



GLOBAL SUPPLIER QUALITY MANUAL

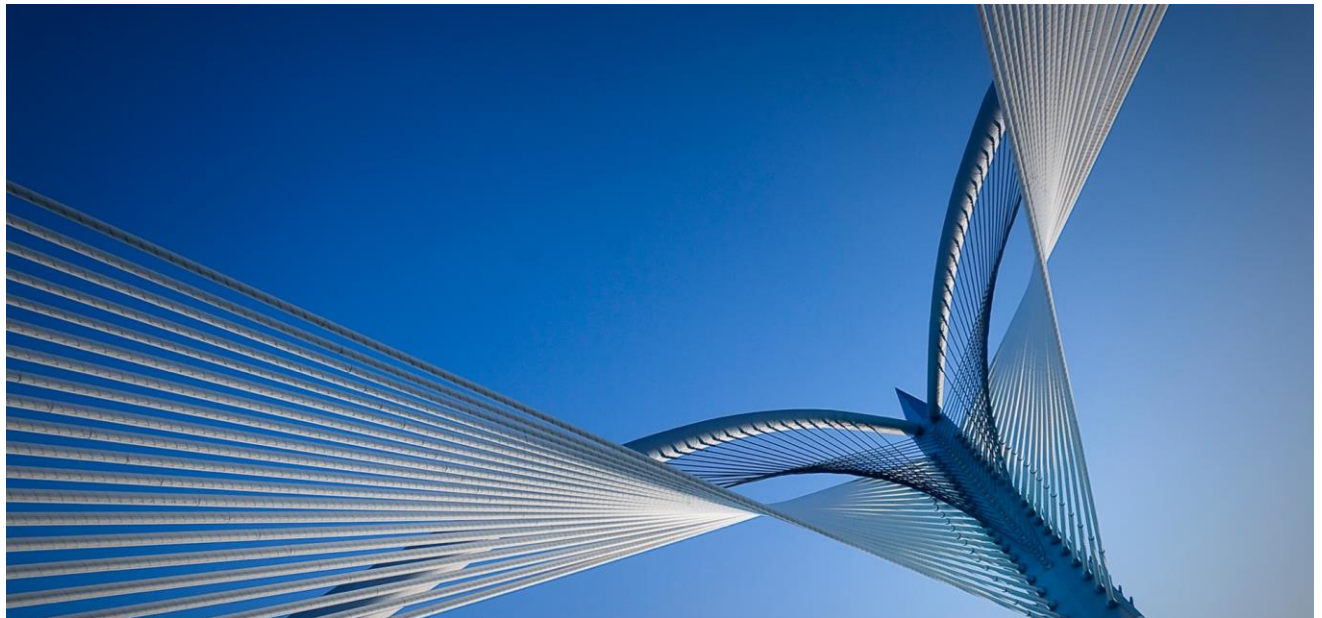


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Revision History

Version No.	Date	Description of Changes
1	1-Aug-20	Initial Release for Trane Technologies
2	31-Jan-23	Clarify this GSQM is for direct material supplier only. Remove all OHSAS 18001 information. Add SCA (Supply Chain Assessment), CDR (Capacity Demonstration Review) and SIP (Supplier Improvement Program) requirements. Change OSA to SSA (Supplier Systems Assessment). Add ETQ Reliance RMA, Controlled Shipping and Supplier Improvement module usage. Add ISO50001 energy management as recommended ISO standard for sustainability.

Only for ease of readability, all defined terms (i.e. Supplier, Buyer, Products, etc.) are or may be printed throughout this manual in lowercase.

Terms & Definitions

Term	Definition
AIAG	Automotive Industry Action Group: Not-for-profit association where professionals from a diverse group of stakeholders work collaboratively to streamline industry processes via global standards development and harmonized business practices (www.aiag.org).
Audit	Systematic, independent and documented process for obtaining and objectively evaluating evidence to determine the extent to which criteria are fulfilled.
Buyer	Buyer shall mean the Trane Technologies legal entity identified as the Buyer in the applicable contracting document (e.g., purchase order or supply agreement). The term "buyer" is used interchangeably with the term "Trane Technologies" in the Global Supplier Quality Manual. The term "Trane Technologies" or "buyer", as defined above, may include one or more Strategic Business Units (SBU)
Process Capability	The maximum amount of inherent variation in a process. A statistical study performed on a process to determine if it is capable of meeting the precision and/or accuracy according to specifications (Cp, Cpk, Pp, Ppk and Sigma values)
Confidential Information	1) Information, knowledge or data disclosed by buyer to supplier, regardless of whether disclosed in written, tangible, oral, visual or other form, including, without limitation, sample products, equipment, software, or other objects or material, provided by buyer to supplier, and 2) information, knowledge or data which was obtained from visits to buyer facilities by supplier.
Control Plan (CP)	Methodology 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 conditions via written descriptions of the actions required at each phase of the process from receiving through shipping.
CTQ	Critical-To-Quality: Any product feature, component, material, assembly or complete system which is selected for production and field traceability in order to satisfy safety reporting requirements, regulatory requirements, or to support reliability analysis of high cost / high interest items.
Defect / Non-Conformance	Non-fulfillment of a requirement related to an intended or specified use, including safety considerations and regulatory requirements.
Deliverable	See Product definition.
ETQ Reliance	The ETQ Reliance system, represents our electronic Quality Management System and will be the primary source of record for Supplier Corrective Action Requests (SCAR) , Controlled Shipping (CS) , Supplier Improvement Program (SIP) Return Material Authorization (RMA) , Supplier Deviation Request (SDR) , Supplier Process and Design Change Request (SPDCR) , and Production Part Approval Process (PPAP) . This system will provide the supplier a direct interface to our system allowing for near real time communication between the supplier and the Trane Technologies facility.
FMEA	Failure Modes and Effects Analysis: A systematic group of activities intended to (a) recognized and evaluate the potential failure of a product / process and the effects of the

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Term	Definition
	failure, (b) identify actions that could eliminate or reduce the chance of the potential failure occurring, and (c) document the entire process. It is complementary to the process of defining what a design or process must do to satisfy the customer
Interested Parties	Relevant customers, employees, suppliers and/or shareholders who may potentially influence the QMS
ISO-9001:2015	International Organization for Standardization: An international technical specification for quality management systems
Major Disruption	Special event resulting from products or services that do not meet the agreed quality and delivery specifications. Results in non-standard operations including: Quality Spills (product out-of-spec, stop shipments, production interruption, etc.) and Stock Outs (product not available).
NBH	New Business Hold: A control that prevents suppliers from quoting or receiving new business until conditions are satisfied to address deficiencies identified by Trane Technologies. The supplier may be removed from the approved supplier list for that commodity.
PDP	Trane Technologies Product Development Process: Enterprise wide process to deploy world-class standard product development processes; use systematic feedback for continuous improvement; implement a common approach to project and program management; Invest in our employees' capabilities.
PPAP	Production Part Approval Process: Defines generic requirements for production part approval, including production and bulk materials. The purpose of the PPAP is to determine that customer engineering design record and specification requirements are properly understood by the supplier. The supplier shall demonstrate that the manufacturing processes have the potential to produce product consistently meeting these requirements during an actual production run at the quoted production rate.
PPM	Parts Per Million: Reject rate determined by number of parts rejected divided by the number of parts provided times 1,000,000.
Preventive Action	Action to eliminate the cause of a potential non-conformance or other undesirable situations.
Product	The term "product" used in the Trane Technologies Global Supplier Quality Manual refers to any kind of product or service. This includes the physical "manufactured" product, a provided service, engineering work such as drawings and specifications or any other internal product provided in a series of processes. The term "deliverable" is used interchangeably with the term product in the Global Supplier Quality Manual.
PSW	Part Submission Warrant: An industry-standard document required for all newly-tooled or revised products in which the organization confirms that inspections and tests on production parts show conformance to customer requirements. The submission approval authorizes the supplier to start production based on PO requirements.
QMS	Quality Management System: A formalized system that documents the structure, responsibilities and processes required to achieve effective quality management. It can be based on the requirements detailed in ISO-9001:2015 with additional enhancements.

