



**GLOBAL
SUPPLIER
HANDBOOK**

Table of Contents

- Introduction 4
- General Expectations 4
- Purchasing Process and Supplier Selection..... 4
 - Supplier Profile and Self-Assessment 5
 - Supplier On-Site Assessment..... 5
 - Alliance Supplier 5
 - Certified Supplier 5
 - New/Cautious Supplier..... 5
 - Restricted Supplier..... 5
 - Non-Disclosure Agreement (NDA)..... 6
 - RFQ/Quoting Process 7
 - Communication 7
 - Commodity Teams..... 7
 - Potential Supplier Identification..... 7
 - Supplier Agreement..... 7
 - Consignment Agreement..... 7
- Quality Systems..... 7
 - Advanced Product Quality Planning Process (APQP) 8
 - Team Identification 8
 - Scope Definition..... 8
 - APQP Process 8
 - Manufacturing Process..... 8
 - Business Policy..... 9
 - Corporate Social Responsibility 9
 - Business Continuity Plan 9
 - Environmental..... 9
- Supplier Quality Expectations 10
 - Potential Late Deliveries..... 10
 - Proprietary Information 10
 - Drawing and Engineering Specifications 10
 - Product Development and Design..... 11

Robertshaw Tooling.....	11
Innovation and Creativity.....	11
Product Quality Expectations.....	11
Quality Performance Records	12
Designated Critical-to Quality Characteristics.....	13
Supplier Design Control.....	13
Special Processes.....	13
Product/Process Change Management.....	14
Extension of Responsibility to Third Party.....	14
Production Part Approval Process (PPAP).....	14
Material/Test Certifications	15
Measurement of Conformance to Specification	16
Verification of Purchased Part.....	16
Customer Verification of Subcontractor Premises.....	16
Replacement of Non-Conforming Material.....	16
Material Control	17
Identification and Traceability.....	17
Supplier Performance and Monitoring	17
Request for Corrective Action	17
Containment Action	17
Root Cause Analysis and Corrective Action Plan.....	18
SCAR Defect Quantity Adjustment	18
Defective Parts Per Million (DPPM).....	18
Cost Reductions and Improvement Performance	18
Inventory Turns Performance	19
On-Time Delivery Performance.....	19
Supplier Development	19
Supplier Improvement Focus (SIF) Meetings	19
Supplier Development Kaizen Events.....	19
Business Reviews.....	20
Private Label (Finished Product) Supplier Expectations	20
Distributor Expectations	20
PPAP Provision.....	20

Control Plans for Distribution..... 20

Distribution Changes 20

Revision History 21

APQP Process 22

 APQP Element 22

 Element Description 22

 Deliverables 22

Introduction

Robertshaw is a global climate, appliance and automotive controls solutions group. The Supply Chain organization at Robertshaw contributes to manufacturing excellence in quality, cost, delivery and innovation to the customer. In particular, the supply chain function assures the on-time delivery of component material and shipment of finished goods at the best possible value for the customer. Continued improvement in our global supply chain systems is and will continue to be a competitive advantage for Robertshaw.

The purpose of this handbook is to communicate our requirements and expectations to our suppliers. Copies of the handbook can be obtained by contacting a Robertshaw representative at the appropriate business location. Any questions regarding access to this handbook should be directed to the Robertshaw Site Buyer, Commodity Manager, Regional Manager of Supplier Quality & Development or site Supplier Quality Engineer.

The contents of this handbook apply to suppliers of direct production items and processes (e.g. heat treat, plating), suppliers of private label products and distributors as noted. It does not apply to suppliers of MRO/Indirect products.

Acceptance of a purchase order and/or supplier agreement constitutes acceptance of the requirements of this document.

Deviation from the requirements of this document requires approval from Robertshaw supply chain management, plant quality management or supplier quality management.

When conflicts exist between engineering drawings, purchase orders, and this handbook, engineering drawings will be the primary source of quality requirements; purchase orders will be secondary, followed by this handbook.

General Expectations

It is the responsibility of the supplier to understand and ensure compliance with this manual and the quality policies, procedures, work instructions, and purchase orders of Robertshaw and its business groups.

Preference will be given to suppliers with a quality system certified to a recognized national or international standard such as ISO 9001, TS 16949, AS 9100, etc.

Suppliers are expected to review their performance information located in the Supplier Performance Portal on a regular basis and take action as appropriate on corrective action requests and scorecard ratings that do not meet goal levels.

Purchasing Process and Supplier Selection

Suppliers are selected after evaluation of their quality system, manufacturing process, and business policy. The supplier's expertise and experience with value engineering, concurrent design, and rapid prototyping/cycle time reduction as well as willingness to participate on joint teams will be key factors in the supplier selection process. Robertshaw reserves the right to perform a site audit of any or all of these areas as it deems necessary. Audits conducted by a third party may also be accepted when appropriate. When instances occur which warrant the review of a subcontractor's process or control system, the supplier is expected to coordinate such a review.

Supplier Profile and Self-Assessment

Potential suppliers are required to provide answers to a Supplier Profile and Self-Assessment Questionnaire that includes but is not limited to: General Company Information, Financial Information, Customer Information, Production Capacity, Equipment Processes, Product & Sales, Quality Management System information and Environmental, Health and Safety Programs.

