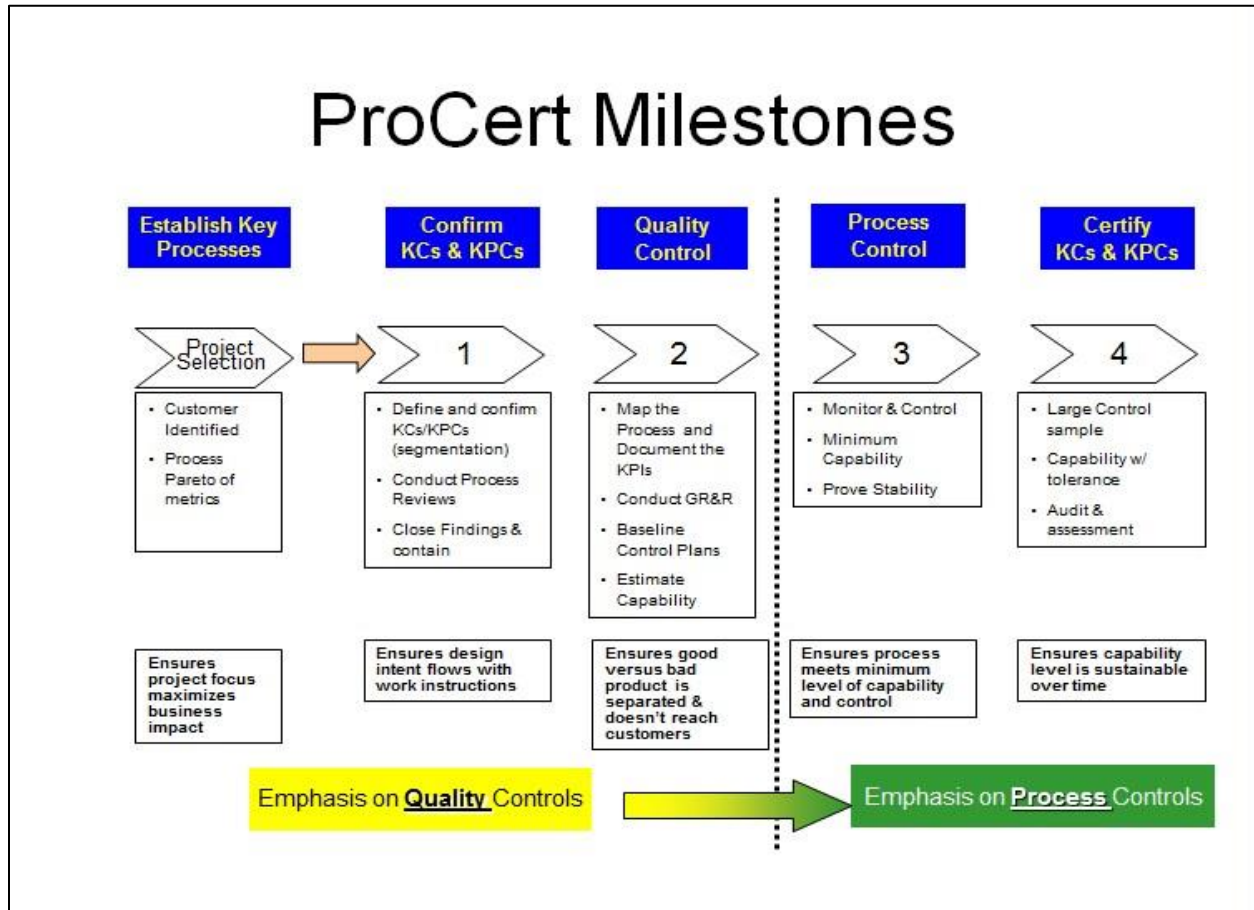
15.2.18. Parts Warrant (PSW)

This form that summarizes the whole PPAP package. The PSW includes part information, the reason for submission and the level of documents submitted to the customer. A Declaration statement must be signed by an authorized person at the Supplier's site making the submission (typically the plant quality manager). The Carrier using site must disposition the PSW, sign and return to the supplier. The supplier is not authorized until they have received a full or interim approved PSW from Carrier.

If a Level 4 PPAP is requested, the Carrier requestor must specify, in writing, what documentation / data will be required to accompany the PPAP submission (attachment 2, L-4 addendum).

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15.3. Appendix 2 - ProCert



15.4. Steps to Certify a Process

The following requirements shall be achieved to consider a process / KC certified.
Initial steps to implement Process Certification:

- Map the current process steps to identify KPIs and the process KCs that impact the process output and/ or KCs identified by Carrier. Refer to Design and Process FMEA's in this step. Identify current process performance or output for each process step.
- Verify and document that the measurement processes used for all variable and attribute KCs are capable (i.e., repeatability, reproducibility, correlation studies, and total process capability).
- Identify controlling actions to maintain process capability and reaction plans for out of control conditions as they occur at the workstation. These should be documented on the control plan and/ or work instructions.



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- Implement a process monitoring method.
- Implement a Preventive Maintenance Plan.
- Perform self-audits.









15.5. Variable Measured Characteristics: A process is considered certified when:

- Measurement equipment is qualified (e.g. R&R studies completed)
- Assignable causes for variation have been identified, documented, and removed.
- Process inputs and KCs are identified, monitored, and controlled.
- A minimum of twenty-five (25) consecutive observations or thirty (30) days of output whichever is greater, capturing variability associated with step to step, piece to piece, set up to set up, time to time, and lot to lot variation, with no nonconformance detected.
- KCs are under statistical control and Cpk of 1.33, or better is demonstrated.
- Routine self-audits being performed

15.6. Attribute Measured Characteristics: A process is considered certified when:

- Measurement equipment is qualified (e.g. R&R studies completed)
- Assignable causes for variation have been identified, documented and removed.
- Process inputs and KCs are identified, monitored and controlled.
- A minimum of forty-five (45) consecutive observations (90% confidence) or (30) days of output whichever is greater, capturing variability associated with step to step, piece to piece, set up to set up, time to time, and lot to lot variation, with no non-conformances detected.
- Routine self-audits being performed

15.7. Key Characteristics

Business Unit	Legacy Identification Symbols
Refrigeration	  
BSS / Carlyle	
EMEA / Montluel	 
RLCS	
RCS / RCD	(C)
Fire & Security	

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16. REVISION/REVIEW UPDATES

Change #	Revision Description	Approved by & Title	Date
0005	Updated to Carrier specific as an independent company	Gary Christman	23Mar2020
0020	Added section 11.1 to define supplier categories for clarification and clarified the metric target chart, section 11.2 values with < >	Kevin Carpenter	09Nov2020
0024	Section 1 added Carrier Way and quality policy Section 2 Purpose Section 5 expectation Section 6.1.4 added IATF 16949 Section 6.4 Added Contingency Planning Section 7.1 Revised PPAP Submission Requirements Section 8 Revised change management Section 9 Layered process audit and Safe launch Section 10 Added categories for escapes Section 10.2 Added Supplier Identified Non-conforming product Section 10.5 Added Problem Resolution Section 10.6 Added Controlled Shipment Section 11 Revised Supplier Excellence Program and Added Reward incentives Section 12 Revised Sustainability Section 16 Added form # QLY-15FM1 and updated Supplier Change/Deviation Request (SCDR). It was previously SDR Deleted attachment photos of supporting documents	Kevin Carpenter	10Mar2021

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