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Term	Definition
SBU	Strategic Business Unit: Trane Technologies is organized into different operating units, based upon products or customer types.
SCAR	Supplier Corrective Action Request: A formal request to take action to eliminate the cause(s) of an existing non-conformance or other undesirable situation in order to prevent recurrence. Used to communicate, document, track and drive resolution of verified supplier caused problems.
SDR	Supplier Deviation Request: Form and process that allows for time bound deviations from Trane Technologies engineering specifications or prints.
SIP	Supplier Improvement Program: A structured problem-solving and continuous-improvement approach to drive Supply Chain Continuity, Zero Defects Philosophy and 95% On Time Delivery.
SPDCR	Supplier Process and Design Change Request: A formal request used by the supplier to notify Trane Technologies of any supplier initiated part, process or design changes, prior to the implementing the change.
Supplier	The legal entity identified as the supplier in the applicable contracting document (e.g., purchase order or supply agreement).

1.0 Doing Business with Us

1.1 Our Company

At Trane Technologies, we boldly challenge what's possible for a sustainable world.

Global megatrends are pushing climate issues to the forefront of the world's concerns. As a global climate innovator, Trane Technologies demonstrates our commitment to take action. Through our strategic brands Trane® and Thermo King®, and our portfolio of environmentally responsible products and services, we bring efficient and sustainable climate solutions to buildings, homes, and transportation.

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We also recognize the importance of strong partnership with suppliers who provide quality parts and raw materials to ensure customer expectations are met and sustainable solutions pave a better way.

Suppliers should visit our website (www.tranetechnologies.com) to learn more:

<https://www.tranetechnologies.com/en/index/company/doing-business-with-us.html>

1.2 Purpose

The Global Supplier Quality Manual defines the expectations for all Trane Technologies direct material suppliers. The supplier shall meet or exceed the requirements and guidelines defined in this manual, as long as it provides products to Trane Technologies and its customers.

Adhering to the guidelines established in this manual, the supplier should continually improve the processes used to design, manufacture, and deliver products to Trane Technologies.

Throughout this manual, the word “**shall**” or “**must**” indicates a requirement. The word “**should**” indicates a recommendation.

The English version of this manual is the official version. The English version has precedence in the event of discrepancies with manuals translated into different languages.

1.3 Business Partner Code of Conduct

The supplier shall adopt and comply with the buyer’s Business Partner Code of Conduct (BPCOC). The supplier shall take all steps necessary to ensure that its sub-suppliers and subcontractors comply with the BPCOC. At the supplier’s request, the buyer will mail the supplier a hard copy. The BPCOC may be amended by Trane Technologies from time to time.

The complete Business Partner Code of Conduct is available in multiple languages and can be found by accessing our website at:

<https://www.tranetechnologies.com/en/index/company/doing-business-with-us/bpcoc.html>

1.4 Supplier Diversity

Trane Technologies recognizes the value of diversity in its workforce and supply chain. Trane Technologies’ s Supplier Diversity Program includes minority, women, and veteran -owned businesses, both large and small. Each procurement team has direct responsibility to search for and develop diverse-

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owned businesses.

Trane Technologies requires third party certification or government registration to be included in our Supplier Diversity Program. Additional information regarding the program, as well as accepted sources of certification, can be found on our website at:

<https://www.tranetechnologies.com/en/index/company/doing-business-with-us/supplier-diversity.html>

2.0 General Supplier Requirements

The term supplier includes suppliers of products (together called "products" or "deliverables" in this manual) and distributors that provide deliverables to Trane Technologies. The term supplier also includes suppliers of both custom and commercially available products. The supplier shall:

- ❖ Satisfy the requirements established in this manual
- ❖ Maintain a working knowledge of all policies and processes governing the relationship between the supplier and Trane Technologies
- ❖ Accept responsibility for the quality, on-time delivery, regulatory compliance, and technical performance of all deliverables

In the event of a conflict between the terms of this manual and any buyer purchase order or other contract between the parties, unless the parties agree otherwise in writing, the various components of the agreements shall be given the following precedence (in descending order of precedence): 1) the Supply Agreement, if any; 2) a purchase order; 3) an applicable country/region supplement to the buyer's terms and conditions of purchase; 4) the buyer's terms and conditions of purchase and 5) the Global Supplier Quality Manual. Subsequent requirements may take precedence based upon:

- ❖ Customer, market, or site specific operating conditions
- ❖ Strategic Business Unit (SBU) requirements

NOTE: It is the supplier's responsibility to integrate the contents within this Global Supplier Quality Manual, into their process, quality system and deploy to their respective sub-suppliers.

At Trane Technologies' s discretion, a waiver of certain manual requirements may be granted and approved for a specific product or duration. All such waivers shall be effective only upon express written approval by Trane Technologies.

Additional policies and processes can be found on our web-site at:

<http://tranetechnologies.com/company/doing-business-with-us/global-supplier-quality-manual.html>

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Supplier Dashboard

Suppliers will use our Supplier Dashboard for proactive monitoring of Key Performance Indicators (KPIs) such as Quality Defective Parts per Million (DPPM), On-Time Delivery to Need by Date, On-Time Delivery to stated Lead Time, and Payment Terms.

These KPIs provide a basis for supplier relationship meetings and acquiring preferred status.

Suppliers may also use this dashboard to see open purchase orders and look at 12 month gross and net requirements forecasts.

More information can be found on our web-site at

<https://www.tranetechnologies.com/en/index/company/doing-business-with-us/supplier-dashboard-registration.html>

ETQ Reliance System

The ETQ Reliance system, represents our electronic Quality Management System and will be the primary source of record for Supplier Corrective Action Requests (SCAR), Controlled Shipping (CS), Supplier Improvement Program (SIP), Return Material Authorization (RMA), Supplier Deviation Request (SDR), Supplier Process and Design Change Request (SPDCR), and Production Part Approval Process (PPAP). This system will provide the supplier a direct interface to our system allowing for near real time communication between the supplier and the Trane Technologies facility.

Supplier shall follow Trane Technologies facility's requirements of ETQ utilization.

2.1 Supplier Quality Management System

The supplier shall establish and maintain an effectively documented Quality Management System (QMS) that satisfies the requirements defined in this manual. The QMS must communicate, identify, coordinate and control all activities necessary to design, develop, produce and deliver a quality product to Trane Technologies and/or its customers.

The supplier shall be compliant with one of the following international quality management standards: ISO9001 or IATF 16949 latest revision. The supplier may be registered by an accredited certification body. Trane Technologies may request a copy of the certificate when applicable. Trane Technologies may conduct a Supplier Systems Assessment (SSA) of the supplier's QMS, refer to section 3.1 Supplier Assessment for additional information. A SSA shall be required to verify the supplier's QMS if the supplier

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has not achieved compliance or is not certified. The supplier shall notify Trane Technologies of any significant changes in their QMS including loss of certification.