Supplier On-Site Assessment

Once the self-assessment is complete, a Robertshaw representative may conduct an on-site audit. The site audit will follow the same format as the Supplier Profile and Self-Assessment.

Following an acceptable assessment of the supplier's quality system, manufacturing process, business policy and any other factors as defined by Robertshaw, the supplier is added to the Global Approved Supplier List (ASL) contained within the Supplier Performance Portal.

There are four classifications associated with suppliers on the ASL, and suppliers can be moved to a new classification dependent on performance.

Alliance Supplier

- Brings additional value in engineering and technical support
- Committed to process control and Quality-Cost-Delivery-Service excellence
- Shares financial/cost structure
- Provides NPI and tooling support
- Quote all business in commodity portfolio

Certified Supplier

- Proven historical performance
- Cost competitive
- Predictable performance based on effective and sustainable process controls
- Preferred source when multiple sources exist
- Used for multiple quotes and limited packages

New/Cautious Supplier

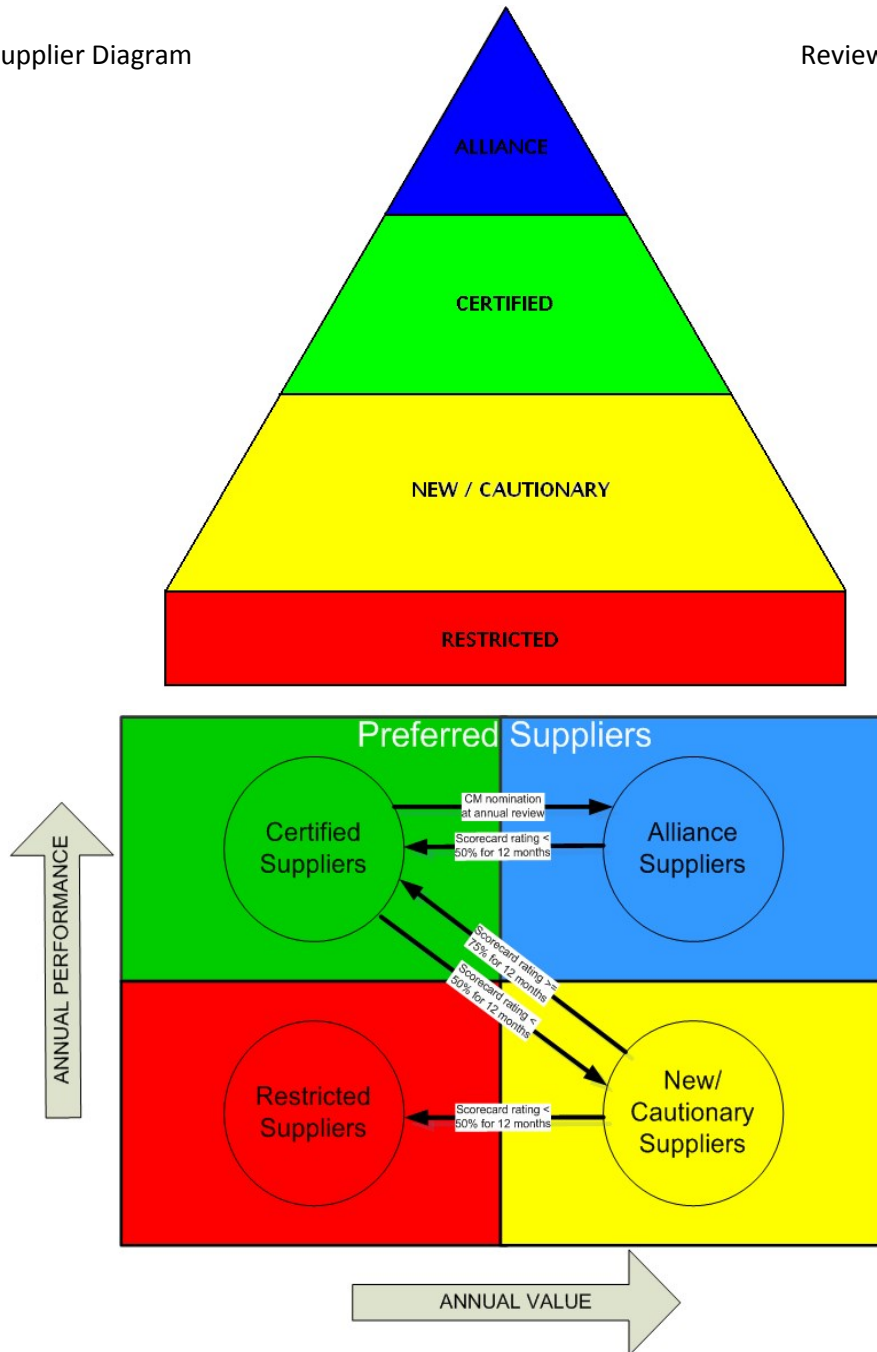
- Default level for new suppliers
- Focus on material and performance controls through various forms of inspection and evaluation
- Commodity Manager determines if new business or quotes are received

Restricted Supplier

- Invest resources and develop supplier to New/Cautious or develop an exit strategy.
- Niche/Specialty, Customer Approved (Mandated), Disqualified

Supplier Diagram

Review Process



Recognized third party quality system certifications such as ISO 9001, ISO/TS-16949, AS9100, etc. will be accepted but will not preclude on-site visits by Robertshaw representatives.