The supplier shall satisfy the requirements of all Interested Parties regarding product quality. However, the customer requirements shall take precedence over any other Interested Party's requirements.

2.2 Supplier Quality Manual

The supplier is not required to have a Quality Manual. However, the supplier must be able to demonstrate the following:

- ❖ Existence and compliance to a Quality Management System
- ❖ Supplier's quality policy and objectives
- ❖ Documented information retention policy

The supplier's management shall be engaged to ensure compliance and continuous improvement of the requirements outlined in their QMS.

2.3 Customer Communications

The supplier shall communicate essential business information to Trane Technologies. Such information may pertain to contractual issues including, but not limited to:

- ❖ Inquiries, orders, bids, amendments and invoices
- ❖ Product quality issues relating to design, specifications, changes and notifications
- ❖ Delivery delays and/or shortages
- ❖ Customer feedback and information

Other elements of essential information relating to changes in the supplier's business environment must be communicated immediately, such as:

- ❖ Acquisitions
- ❖ Partial Sale
- ❖ Change of control/executive management
- ❖ Pending litigation
- ❖ Restructuring
- ❖ Bankruptcy

The effective transmission of such information requires that all suppliers identify and register key points of contact with their Trane Technologies counterparts. The majority of the communication shall be handled

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through electronic documents and systems. The supplier should adopt the necessary electronic systems to manage these processes and improve communications with Trane Technologies. The supplier is responsible for the validity and accuracy of the documents submitted electronically and must comply with all applicable legal requirements regarding electronic signatures.

All communications, both electronic and otherwise, with Trane Technologies shall be in English. A specific Trane Technologies facility may allow exceptions for direct communications meant for that facility only.

2.4 Document Control

The supplier shall establish and maintain documented information related to the QMS. Documented information must be updated, approved for use, available at points of use and controlled in a consistent manner. The supplier's QMS shall include provisions for Trane Technologies design-owned documentation. A master list of documents including the current revision level shall be maintained to prevent use of invalid or obsolete documents. The supplier shall maintain documented information of each change implemented.

When the supplier has design responsibility, Trane Technologies may request any documentation including drawings, engineering standards, and specifications. The supplier shall notify Trane Technologies of any changes by submitting a Supplier Process and Design Change Request (SPDCR). Refer to section 4.8 Change Control for additional information. Obsolete documents shall be destroyed or appropriately identified as such.

2.5 Documented Information Retention

The supplier shall establish and maintain documented information to provide evidence of regulatory compliance and Trane Technologies requirements. Retention policies shall define requirements for paper and electronic documented information. The documented information shall be:

- ❖ Legible
- ❖ Stored in an environment that prevents document deterioration
- ❖ Readily accessible upon request

The supplier's employees, contractors, and agents who create, receive, use or manage these documented information are required to comply with the policies and processes in accordance with customer, warranty, legal and regulatory requirements.

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Trane Technologies requires the supplier to maintain all documented information relating to deliverables provided for the life of the product plus one (1) calendar year and any applicable contractual requirements, including but not limited to those for warranty and service for the purpose of this manual, unless otherwise specified. The life of the product begins with product concept and extends until the end of active part production and service requirements. Trane Technologies may notify the supplier when a product is no longer considered an active part. The supplier shall provide documented information to Trane Technologies when requested.

The sections of this manual that require documented information shall conform to this retention policy.

2.6 Confidentiality

The supplier shall use Confidential Information solely for the purposes of supporting the current business relationship with Trane Technologies. The supplier shall not disclose Confidential Information to any third party without buyer's express written consent, except that the supplier may disclose Confidential Information to its contractors, sub-suppliers, consultants or agents who have a need to know and have executed confidentiality agreements with the supplier, obligating them to treat such information in a manner consistent with these Terms and Buyer's Non-Disclosure Contract, if any, with supplier. The supplier shall not i) sell buyer parts or components incorporating or containing Confidential Information to any third party, or ii) sell any deliverables produced using Confidential Information to any third party.

Notwithstanding the foregoing, the foregoing shall not restrict or affect supplier's rights to use or disclose information: i) which is or may hereafter be in the public domain through no fault of supplier; or ii) which supplier can show, as reflected by its written documents, was known to it prior to the disclosure by buyer; or iii) which is disclosed to supplier by a third party, with the legal right to disclose, subsequent to buyer's disclosure; or iv) which supplier can show, as reflected by its documents, was independently developed by supplier without the use of the Confidential Information.

The supplier acknowledges that a breach of this Section 2.6 would result in immediate and irreparable harm to buyer, for which there is no adequate remedy at law. The buyer is entitled to equitable relief compelling supplier to cease and desist all unauthorized use and disclosure of Confidential Information. The supplier shall immediately notify buyer of any breach of confidentiality.

Throughout the period of production and service, the supplier shall prevent improper use, loss, or damage to all Trane Technologies Confidential Information. At the conclusion of the defined retention period, the supplier shall return or securely dispose of electronic and hard media copies of all such Trane Technologies documents. Refer to section 2.5 Documented Information Retention for additional information.

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2.7 Risk Assessment & Contingency Planning

The supplier shall conduct a risk assessment of their operations that support Trane Technologies'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
- ❖ Facility or system issues
- ❖ Information loss
- ❖ Intellectual property claims
- ❖ Personnel concerns
- ❖ Equipment problems

The supplier shall prepare contingency plans to ensure continued operations at Trane Technologies. The supplier shall communicate any critical risk scenario without a contingency plan that may result in a Major Disruption. The supplier shall provide the contingency plans to the buyer when requested. Refer to Section 4.8 Change Control for additional information

2.8 Environmental, Health & Safety Compliance

Trane Technologies is committed to sound Environmental, Health and Safety (EH&S) operating practices including:

- ❖ Decreased use of hazardous substances
- ❖ Reduced waste and emissions
- ❖ Improved energy and water conservation
- ❖ Greater reuse and recycling of materials
- ❖ Safe and healthy work environments that prevent accidents and injuries
- ❖ Continuous improvement in EH&S performance

Trane Technologies suppliers are encouraged to actively implement globally recognized Environmental, Health and Safety management systems. A robust EH&S program reduces operational impact on human health and the environment in a sustainable manner. Recommended programs include, but are not limited to:

- ❖ Occupational Safety and Health Administration (OSHA) VPP
- ❖ ISO 14001
- ❖ ISO 45001
- ❖ ISO 50001

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The supplier shall work with Trane Technologies to reduce the impact of packaging waste through:

- ❖ Reduction or elimination of unnecessary over packaging
- ❖ Implementation of returnable packaging
- ❖ Substitution of current packaging materials for recyclable materials

The supplier shall comply with all applicable EH&S regulations. The supplier shall adhere and comply with our Supplier Sustainability Expectations found on our website at

<https://www.tranetechnologies.com/content/dam/cs-corporate/pdf/company/suppliers/Supplier-Sustainability-Expectations.pdf>

2.9 Cleanliness of Premises

The supplier shall adopt a cleanliness standard. The standard shall create a state of order consistent with the requirements of the deliverables provided to Trane Technologies. The standard shall include a process for establishing and maintaining a clean work environment. Trane Technologies recommends the 5S program to establish the standard.

2.10 Training

The supplier shall provide appropriate training to ensure that employees are competent and qualified to produce quality deliverables. The supplier shall review and document the required skills and competencies necessary for the production, inspection, handling, and delivery of products to Trane Technologies and/or its customers. The supplier shall provide appropriate training to ensure that employees follow applicable processes and instructions. The supplier shall maintain employee documented information of training, performance metrics, and skills.

2.11 Customer Approved Sources

The supplier shall purchase products from Trane Technologies approved sources, when specified by the contract. The use of Trane Technologies approved sources, including tooling and gauging suppliers, does not relieve the supplier of the responsibility for ensuring the quality of purchased products. The supplier shall be responsible for managing all aspects of the relationship with the approved source including:

- ❖ Quality of product or service
- ❖ Technical performance
- ❖ Source of materials

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- ❖ On-time delivery
- ❖ Extension of Credit

2.12 Sub-Supplier Management

The supplier shall define expectations for each sub-supplier including:

- ❖ Support of APQP requirements
- ❖ Identification of their role in the supplier's and Trane Technologies' s products and processes
- ❖ Involvement in problem solving and corrective actions, by using 8D methodology

The supplier shall work with sub-suppliers in order to meet the requirements provided in this manual.

Areas of emphasis include:

- ❖ Verification of purchased products
- ❖ Incoming product quality
- ❖ Sub-supplier monitoring

Refer to the AIAG CQI-19 document for additional information on sub-supplier management, if necessary.

Verification of Purchased Products & Services

For each sub-supplier, the supplier shall establish and implement methods, processes, and systems to verify that all deliverables comply with Trane Technologies requirements. The supplier shall complete this verification process prior to use for all deliverables provided to Trane Technologies. Consistent methods used for verification may include:

- ❖ Control plans
- ❖ Standard work instructions
- ❖ Regular inspection
- ❖ Functional testing
- ❖ Audits

To ensure on-going product quality, Trane Technologies may conduct an audit to verify product at the supplier or sub-supplier facility. The scope of each audit will be at the sole discretion of Trane Technologies. Trane Technologies shall notify the supplier of the planned date of the audit. The supplier and Trane Technologies will negotiate a mutually acceptable date for the audit. The supplier must notify the sub-supplier of this requirement. Any verification performed by Trane Technologies does not relieve the supplier of the responsibility to provide quality products.

Incoming Product Quality

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The supplier shall implement a process to ensure the quality of incoming deliverables meets Trane Technologies' s requirements. The process should incorporate standard methods including:

- ❖ Statistical data evaluation from the sub-supplier
- ❖ Performance-based receiving inspection
- ❖ Testing based on approved sampling plans
- ❖ Supplier audits or assessments coupled with documented information of acceptable delivered product quality
- ❖ Part evaluation by an approved laboratory
- ❖ Other methods approved by Trane Technologies

All non-conforming material resulting from this process shall be identified and quarantined. The supplier and sub-supplier shall have a process to disposition non-conforming product.

Sub-Supplier Monitoring

The supplier should collect objective data on the performance of its sub-suppliers. This data should be used to generate a performance ranking or scorecard. Performance metrics may include:

- ❖ Delivered product quality – Nonconforming Parts Per Million (PPM)
- ❖ Delivery schedule performance with incidents of premium freight
- ❖ Lead-time improvement
- ❖ Major Disruptions
- ❖ Special status notifications from sub-supplier pertaining to quality or delivery issues

Continuous improvement activities should be driven by a sub-supplier's performance against such metrics.

In some cases, sub-supplier performance monitoring may not be conducted due to the business, product or other quality considerations. The supplier may be required to notify Trane Technologies of such exceptions.

3.0 Supplier Selection & Assessment

Trane Technologies expects the supplier to:

- ❖ Abide by our Code of Conduct
- ❖ Provide high quality products that meet or exceed expectations
- ❖ Provide products at a competitive price
- ❖ Deliver products on-time

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- ❖ Maintain financial strength to support current business and promote growth

Trane Technologies shall verify compliance during the selection and assessment process.

3.1 Supplier Systems Assessment

Trane Technologies may conduct an Supplier Systems Assessment (SSA) of the supplier's QMS documentation, Sustainability, EHS and manufacturing facilities based upon criteria established in the SSA form. The SSA is generally conducted for potential new suppliers or an existing supplier's new facility. A SSA may be conducted if a supplier has not had an assessment in the last five (5) years. The SSA should be conducted in person or self-assessment at the supplier's manufacturing facility. A Category Specific Process Audit (CSPA) of the supplier may be required in addition to the SSA for new suppliers. The CSPA evaluates the supplier's capability to manufacture the potential product.

Trane Technologies shall share the results of the SSA with the supplier.

Generic Supplier Process Audit (GSPA)

Trane Technologies may conduct an on-site Generic Supplier Process Audit (GSPA) at the supplier and/or its sub-suppliers. The GSPA ensures the process meets Trane Technologies's requirements for capability and error detection and prevention. All processes will be reviewed based on:

- ❖ Continuous improvement
- ❖ New or changed processes
- ❖ Support for global procurement strategy
- ❖ Major Disruptions

Category Specific Process Audit (CSPA)

Certain manufacturing processes cannot be verified using normal monitoring and measurement techniques. Trane Technologies may conduct Category Specific Process Audit (CSPA). The supplier must demonstrate the ability to control the elements of these processes to achieve the defined results. The supplier shall establish verification methods for these processes, as applicable:

- ❖ Defined criteria for review and approval of the processes
- ❖ Approval of equipment and documented capability assessments
- ❖ Documentation of training, previous experience and qualification of personnel
- ❖ Use of specific methods and processes
- ❖ Requirements for documented information storing the measurement results
- ❖ Revalidation of the processes

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After the start of production, the audit is a method for identifying continuous improvement ideas and helping with problem solving. Refer to the AIAG CQI specific Special Process manual for additional information, if necessary.

Trane Technologies shall share the results of the SPA with the supplier.

The SSA and SPA status is manufacturing site specific. Trane Technologies reserves the right to conduct more frequent audits and to enter the supplier's facilities to perform an audit. Trane Technologies shall notify the supplier of the planned date of the audit.

3.2 Supply Chain Assessment

Supply Chain Assessment (SCA)

The Supply Chain Assessment (SCA) provides objective criteria to evaluate the supplier's ability to manage their material flow, which can guarantee them on time deliver Trane Technologies' s required demand. SCA is generally conducted for potential new suppliers or an existing supplier's new facility or an existing supplier's new sub-supplier. A SCA may be conducted if a supplier has not had an assessment in the last two (2) years. In the case of EMEA and AP suppliers, the frequency will be determined by the regional leader. The SCA should be conducted in person at the supplier's manufacturing facility. A Capacity Demonstration Review (CDR) of the supplier may be required in addition to the SCA for new suppliers.

Trane Technologies shall share the results of the SCA with the supplier.

Capacity Demonstration Review (CDR)

The CDR can be required when there is significant volume increase, or there is noncompliance to deliver on time to the contracted volumes or new part number's PPAP submission. The CDR should be conducted in person at the supplier's manufacturing facility, if verification is required. During a CDR, all serial production tooling and equipment must be in place and running at full capacity, including all direct and indirect personnel and support systems.

The SCA and CDR status is manufacturing site specific. Trane Technologies reserves the right to conduct more frequent evaluation and to enter the supplier's facilities to perform an audit. Trane Technologies shall notify the supplier of the planned date of the audit.

4.0 Advanced Quality Planning

The supplier shall develop the processes required for the quality planning of product. In the planning of product, the supplier shall work with Trane Technologies to:

- ❖ Develop quality objectives and requirements for the product
- ❖ Establish processes, documents, and provide resources
- ❖ Determine required verification, validation, monitoring, inspection and test activities and the criteria for acceptance
- ❖ Define documented information required to provide evidence of product conformity

4.1 Advanced Product Quality Planning

The supplier shall implement a framework that ensures robust product and process development capabilities. Advanced Product Quality Planning (APQP), published by AIAG, provides a proven and disciplined approach that meets Trane Technologies' s deliverable requirements. The process should be implemented from initial product concept and continue through the production launch phase of the project.