Non-Disclosure Agreement (NDA)

Before Robertshaw print specifications and production requirements are given to a potential supplier, the supplier must have a current signed (within the last two years) Non-Disclosure Agreement (NDA) on file.

RFQ/Quoting Process

The Commodity Manager or Site Buyer sends a RFQ package to supplier and reviews completed return package for acceptable quotation. The Non-disclosure agreement must be in place prior to Robertshaw submitting an initial RFQ package. Supplier quotes must acknowledge acceptance of Robertshaw Terms and Conditions or provide a detailed list of exceptions.

Communication

The Commodity Manager and/or Site Buyer, in conjunction with the business unit and supplier, will define the appropriate communication channel at the commencement of the agreement.

Commodity Teams

Commodity teams will handle the majority of Robertshaw purchasing activities. As the name implies, the commodity team is a group of professionals focused on a particular commodity such as springs, steel, or electronic components. The team is typically cross functional including purchasing, quality, engineering, manufacturing, financial, transportation, and legal expertise. The commodity team determines the strategy for their particular commodity using several tools.

Potential Supplier Identification

The Commodity Manager is to apply knowledge of the industry, input from Robertshaw resources and past performance data when identifying potential suppliers. Where applicable, suppliers must be RoHS and/or REACH compliant. Automotive suppliers must be certified to ISO/TS16949. The Commodity Manager is responsible for negotiating the contract as the representative of Robertshaw.

Supplier Agreement

The Commodity Manager is responsible for issuing and approving the supplier agreement.

Consignment Agreement

The Commodity Manager is responsible for issuing and approving the consignment agreement (if applicable).

Quality Systems

A solid systems approach to quality management is essential to achieve the level of quality integrity required by today's demanding customers. The ability of a supplier to develop and maintain a quality system capable of meeting Robertshaw' requirements is an essential factor in qualifying and continuing as a Robertshaw supplier.

Every supplier will have a quality system that effectively prevents the shipment of noncompliant material. The quality system should be based on an industry recognized standard (i.e.: ISO9001, TS16949, etc.). Robertshaw shall be afforded the right to evaluate and monitor the supplier's quality system as needed. Suppliers that currently meet recognized industry standards but have a history of poor performance or chronic quality issues will be monitored and assessed to ensure proper improvement.

Ongoing supplier development is accomplished by monitoring supplier performance of product

DPPM, On-Time Delivery, Corrective Action Response Time, Cost Reductions and Inventory Turns with a web based tool known as the Supplier Performance Portal. Failing to meet any of these performance requirements may cause the supplier to be subject to disqualification for additional business or removal from the Global Approved Supplier List.

Advanced Product Quality Planning Process (APQP)

Robertshaw requires that their supply base utilize the APQP process in order to guarantee a conforming product once production has begun. The APQP process facilitates the development of a product that will satisfy the customer and allows for continuous improvement by using a knowledge database available with experience and lessons-learned.

Robertshaw site Quality Assurance may make changes to APQP requirements with the approval of the site Quality Manager or division Manager of Supplier Quality & Development.

Team Identification

Before the process can begin, the supplier must organize a cross-functional team that includes, but is not limited to, the following functions:

- Engineering
- Manufacturing
- Materials
- Purchasing
- Quality
- Sales
- Sub-contractors
- Customers

Scope Definition

The supplier team must begin with defining the customer needs, expectations, and requirements. The following should be identified within the scope:

- Project Team Leader – to oversee the planning process
- Roles and responsibilities definition
- Identification of internal and external customers
- Select and define all the support needed for the team (individuals, sub-contractors, etc.)
- Understand customer expectations
- Assess feasibility of the proposed design, performance requirements and manufacturing process

APQP Process

The Robertshaw APQP matrix details the requirements by stage for suppliers. It is critical that each stage have both customer and sub-supplier input. Deliverables should be reviewed with Robertshaw to ensure complete customer satisfaction with the product. Robertshaw has final approval on all requirements in the APQP Process. See the APQP matrix at the end of this handbook.

Manufacturing Process

Robertshaw is an advocate of the strategies, tactics and tools required to achieve Six Sigma product designs and manufacturing processes including supplier processes. Robertshaw needs suppliers who are

experts in their manufacturing specialty and who are also willing to learn new process improvement methods to support long term business growth.

Some manufacturing requirements include, but are not limited to:

- Supplier will create a manufacturing plan for all production tooling, assembly equipment, service, and part quality. This must be documented, submitted, and approved by the appropriate Robertshaw supplier quality representative when required.
- Supplier will create a production control plan that will include provisions for early production containment. This must be documented, submitted, and approved by the appropriate Robertshaw supplier quality representative when required.
- Supplier will track timing of production assembly equipment.
- Supplier will develop a process flow diagram/plant layout and work cell layout for the product.
- Supplier will develop a process control plan that includes monitoring of all product and process special characteristics as defined and agreed upon.
- Supplier will develop Process Failure Mode and Effects Analysis (PFMEA) that meets Robertshaw requirements.
- For all parts requiring appearance approval, the supplier is responsible for submitting and achieving part appearance as part of the Production Part Approval Process (PPAP).
- Supplier will interface with the Robertshaw manufacturing plant to assure that parts meet production and product engineering drawing standards.
- Supplier is responsible for the manufacture and delivery of parts per timing required to meet all delivery requirements.
- Supplier is responsible for providing support at the Robertshaw manufacturing plant during the launch of production as required by the plant.

Business Policy

Corporate Social Responsibility

Corporate social responsibility refers to a range of fundamentals that organizations are expected to acknowledge and to reflect in their actions. It includes – but is not limited to – respecting human rights, fair treatment of the workforce, customers and suppliers, being good corporate citizens of the communities in which they operate and conservation of the natural environment. These fundamentals are seen as not only morally and ethically desirable ends in themselves, but also as key drivers to ensure that society will allow the organization to survive in the long term. Potential suppliers are required to provide evidence that these practices are being adhered to by the facility conducting business with Robertshaw.

Business Continuity Plan

All suppliers are expected to develop a documented business continuity plan that enables the supplier to continue to perform critical functions and/or provide services in the event of an unexpected interruption. These plans should be made available to Robertshaw upon request.

Environmental

All purchased materials used in part manufacture shall satisfy current government and safety constraints on restricted, toxic and hazardous materials; as well as environmental, electrical and electromagnetic considerations applicable to the country of manufacture and sale. If applicable, purchased materials must conform to the Restriction of Hazardous Substances (RoHS) and/or

Registration, Evaluation, Authorization and Restrictions of Chemicals (REACH) requirements. Suppliers must be prepared to provide supporting evidence of conformance.

Supplier Quality Expectations

Robertshaw purchases a large percentage of the material, components, and subassemblies used in its products. The quality of these purchased items greatly influences the performance and reputation of Robertshaw products in the marketplace as well as Robertshaw Controls manufacturing productivity. Long term success requires suppliers who take responsibility for the quality of their product and are committed to joining Robertshaw as partners in continuous improvement.

Potential Late Deliveries

Suppliers are at all times expected to meet 100% on-time delivery expectations. Under unforeseeable circumstances, suppliers are expected to communicate potential late deliveries and deviations to the appropriate purchasing personnel as soon as the supplier is aware of the potential late delivery or deviation. This will enable Robertshaw to minimize the schedule impact and to determine the appropriate course of action with the Robertshaw customer. This communication can initially be verbal and should be followed up in writing or via a comment mechanism such as the Plex Supplier Portal or the Supply Visualization website.

Failing to meet delivery requirements may result in a charge-back to the supplier per agreement with Robertshaw:

- Purchase of material from an alternate source.
- Premium freight due to:
 - Supplier is behind schedule (past due)
 - Supplier did not allow enough transit time for the shipment to be received on time.
 - More than authorized number of shipments per week and/or month
 - Extra shipment due to rejects or supplier discrepancy or returns
 - Failing to use designated an appointed Robertshaw carrier (when applicable)

Proprietary Information

Robertshaw information such as drawings, materials used, technology, customers, and financial information should be considered proprietary information. As such, the supplier will not divulge this information to other parties. In particular, drawings of parts designed by Robertshaw are proprietary and as such, the supplier should not manufacture parts from these drawings for any party other than Robertshaw. A Non-Disclosure Agreement must be signed by the supplier prior to receiving any proprietary information and a minimum of every two years thereafter.

Drawing and Engineering Specifications

Suppliers are responsible for reviewing and complying with all drawing and specification requirements. If any questionable areas appear to exist, the supplier must contact Robertshaw for clarification. Drawing clarifications are to be resolved prior to production part manufacture, and in no case can the engineering drawings and specifications be superseded by any informal agreement.

All engineering and manufacturing information, including, but not limited to, build and test authorization documents, reports, drawings/data, specifications, and other supporting data, shall be retained by the supplier for the part and/or tools.

Product Development and Design

Suppliers are encouraged to participate in Robertshaw design and improvement efforts when requested to do so. A supplier may be requested to attend design reviews as experts in a particular commodity, to work with Robertshaw teams to concurrently design new products, and to participate with teams working on value engineering/value analysis to optimize product total cost. Robertshaw' goal is to optimize total cost and to reduce the new product development cycle and lead time to the customer.

Robertshaw Tooling

Robertshaw owned tooling requirements are covered under a bailment agreement if applicable.

Innovation and Creativity

Innovation is one of the core processes that every organization must nurture in order to retain its viability. Not only is it critical that businesses innovate and implement products and services in highly profitable ways, but also in the infrastructure of people and processes that enable a business to compete and win. Robertshaw partners with suppliers who take such initiative and provide value to the supply chain.

How do suppliers engage in the process?