The supplier shall establish periodic internal reviews during the design and development process and the production launch. The supplier shall evaluate quality risks, costs, lead-times, critical paths and other items as appropriate throughout the entire APQP process. The reviews shall:

- ❖ Monitor progress of the design and development of deliverables
- ❖ Evaluate the results compared to the product requirements
- ❖ Identify potential problems and develop corrective actions
- ❖ Analyze the product and/or process utilizing a risk-approach (FMEA) methodology
- ❖ Provide input for management reviews

Trane Technologies may request the results of reviews based upon potential risk that a product has to Trane Technologies' s business or products. Refer to the AIAG APQP and FMEA manuals for additional information.

Planning

The supplier shall develop a project plan with:

- ❖ Project tasks, target dates and assigned responsibilities
- ❖ Time allocated for completing initial designs, supplier selection, product development, testing, tool design, manufacturing, supplier production try-outs and Production Part Approval Process (PPAP)

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- ❖ Sample requirements, PPAP quantities, and delivery dates
- ❖ Trane Technologies Product Development Process (PDP) alignment when applicable

Product Design and Development

When design responsible, the supplier shall complete the initial product design and maintain documented information of all changes for each product. Trane Technologies shall be notified of all changes impacting product form, fit function or potential influence on user experience. All changes shall be reviewed, verified and validated, prior to the implementation and acceptance by Trane Technologies. The review of design changes shall include an evaluation of:

- ❖ Product and mating parts in the assembly
- ❖ Manufacturing and downstream processes
- ❖ Purchasing costs

The supplier shall verify that the product meets the requirements established during the planning activities. Design verification shall be conducted independent of the responsible design team. The verification results shall be reviewed periodically with management. The supplier may be required to participate in design reviews with the Trane Technologies project team.

Once the design is frozen, supplier shall have the manufacturing feasibility study. Feasibility commitment should be signed as required.

Product and Process Validation

The supplier should begin the Product and Process Validation phase of APQP when the tooling, capital equipment and/or gauging is available. The supplier shall test and verify that their process outcomes satisfy the designs and/or specifications derived in the Product Design and Development phase. The process capacity shall meet the contracted production rate prior to acceptance. The installed capacity shall be verified during the PPAP activity. (Refer to section 4.5 Product Approval Process for additional information)

Trane Technologies may specify the validation plan when it has design responsibility. When the supplier has design responsibility, Trane Technologies reserves the right to approve the validation plan. The supplier shall perform the validation testing. The testing shall ensure the resulting product satisfies the requirements for the application and its intended use. The supplier's engineering function shall define and finalize specific test processes to validate the design. The supplier is responsible for any outsourced services used in the validation process. Refer to section 4.13 Statutory & Regulatory Conformity for additional requirements.

Production intent materials, tooling, processes and sub-suppliers should be used to produce products for validation testing. Trane Technologies may require product for testing requirements.

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Trane Technologies shall approve parts via the PPAP submission, utilizing our ETQ Reliance system. This system will provide the supplier a direct interface to our system allowing for near real time communication between the supplier and the Trane Technologies facility. The supplier shall not ship any production parts until signed approval is received from Trane Technologies per agreed method or documentation (i.e. Part Submission Warrant). Refer to section 4.5 Product Approval Process for additional information.

Production Launch

The supplier begins the Production Launch phase of the APQP when PPAP approval or interim approval is provided by Trane Technologies. The supplier shall utilize the Early Launch Containment methodology to reduce risk and improve quality prior to product delivery.

Once the production process has stabilized, Lessons Learned and Best Practices can be documented and reviewed.

4.2 Customer-designated Special Characteristics

Trane Technologies drawings and specifications may designate product features as Special Characteristics, Critical-to-Quality or other designations. These features may be designated by various symbols depending on each SBU. Typically, these characteristics influence:

- ❖ Product form, fit or function
- ❖ Compliance to regulations
- ❖ Safety requirements
- ❖ Customer satisfaction

The supplier shall demonstrate process capability through statistical controls for all designated special characteristics and maintain control for all measurement methods used. The target process capability for special characteristics shall be (Cp, Cpk, Pp, Ppk):

- ❖ Short-term: greater than or equal to 1.67
- ❖ Long-term: greater than or equal to 1.33

The Trane Technologies SBU may define the exact process capability requirements for each special characteristic. If no special characteristics are defined, the supplier shall determine which product and/or process characteristic should be used to evaluate capability. Trane Technologies reserves the right to approve the characteristics selected for evaluation. Trane Technologies shall define the requirements in the PPAP request letter when the volume does not support conducting a process capability study.

For any deviation of process capability, the supplier shall initiate an internal corrective action plan,

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including 100% inspection, when process capability is not met. The supplier shall maintain documented information of all corrective actions. Refer to the AIAG PPAP and SPC manuals for additional information on process capability.

4.3 Measurement System Analysis

The purpose of the Measurement System Analysis (MSA) is to assess the accuracy, repeatability, and reproducibility of each measuring device used in the manufacture of products supplied to Trane Technologies. The supplier shall implement a process to evaluate each type of measurement system periodically. An MSA shall be conducted on all new or modified measurement systems. Analytical methods and acceptance criteria shall conform to Trane Technologies requirements. The supplier shall develop a corrective action for any measurement system found that does not meet the requirements, including:

- ❖ Containment of suspect and non-conforming products
- ❖ Notification to Trane Technologies of affected products
- ❖ Potential last good inspection/calibration/MSA date
- ❖ Interim corrective action
- ❖ Repair, replacement and/or recovery plans
- ❖ Certification by outside source

Trane Technologies may request MSA results and/or sample parts from the supplier to perform comparative correlation studies with the supplier's measurement results. Refer to the AIAG MSA manual for additional information.

4.4 Calibration and Verification Documented Information

The supplier shall implement a calibration and verification system or process to ensure all gauges, jigs, fixtures, poka-yoke devices, master standard, measuring and testing equipment are qualified at defined frequencies. All measuring and test equipment must be:

- ❖ Identified with unique traceability and qualification status
- ❖ Calibrated and/or verified at a specified frequency to approved standards
- ❖ Adjusted or re-adjusted, as required
- ❖ Prevented from improper adjustment
- ❖ Protected from damage during use, handling and storage

Documented information shall be maintained for all gauges, measuring and testing equipment including:

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- ❖ Equipment identification and calibration standard
- ❖ Revisions for engineering changes
- ❖ Any out-of-specification readings
- ❖ Impact assessment for out-of-specification condition
- ❖ Statements of conformity after calibration or verification

The supplier shall notify Trane Technologies of potential suspect product when an out-of-calibration condition is detected after production launch. The supplier shall take appropriate actions to prevent further use of discrepant product at Trane Technologies. All suspect products at the supplier must be identified and quarantined. Refer to section 5.0 Non-Conforming Product for additional information.

Computer software and its application shall be verified and documented on a regular basis when used for monitoring or measuring product conformity. It shall also protect against unauthorized access. A list of authorized personnel must be available upon request from Trane Technologies.

The supplier should reference ISO 17025 as a guideline for compliance.