- Informal discussions and contacts
- Supplier forums and showcases
- Business reviews
- On-site audits and Value Analysis/Value Engineering (VA/VE) activities

What is a well thought out idea?

- Clear value for supplier, Robertshaw and our customers
- Total cost savings
- Unique feature that meets a consumer need
- Differentiating technology
- Gut Level assessment of business case
- Understanding of technical requirements
- Understanding of technical issues
- Proposed plan and schedule for next steps

Product Quality Expectations

Suppliers are fully responsible for the quality of their products and are not to rely on Robertshaw to determine the quality level of their material or service. Use of sampling techniques is not intended to imply that defective material at any level is acceptable. The documentation of any defect from Robertshaw via a Supplier Corrective Action Request (SCAR) requires that an investigation of the product defect root cause and control system adequacy be initiated. Corrective action must be implemented accordingly. Elapsed time between delivery to Robertshaw and notification to the supplier of any defect(s) does not relieve supplier of product quality responsibility.

Quality Performance Records

Internal quality performance records which show the results of quality related activities to ensure compliance with Robertshaw specifications and quality requirements shall be kept on file at the supplier location and made available upon request. Examples include inspection, product validation, test data, control charts, DPPM data, pareto charts, machine strip charts, etc. Records are to be retained for a minimum of 5 years unless notification and acknowledgement is confirmed by Robertshaw.

The following activities are required to guarantee the quality of the product being delivered:

- Supplier will provide in-plant technical support at the request of Robertshaw for a sustained time period, until all quality targets are achieved or as determined by Robertshaw personnel.
- Supplier will respond with root cause analysis, and containment plans for all quality concerns identified with regard to the product.
- It is expected that the supplier will complete all PPAP requirements prior to PPAP submission date. Deviations to this plan must be documented and approved through Robertshaw Purchasing and Program Management.
- The supplier shall supply a Control Plan (prototype, pre-production & production) formatted in the latest version of the AIAG Advanced Product Quality Planning and Control Plan Reference Manual. The Control Plan shall reference a process flow chart that depicts each manufacturing step and inspection/test control point from receipt of raw materials through delivery of finished components. The Control Plan must reference detailed inspection/gage/test instructions that include the following for each inspection/test control point:
 - Inspection/test point identification
 - Product engineering change level
 - Inspection/test procedure
 - Characteristic inspected/tested
 - Poke Yoke must be in place for all value-added content and is the responsibility of the supplier.
 - Sample size/frequency
 - Ongoing capability of critical/key characteristics
 - Tolerance/standard/specification
 - Reaction plans detailing if out of control or out of specification conditions are encountered
 - Date when instructions were issued
 - Signature of the individual approving the instructions
- The supplier shall ensure that all jigs, fixtures, tooling masters, templates, patterns, etc. are design approved using Robertshaw guidelines where available and statistically qualified or proven before use. Periodically, and when changes occur, such items shall be re-qualified to ensure the capability of producing the required results. The extent and frequency of re-qualification shall be defined by the Robertshaw production facility Supplier Quality Engineer or process Quality Engineer in conjunction with the supplier.
- The supplier must provide parts capable of being produced by stabilized processes and repeatable part manufacturability to the quoted cycle times.
- If required by Robertshaw, the supplier must implement and maintain a Robertshaw approved quality wall/containment system prior to program launch or earlier. The quality wall/containment system is to be retained for the time period specified by Robertshaw.

Designated Critical-to Quality Characteristics

Certain components or processes have designated characteristics that can influence safety, fit, or function of the final product. Those characteristics must be identified by Robertshaw and/or the supplier and should be included on the drawings and specifications. The supplier's control plan must show quality control points for these characteristics.

If required, recertification of capability studies on critical/key characteristics are to be submitted to the appropriate Robertshaw supplier quality representative. Capability requirements will be defined on the Robertshaw drawing or through other documentation from the Robertshaw manufacturing plant.

Supplier Design Control

If the design of the product to be supplied is controlled by the supplier, sufficient technical documentation shall be maintained by the supplier and provided to Robertshaw to verify the integrity of the product it receives.

Requirements for design support are as follows:

- The supplier will provide completed part data in the required application based off Robertshaw requirements when applicable.
- The supplier will provide completed detailed drawings w/GD&T when applicable.
- The supplier is responsible for completing the Design Failure Modes Effects and Analysis (DFMEA) if they are design responsible.
- The supplier is responsible for notifying Robertshaw of potential failure modes related to the end-product.
- The supplier is responsible for defining the failure modes within the supplier's facility that could possibly affect the end product.

Special Processes

Special processes refer to processes from which the results cannot be fully verified by subsequent inspection and testing of the product and where processing deficiencies may become apparent only after the product is in use. Among others, these include brazing, deburring, welding, heat treating, plating, and painting.

Processes used to manufacture heat treated and plated parts, particularly fasteners, require special attention and control. Likewise, the parts produced from these processes require special inspection. Therefore, it is required that a supplier of heat treated or plated parts submit the following to Robertshaw engineering, purchasing or plant quality prior to production for approval:

- Source
- Process
- Process Flow Chart
- Process Control Plan
- Lot Control/Traceability Plan

These documents are required for review and approval as part of the PPAP process. This activity is necessary in order to properly evaluate special process and their potential failure modes.