4.5 Product Approval Process

Trane Technologies utilizes the PPAP requirements for product approval as outlined by the AIAG Production Part Approval Process. All suppliers shall comply with these requirements for all new products and any approved changes to production parts. Trane Technologies shall determine the PPAP level required. The Trane Technologies PPAP owner shall work with the supplier to define the PPAP submission supporting data via the Part Submission Warrant (PSW) and the PPAP production run quantity. The PPAP run parts and the supporting data should be conducted utilizing production intent process. Reference the PPAP chart for submission requirements:

Level 1	❖ Parts Submission Warrant (PSW) only with Appearance Approval Report for designated appearance items
Level 2	❖ PSW with product samples and limited supporting data
Level 3	❖ PSW with product samples and complete supporting data ❖ Default PPAP level
Level 4	❖ PSW and other requirements as defined by Trane Technologies ❖ Level reserved for special applications only
Level 5	❖ PSW with product samples and complete supporting data reviewed at the supplier's manufacturing location. ❖ Requires onsite review by Trane Technologies

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Trane Technologies will provide a status of:

- ❖ Approved – the product meets all requirements and the supplier is authorized to deliver production quantities.
- ❖ Interim Approval – the product may be delivered for a specific time or quantity while the supplier implements the required corrective actions. The supplier must re-submit the PPAP documentation & samples to Trane Technologies for full approval before interim approval date expired.
- ❖ Rejected – the product fails to meet the requirements and the Supplier is not authorized to deliver the product or service. After implementing the corrective actions identified, the supplier must re-submit the PPAP documentation & samples to Trane Technologies for approval.

Trane Technologies shall notify the supplier of the concerns and/or issues that result in a product status of Interim Approval or Rejected. The supplier shall not ship any production parts until signed approval is received from Trane Technologies. Trane Technologies utilizes an electronic medium for the execution and submission of PPAP's. We refer to this system as ETQ Reliance system PPAP Module. Contact your Trane Technologies quality representative for further details

4.6 Laboratory Requirements

The supplier should establish and maintain laboratory capability for frequently used services, such as gauge calibration. Laboratory services provided by the supplier, either internal or external, shall be qualified to perform the required inspection, test or calibration services. The laboratory scope shall be defined, and technical requirements reviewed for:

- ❖ Adequate laboratory processes
- ❖ Competent laboratory personnel
- ❖ Testing processes
- ❖ Capability of performing test and traceability to standards
- ❖ Related documented information

External laboratories may require accreditation to ISO/IEC 17025 or equivalent national standard.

At any time, Trane Technologies may request production samples to perform analysis and testing.

4.7 Production Monitoring

The supplier's control plan shall identify all Trane Technologies requirements and the method of inspection and when applicable functional verification to be performed. Trane Technologies may specify

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certain criteria for inspection methods and functional verification. The control plan establishes the method and frequency of monitoring and measuring the product and processes to ensure conformity to Trane Technologies requirements. The supplier shall establish processes to control non-conforming product or service. The non-conforming product shall not be released or delivered unless approved by the supplier's authorized representative and, when applicable, Trane Technologies. Refer to section 5.5 Customer Waiver for additional information.

Layout Inspection

Trane Technologies may request the supplier to submit an annual layout inspection report. If a non-conformance is found, the supplier shall notify Trane Technologies. Trane Technologies may issue a Supplier Corrective Action Request (SCAR) for supplier identified non-conformances with the products. Refer to section 5.2 Corrective Actions for additional information.

4.8 Change Control

After product approval, the supplier shall control all changes to Trane Technologies deliverables. The supplier's QMS shall include processes to manage all changes to engineering documented information, manufacturing equipment and tooling, test and measurement equipment and all materials used in the process.

Any changes to engineering drawings, specifications, materials, manufacturing processes or other documents require **PRIOR APPROVAL** by the authorized Trane Technologies representative. The Supplier Process and Design Change Request (SPDCR) form shall be used by the supplier to notify Trane Technologies prior to any changes. Trane Technologies utilizes an electronic medium for the execution and submission of all SPDCR's. We refer to this system as ETQ Reliance system Deviation Module. Contact your Trane Technologies quality representative for further details.

Some examples requiring notification and when applicable PPAP re-submission:

- ❖ Drawing or specification change
- ❖ Material change or sub-tier supplier change
- ❖ Special process change including heat treatment, plating, coating, etc.
- ❖ New or modified production tooling
- ❖ Re-locating equipment within a site
- ❖ Manufacturing location change
- ❖ New sub-supplier or sub-supplier process change
- ❖ New or modified testing and/or measuring equipment
- ❖ Packaging and/or labeling change

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Trane Technologies shall be notified of planned changes prior to starting the project. The implementation date shall be determined by Trane Technologies and the supplier.

Various new process and product capability studies and approvals may be required as a result of the planned changes. The acceptance criteria for a planned change shall be agreed upon by Trane Technologies and the supplier prior to implementation. The process for accepting a change may require substantial time to complete all tasks identified. Refer to section 4.5 Product Approval Process for additional information.

In the event of an unauthorized change, the supplier must notify Trane Technologies within 24 hours of detecting the change. The supplier may be placed on New Business Hold (NBH) if the proper notifications and processes are not followed.

The supplier shall request approval from each Trane Technologies site affected by a change.

The supplier shall refer to the Supplier Process and Design Change Request (SPDCR) form on our website at:

<https://tranetechnologies.com/content/dam/cs-corporate/docs/excel/Supplier-GPO-Q-TM-0001-02-SPDCR-Template.xlsx>

4.9 Preventive & Predictive Maintenance

The supplier shall plan and operate a comprehensive maintenance system for the production equipment used to support products. The maintenance system, at a minimum, shall cover:

- ❖ Planned maintenance activities
- ❖ Packaging and preservation of equipment, tooling and gauging
- ❖ Availability of replacement parts for key manufacturing equipment
- ❖ Documenting, evaluating and improving maintenance objectives and performance
- ❖ Predictive methods to reduce and/or eliminate unscheduled interruptions

4.10 Customer-owned Assets

Custom products may require Trane Technologies-owned assets to be consigned to the supplier. The assets shall be used exclusively for the development, production, and testing of Trane Technologies products. Such assets may include, but are not limited to:

- ❖ Production tooling and fixtures

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- ❖ Gauges
- ❖ Testing and measuring equipment
- ❖ Dedicated processing equipment
- ❖ Prototype or production components
- ❖ Licensed software and hardware

The purchase order shall identify all required assets, applicable specifications, maintenance requirements and expected life of the asset. The supplier shall adhere to the terms and conditions established by the Bailment Agreement. The supplier must attach an approved Trane Technologies asset tag or utilize another approved method of marking. The supplier must maintain a log of all Trane Technologies-owned assets. Trane Technologies may request the asset log and/or conduct an audit of the assets.

The supplier shall have documented information and maintain a log of operational data for each asset including, but not limited to:

- ❖ Maintenance history
- ❖ Usage
- ❖ Capability information and capacity documented information
- ❖ Tool changes for perishable tooling or wear components
- ❖ Tool modifications and engineering changes
- ❖ Updated pictures of each asset

The supplier shall immediately notify Trane Technologies if any asset is found to be defective or unsuitable for production. All tool modifications and design changes shall be documented and maintained. Documented information of all repair or replacements actions must be submitted to Trane Technologies.

The supplier shall not transfer, or consign to another party, any Trane Technologies-owned assets without prior written approval from Trane Technologies. Any asset transfer may require a new PPAP approval before production resumes. Refer to section 4.5 Product Approval Process for additional information.

The supplier shall not disposition any Trane Technologies-owned tooling without prior written approval from Trane Technologies.