The following should be documented for each special process:

- Definition of process parameters
- Monitoring and verification of compliance with these parameters

- Qualification of personnel
- Qualification of equipment
- Appropriate test methods and guidelines as required (example: ASTM B830, B850 & F1940)

Changes in heat treating, plating, or other special processes must be resubmitted to Robertshaw for approval. A change in sourcing of heat treating and plating is considered a process change and should be documented with a Supplier Change Request Form.

Product/Process Change Management

The following section details the requirements necessary to notify Robertshaw of any product and/or process changes. This item is critical to the traceability of not only the subcomponents of Robertshaw product, but also the criticality of any effects of these changes may have at the Robertshaw site.

The supplier must notify Robertshaw for any of the following reasons (permanent or temporary changes):

- Change in manufacturing location.
- Change in supplier part number.
- Change in sub-supplier, component part, assembly or material source.
- Supplier proposed engineering change.
- Change in supplier shipping location.
- Tool refurbishment and/or replacement.
- Alternate material to be used.
- Change in part process.
- Change in location of sub-supplier.
- Change or move to new/alternate equipment.
- Use of unique machinery/equipment.

Any other changes in product or process not listed **MUST** be communicated to Robertshaw. Dependent on the change, whether stated above or designated as "other", must be requalified. This qualification will include at minimum a level 1 PPAP. The extent and requirements of PPAP are to be left at the discretion of the Robertshaw plant SQE/QE and/or Robertshaw Purchasing.

Any deviations from the approved engineering documentation or processes approved in qualification **require specific written approval from Robertshaw. DO NOT** make changes to the process, material, specifications, or manufacturing location without notifying Robertshaw and obtaining an approved deviation in advance. Verbal approval is not acceptable. Depending on the severity of the issue, uncommunicated changes could result in charge backs and/or the termination of your status as a supplier to Robertshaw.

Extension of Responsibility to Third Party

The supplier is responsible for extending the requirements of this document to their suppliers. Example: If a supplier provides a screw from a third party to Robertshaw, and the third party changes supply, the supplier is responsible for guaranteeing the quality process including notifying Robertshaw of the change and providing proper Quality Assurance documentation as determined by Robertshaw.

Production Part Approval Process (PPAP)

The supplier must meet the requirements for production part approval prior to first shipment.

Submission requirements are detailed in the Production Part Approval Process (PPAP) Requirements procedure and can be found on the Supplier Performance Portal.

The supplier is expected to submit a PPAP based of the current edition of the AIAG PPAP Manual. The following list details all the requirements (not all are necessarily applicable) for PPAP:

1. Design Record – Part prints, drawing and any other specifications required.
2. Authorized Engineering Change Documents – Documents and history of engineering changes.
3. Customer Engineering Approval
4. Design Failure Mode and Effects Analysis (Design FMEA)
5. Process Flow Diagrams: Manufacturing Flow, Plant Layout, and Work Cell Layout.
6. Process Failure Mode and Effects Analysis (Process PFMEA)
7. Control Plan
8. Measurement Systems Analysis—Gage R&R
9. Dimensional test results
10. Records of material and/or performance test results
11. Initial process studies – capability studies on critical dimensions
12. Qualified laboratory documentation
13. Appearance Approval Report (AAR)
14. Sample production parts
15. Master Sample
16. Checking aids – 3rd party certifications of all gages and tools
17. Customer specific requirements
18. Part Submission Warrant

The default level of PPAP is a level 3. Other levels may be used with the approval of the site Quality Manager or division Manager of Supplier Quality & Development.

Material/Test Certifications

When requested, material certifications for both the supplier and any sub-suppliers must accompany the supplied products. If a deviation is required, a formal request for deviation of the material must be submitted and approved in writing prior to shipment of product.

To ensure our customers receive only the highest quality product, Robertshaw has developed a material verification process that verifies supplied material conformance to specifications. Robertshaw quality assurance personnel will work with suppliers to implement one of the following methods of material verification:

- Receipt and evaluation of statistical data provided by the supplier
- Second or third party assessments of supplier sites
- Receiving inspection and/or testing
- Part evaluation by an accredited laboratory

When requested, suppliers are expected to provide statistical data and/or allow annual assessments at their facilities. Suppliers must maintain Cpk levels as defined by the Robertshaw print and/or manufacturing facility. Any exceptions must be reviewed and approved by Robertshaw.

Any failures in testing, whether performance or material related, must be followed up with a corrective action and root cause analysis.

Measurement of Conformance to Specification

Each supplier is responsible for performing, or having performed the inspection tests required to substantiate that prototype material/parts conform to print specifications. All dimensional characteristics on the print must be measured or otherwise verified.

In situations where the supplier is not provided a detailed print by Robertshaw the supplier must create a print which reflects the component dimensions. In situations where suppliers develop a detailed drawing, the cost of the service should be separately itemized on quotations and invoices.

If a print provided by Robertshaw is not sufficiently detailed, the supplier must request Robertshaw have the print updated to include necessary information. Suppliers must ensure that all assumed dimensions are recorded on the print submitted with the prototype parts.