4.11 Identification & Traceability

The supplier shall properly identify product throughout the realization process and establish a system that:

- ❖ Identifies the production status
- ❖ Verifies product acceptance with regards to inspection and testing

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- ❖ Properly controls product disposition

The supplier shall create a traceability method for unique identification of each part or material lot, unless otherwise agreed upon by Trane Technologies. The supplier shall work with Trane Technologies to develop and approve an acceptable method, location and content for marking the product. The supplier shall maintain all documented information necessary to ensure product quality.

4.12 Preservation of Material

The supplier shall develop a plan for proper identification, handling, packaging, storage, protection and preservation of all Trane Technologies products and materials. The preservation plan shall apply to all internal and external supplier processes. The plan shall apply to the storage and delivery of all products prior to assembly at Trane Technologies or its customer facilities. As required, material handling, packaging and storage shall be designed to:

- ❖ Prevent contamination
- ❖ Prevent part-to-part contact (except bulk material)
- ❖ Reduce environmental effects on product
- ❖ Prevent degradation of product
- ❖ Rust prohibitive shall be compatible with Trane Technologies lubricating oil when applied on an internal surface
- ❖ Prevent loss or damage in transport
- ❖ Properly manage shelf life of perishable products

The supplier should utilize an inventory management system to optimize inventory, reduce risk of obsolete product, and ensure stock rotation.

4.13 Statutory & Regulatory Conformity

The supplier's product shall be certified to applicable standards as required (e.g. Underwriters Laboratory (UL), European Union (CE mark), Canadian Standards (CSA), DIN, ASME, RoHS WEEE, REACH etc.). The supplier shall ensure that certification is maintained. Evidence shall be submitted along with PPAP documentation, when required.

The supplier's product or service shall meet all statutory and regulatory requirements for the locations where it is manufactured and used. These requirements shall be properly documented and documented information maintained.

The supplier shall comply with all buyer requests for information and other reasonable buyer requirements regarding Conflict Minerals. For more information see the Conflict Minerals section of our

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website at:

<https://tranetechnologies.com/content/cs-corp/en/index/company/doing-business-with-us/conflict-minerals.html>

The supplier shall provide samples, testing, environmental and material Safety Data Sheet (SDS) information when requested. The SDS is required for but not limited to:

- ❖ Rust prohibitive
- ❖ Lubricating oil and grease
- ❖ Acids and caustics
- ❖ Cleaners
- ❖ Other chemical material that is used while producing or assembling the product.

5.0 Non-Conforming Product

When a non-conformance occurs, and to prevent their unintended use or delivery, the supplier shall:

- ❖ Identify the non-conformance (According to supplier applicable documented procedure)
- ❖ Minimize its impact through proper containment.
- ❖ Determine the true root cause.
- ❖ Implement corrective action.
- ❖ Establish controls to prevent the non-conformance from recurring.

In the process of resolving the non-conformance, corrective actions, lessons learned and best practices are documented and shared, when appropriate.

5.1 Control of Non-Conforming Product

The supplier shall identify and control in a quarantined location any non-conforming product when:

- ❖ Product requirements are not met
- ❖ Packaging is incorrect
- ❖ Labeling or marking misidentifies the product
- ❖ Product status is unknown or suspect

The supplier shall establish a documented process to ensure that outputs (i.e. products, processes, services...) do not meet applicable requirements are identified and controlled to prevent their unintended

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use or delivery. The non-conforming product must be controlled until the supplier can:

- ❖ Determine and eliminate root cause of non-conformance through process improvements
- ❖ Eliminate the detected non-conformance by Trane Technologies-approved rework and/or repair
- ❖ Obtain approval to “Use-As-Is” from Trane Technologies. Refer to section 5.5 Customer Waiver for additional information.
- ❖ Scrap or reject product to prevent unintended use
- ❖ Re-allocate product to a different Trane Technologies-approved application (known as re-grade)

The supplier shall establish a documented process to define and control rework and repair processes. Any rework or repair process, not identified within the approved PPAP documents, must be approved by Trane Technologies prior to being applied/delivered. Customer approval does not relieve the supplier of any liability regarding product quality. All corrected non-conforming product must be re-verified to demonstrate conformity to the requirements. The supplier must properly identify each product or package as repaired or reworked.

The supplier shall immediately notify Trane Technologies of any defective products found at their facility that may have been delivered to Trane Technologies and/or its customers. When potential non-conforming products have been shipped, the supplier must implement immediate (within 24 hours after notification) and appropriate containment processes and actions. The actions should include:

- ❖ Containment of product at the supplier’s or sub-suppliers’ facility, in transit and at Trane Technologies and/or its customer
- ❖ Notification to the Trane Technologies plant of conforming product availability and shipment dates
- ❖ Product sorting at Trane Technologies and/or its customer
- ❖ Approved third party sorting provisions when supplier is unable to send representatives

The supplier shall maintain documented information of the non-conformance and subsequent actions taken. Trane Technologies reserves the right to audit any non-conformance. Trane Technologies may issue a Supplier Corrective Action Request (SCAR) for supplier identified non-conformances with the product(s).

5.2 Corrective Actions

Trane Technologies may issue a Supplier Corrective Action Request (SCAR) in the identification and resolution of non-conformance detected at Trane Technologies’ s facilities or by our customers. The SCAR may be issued based upon incoming inspections, in-process rejects, customer rejects, field

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failures, packaging or labeling issues.

The supplier is expected to respond to all SCARs issued in the format received. Trane Technologies utilizes an electronic medium for the execution and submission of all Supplier Corrective Action Requests (SCAR's). We refer to this system as ETQ Reliance system SCAR Module. Contact your Trane Technologies quality representative for further details. When a supplier receives a SCAR, Trane Technologies' s 24-14-30 policy shall be followed:

Initial Response within 24 hours:

- ❖ Acknowledge receipt of SCAR upon notification
- ❖ Identify all suspect product
- ❖ Notification of quantity of suspect material in route to Trane Technologies and/or its customers
- ❖ Immediate containment action taken
- ❖ Interim plan for supporting Trane Technologies production with certified product

Corrective Action Plan within 14 days:

- ❖ Use problem solving techniques to determine the root cause of the non-conformance. Refer to section 5.3 Problem Solving for additional information
- ❖ Detailed plan for implementing corrective actions to control and prevent recurrence
- ❖ Disposition of suspect products

Final Report within 30 days:

- ❖ Implemented corrective actions with supporting data
- ❖ Verify effectiveness of corrective actions

If the supplier fails to respond appropriately, the supplier may be placed on New Business Hold and may be removed from the preferred supplier status.

Controlled Shipping

If escalation of a non-conformance is necessary, Trane Technologies may place a supplier in Controlled Shipping (CS). Controlled Shipping ensures a rigorous inspection process to protect Trane Technologies and its customers from receiving non-conforming product. The supplier shall utilize a separate and distinct area for redundant inspection of the product. Trane Technologies will determine when a supplier shall be placed into Controlled Shipping Level 1 (CS1) and/or Controlled Shipping Level 2 (CS2). Trane Technologies may place a supplier immediately into CS2, bypassing CS1.

For CS1, the supplier must provide certified product to Trane Technologies. The supplier shall provide the CS1 inspection results at the specified frequency determined by Trane Technologies. The supplier shall continue its problem solving activities and corrective action implementation.

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In the event that CS2 is required, a meeting will be scheduled between key stakeholders within Trane Technologies and the supplier. An approved third-party provider must be utilized to certify the supplier's product prior to use. Trane Technologies shall determine the location where the third-party provider must perform the inspections. The results of the third-party inspections shall be provided to Trane Technologies at the specified frequency. The supplier shall continue its problem solving activities and corrective action implementation. If a CS1 inspection has been established, the CS1 requirement remains in effect even with the addition of a CS2 inspection requirement.