Verification of Purchased Part

When specified on the purchase order, Robertshaw shall be afforded the right to verify purchased product at the supplier premises. Verification and the method of product release will be specified on the purchase order.

Customer Verification of Subcontractor Premises

When specified on the purchase order, Robertshaw' customers shall be afforded the right to verify subcontracted product at the supplier premises. Verification and the method of product release will be specified on the purchase order.

Replacement of Non-Conforming Material

The supplier is responsible for repairing or replacing non-conforming material with material satisfying specifications in time to meet Robertshaw delivery requirements per documented agreement with Robertshaw. In some cases, material urgently required to meet customer schedules may be reworked by Robertshaw at the supplier's expense.

Robertshaw maintains the right to reject, in whole or in part, any nonconforming parts. Based on agreement with the supplier, Robertshaw may expect the supplier to immediately repair or replace the nonconforming parts without any cost and/or delivery time impacts to Robertshaw.

Some inclusions to the process are as follows:

- Any tests and/or controls relating to any renewed or replaced parts shall, if so required by Robertshaw, be repeated at supplier's cost.
- Should Robertshaw elect to reject non-conforming parts, such parts will be held by Robertshaw for disposal in accordance with supplier's instructions.

When the root causes of the incorrect parts are identified and agreed as coming from Supplier and as a consequence of the above, Robertshaw may request that the supplier agree to reimburse Robertshaw for any and all repair or replacement costs including but not limited to:

- Costs associated with internal or third party sort, scrap, rework or expedited delivery.
- The costs incurred in the downstream operations or at the customer:
 - Substitute parts
 - Rejects of semi-finished and/or completed products
 - Machine downtime costs (Robertshaw and/or IC Customer)
 - Customer sort, scrap and/or rework costs

- Customer or Robertshaw recall or field return costs

These costs will be documented and supplier agreement obtained prior to debits being taken.

Material Control

Robertshaw has multiple means for material control including but not limited to consignment and kanban techniques. Suppliers are expected to work with each Robertshaw location to implement the material control techniques that are appropriate for the product.

Identification and Traceability

If specific part identification/tagging instructions are not identified on the drawing or the purchase order, the supplier should at a minimum include the part number and purchase order number on the part identification tag.

As applicable, the supplier is required to establish a lot traceability system that tracks components from raw material through inspection and test operations, including rework and sub-supplier procedures.

All required paperwork such as material certifications, inspection reports, etc. shall be included with the shipment.

Supplier Performance and Monitoring

Ongoing supplier development is accomplished by monitoring supplier performance of product quality (DPPM), on-time delivery, corrective action response time, cost reductions and inventory turns with a web based tool known as the Supplier Performance Portal.

Any supplier failing to meet any of these performance requirements may be subject to reduced business or removal from the Global Approved Supplier List.

Request for Corrective Action

Robertshaw plant quality assurance initiates a Supplier Corrective Action Report (SCAR) for any non-conformances associated with supplied product using the Robertshaw Supplier Performance Portal. The SCAR will be described to the supplier by the following defect type(s) along with quantities involved and supporting data:

- Attribute
- Dimensional
- Functional
- Delivery (Line Down, Late Delivery, Quantity Discrepancies)
- Other

Containment Action

Containment action is expected to be initiated by the supplier and communicated to Robertshaw within 24 hours utilizing the Robertshaw Supplier Performance Portal. Containment action may include a request from the Robertshaw plant for the supplier to institute redundant inspection in addition to normal controls (automotive CS levels).

Root Cause Analysis and Corrective Action Plan

The supplier is expected to complete a detailed corrective action implementation plan and root cause analysis, along with any supporting data, utilizing the Robertshaw Supplier Performance Portal.

Expected response time is as follows:

Containment: 24 hours

Root Cause and Corrective Action response: 7 days

SCAR completion including corrective action and verification of effectiveness: 30 days

SCAR response is tracked on the Supplier Performance Portal and suppliers are rated for compliance to required time frames as part of their scorecard.

Suppliers without internet access are expected to respond with hard copy documentation received physically by the Supplier Quality Engineer utilizing either fax or mail within the same date requirements.

SCAR Defect Quantity Adjustment

SCAR defect quantities will be adjusted as follows.

1. If the entire order/lot is rejected and returned to the supplier, the entire lot will be counted as defective.
2. If an order/lot is rejected and the supplier either performs the sort at the Robertshaw plant or pays for a third party to do so, the SCAR will be adjusted to the actual defect quantity found. The supplier is responsible for ensuring that the sort data is provided to the appropriate Robertshaw plant.
3. If an order/lot is rejected and due to immediate need is sorted by Robertshaw personnel:
 - a. If the DPPM of the order/lot after sort is 250 or less, the SCAR will be adjusted to the actual defect quantity found.
 - b. If the DPPM if the order/lot after sort is greater than 250, the entire order/lot will be counted as defective.
 - c. The supplier is responsible for the cost of the sort. Sort costs will be communicated to the supplier prior to any debit being taken.