The supplier is responsible for all costs associated with CS. The supplier shall remain in CS1 and/or CS2 until the Exit Criteria have been met. When placing a supplier in CS, Trane Technologies may consider:

- ❖ Severity or duration of a non-conformance
- ❖ Repeat SCARs
- ❖ Supplier's process is not capable
- ❖ Warranty issues
- ❖ Major Disruptions
- ❖ Current containment activity is inadequate
- ❖ Production Launch first pass yield results inadequate

Additional details necessary for each occurrence shall be defined when the CS process is initiated. Trane Technologies shall provide the Exit Criteria for CS1 and/or CS2 when the process is initiated.

Trane Technologies utilizes an electronic medium for the execution of Control Shipping. We refer to this system as ETQ Reliance system SCAR Module. Contact your Trane Technologies quality representative for further details

5.3 Problem Solving

The supplier should adopt the "Zero Defects" mindset to reduce and eliminate non-conformances. When a non-conformance occurs, the goal is to quickly and effectively identify the problem, minimize its impact, determine the root cause, implement corrective actions and prevent recurrence. A robust problem solving methodology leads to effective root cause identification and elimination. Trane Technologies recommends the use of 8D Problem solving method. The supplier should adopt this method, or another industry recognized disciplined approach that covers, at a minimum:

- ❖ Establish the problem solving team and key contact person – include key stakeholders, experts and direct involved personnel
- ❖ Define the problem scope – state the problem using quantitative terms identifying who, what, where, why, when and how
- ❖ Develop an interim containment plan – immediate actions to contain product at all locations
- ❖ Identify all potential root causes – analyze and verify source of the problem including what

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- process failed, why failure was not detected and what systems failed to prevent the non-conformance (3 root cause approach)
- ❖ Develop corrective actions to prevent recurrence – verify actions resolve the problem and do not create unintended effects
- ❖ Implement corrective actions – update required process documentation and validate effectiveness
- ❖ Implement preventive actions – take steps to prevent similar problems from occurring in other products or processes and document Lessons Learned and Best Practices
- ❖ Review and recognize the team – review and approve completion with management

The supplier shall evaluate the effectiveness of its problem solving process through feedback of internal audits, process audits, performance data and review of repeat SCARs.

Error-proofing methods are effective corrective actions to eliminate recurrence of a root cause when properly implemented. The supplier shall use error-proofing methods to identify potential design and/or process improvements and implement when applicable.

Refer to the AIAG CQI-20 document for additional information on problem solving. Refer to the AIAG CQI-18 document for additional information on error-proofing.

5.4 Cost of Poor Quality (COPQ) Recovery

The supplier shall be responsible for all costs incurred by Trane Technologies and its customers in conjunction with a SCAR or any failure of the supplier's deliverables. Trane Technologies may take immediate actions to satisfy customer requirements while notification of the issue is provided to the supplier. A Return Material Authorization Request shall be provided with details regarding costs incurred. The supplier shall respond to a Return Material Authorization Request when received within 10 days.

Potential costs incurred include, but are not limited to:

- ❖ Incoming inspections
- ❖ Necessary sorting activities
- ❖ Return shipments or shipments to third party locations
- ❖ Customer management for warranty and field inspections
- ❖ Analysis of warranty and field returns
- ❖ Rework, repair or scrap of product at Trane Technologies and/or its customer's facilities
- ❖ Premium freight charges
- ❖ Production downtime
- ❖ Additional labor costs including overtime and extra manpower
- ❖ Process changes for accommodating product

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- ❖ Additional inspections or process controls
- ❖ Costs to manage actions taken

Trane Technologies may place a supplier on New Business Hold as a result of COPQ, SCARs, or other concerns. The supplier may be removed from the approved supplier list.

Trane Technologies utilizes an electronic medium for the execution of return material. We refer to this system as ETQ Reliance system RMA Module. Contact your Trane Technologies quality representative for further details

5.5 Customer Waiver

The supplier must obtain approval from Trane Technologies for temporary changes to existing product and processes prior to releasing product for shipment or authorizing production to proceed. The supplier shall utilize the Supplier Deviation Request (SDR) for these basic steps:

- ❖ Initiate a deviation with detailed information
 - Including root cause investigations and why change is needed
- ❖ Review deviation with Trane Technologies representative
- ❖ Notify Trane Technologies of delivery date
- ❖ Mark affected product accordingly
- ❖ Manage deviation quantity or time
- ❖ Monitor completion of corrective actions

The supplier and Trane Technologies shall evaluate the SDR to reduce adverse impact on the customer, operations, safety, and environment. Product engineering may be required to perform analysis to validate any adverse effects the deviation may have on the design integrity for form, fit or function. The supplier shall provide samples, when requested, of the deviation to evaluate impact of the change in both the design and in use at the Trane Technologies facility. Any costs associated with testing, evaluating or accommodating deviated product are the supplier's responsibility. Trane Technologies will approve or reject the SDR. Excessive use of deviation requests is an indication that the supplier's QMS may not be performing as expected.

Trane Technologies utilizes an electronic medium for the execution and submission of all Supplier Deviation Request (SDR). We refer to this system as ETQ Reliance system Deviation Module. Contact your Trane Technologies quality representative for further details. The suppliers shall refer to the supplier Deviation Request form on our website at:

https://www.tranetechnologies.com/content/dam/cs-corporate/docs/excel/Supplier-QMOD-0002.15_SDR.xlsx

5.6 Continuous Improvement

The supplier shall strive to continually improve its products, processes and systems. The supplier shall conduct regular reviews of:

- ❖ Quality policy and objectives
- ❖ Audit results
- ❖ Data analysis
- ❖ Corrective and preventive actions

The process of continuous improvement must be included in the goals and objectives of the entire supplier organization. Continuous improvement can reduce potential risks and prevent possible non-conformances. Refer to section 4.8 Change Control for additional information.

5.7 Supplier Improvement Program

Trane Technologies uses Supplier Improvement Program (SIP) as a structured problem-solving and continuous-improvement approach to drive Supply Chain Continuity, Zero Defects Philosophy and 95% On Time Delivery.

Each supplier in SIP needs to complete the corrective action within 90 days, then it will be put in 3 months monitoring phase. Supplier can be exited from SIP if their performance can meet the target after monitoring phase, or escalated to NBH if they can not meet the target in the monitoring phase.

Trane Technologies utilizes an electronic medium for the execution of Supplier Improvement Program. We refer to this system as ETQ Reliance system SCAR Module. Contact your Trane Technologies quality representative for further details

6.0 Customer Satisfaction

Customer satisfaction provides an important feedback to the supplier on their performance. The supplier shall establish a method to evaluate feedback from Trane Technologies in these areas:

- ❖ Part quality performance

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- ❖ Warranty and field returns
- ❖ Delivery schedule performance
- ❖ Trane Technologies issued SCARs
- ❖ Major Disruptions

The supplier shall monitor the performance of their manufacturing processes to demonstrate compliance with Trane Technologies requirements for product quality and efficiency of the process. The supplier should retrieve information from Supplier Dashboard or contact Trane Technologies representative to receive additional feedback.

Trane Technologies monitors its suppliers for these items and may place a supplier on New Business Hold as a result.

7.0 Global Logistics

The supplier shall comply with the requirements established by Trane Technologies Global Logistics and any specific regional requirements.