Defective Parts Per Million (DPPM)

The number of defective parts shipped by the Supplier will be calculated as DPPM (number of defective parts received by Robertshaw from the supplier divided by the number of parts shipped by the supplier for that time period multiplied by 1,000,000) and monitored in the Supplier Performance Portal. The Supplier Performance Portal shows performance as part of the supplier scorecard. **Under no circumstances are suppliers to assume that DPPM goal (green) levels allow for shipment of defective product or non-response to a containment and/or corrective action request. Zero defects is the required quality level.**

DPPM higher than the goal (green level) is the level at which 100% containment is required on shipments until the defect is corrected.

Cost Reductions and Improvement Performance

Suppliers are expected to recommend both product and process improvements to reduce total costs. Robertshaw must receive timely notification of such changes to assess any impact to the final product

functionality. The supplier should completely explain the extent of the improvement and the associated cost reduction. Robertshaw Supply Chain will aggressively pursue product/process improvements to reduce costs. Supplier performance for cost reduction and improvement is tracked and monitored with the Robertshaw Supplier Performance Portal. Individual cost reduction targets will be defined by commodity type.

Inventory Turns Performance

Robertshaw has a lean manufacturing philosophy and may use Just-in-time (JIT), kanban techniques or consignment to reduce inventory to a minimum. These quantities may be adjusted during the period of the agreement. Performance will be based on individual supplier and commodity targets set by Robertshaw. Supplier performance is tracked and monitored with the Robertshaw Supplier Performance Portal. Individual inventory turns targets will be defined by commodity type.

On-Time Delivery Performance

Any delivery issue that creates a line down, late delivery/stock out or quantity discrepancy will be captured and monitored in the Robertshaw Supplier Performance Portal. A SCAR is issued when the supplier is 100% responsible for the material or delivery situation.

Supplier Development

Supplier development activities within Robertshaw allow us to work closely with our suppliers and assist in driving their improvement efforts. Supplier development initiatives focus on the following:

- Improving product quality (DPPM)
- Improving supplier delivery
- Reducing costs
- Improving process control
- Improving quality systems
- Improving Supply Chain effectiveness

Mechanisms that may be used by Robertshaw to assist suppliers in driving improvement include Supplier Improvement Focus meetings, Supplier Development Kaizen events and Business Reviews.

Supplier Improvement Focus (SIF) Meetings

Supplier Improvement Focus (SIF) meetings are led by Robertshaw supplier quality personnel and held with each Robertshaw manufacturing plant on a semi-annual basis. Suppliers are invited based on quality, delivery or cost performance below Robertshaw' goals.

SIF is a two-way process that includes a review of performance, action taken on specific issues, systemic improvements made to prevent future issues, and any additional action items assigned to either the supplier or Robertshaw as determined during the meeting.

Supplier Development Kaizen Events

A Supplier Development kaizen event is a cross-functional team event, held at the supplier's facility and coordinated by a cross-functional Robertshaw team working in conjunction with the supplier's personnel. These events have specific goals related to process changes for quality, delivery or cost improvement.

Business Reviews

Business reviews are conducted on a regular basis with top strategic suppliers to review goals and supplier performance against those goals.

Private Label (Finished Product) Supplier Expectations

At its discretion, Robertshaw may waive the PPAP provision for private label suppliers of finished product. In its place the supplier will be requested to provide validation test data, manufacturing control plans and/or product samples.

Distributor Expectations

The ISO9001 and TS16949 standards are written predominantly for manufacturing. Although the majority of elements apply to a distributor, experience has highlighted the need to define the requirements and responsibilities expected of a Robertshaw distributor.

PPAP Provision

PPAP is required by Robertshaw, and as such distributors must be able to support the flow of information. Therefore, the main role of a distributor relating to a PPAP request or submission is:

- Communication
- Data Provision
- Sample Provision

The OEM is responsible for notification of changes that will initiate a PPAP submission. The distributor must react to the OEM's notification and forward this to all Robertshaw business units who are contracted to purchase the affected part or series.

On request for a PPAP submission the distributor must communicate the exact requirements to the OEM and obtain the necessary data and samples. These must be supplied to Robertshaw, utilizing the correct forms, in a timely manner. This documentation must include the name of the sub-supplier manufacturing the product for the distributor.

Control Plans for Distribution

Controls Plan requests to distribution suppliers will originate at the discretion and responsibility, as needed, of the individual Robertshaw site.

Distribution Changes

A distributor must complete a Supplier Change Request Form in the following situations:

- Sales office and/or warehouse location are changed,
- Major changes to the warehouse operation,
- Labeling requirements are changed, Packaging requirements are changed, Carriers are changed.

Typical items required from the distributor are, but are not limited to:

- A detailed plan
- A contingency plan
- Samples of labels
- Samples of packaging
- Audit results referring to the carrier

Revision History

Revision History

Rev F

10/15/2015

Changed to Robertshaw

Approvals

Jerry Hein

Global Supplier Handbook Rev F

10/15/2015

APQP Process

APQP Element	Element Description	Deliverables
1.	Plan and Define Program	Reliability and Quality Goals
	Determination of customer needs and expectations in order to plan and define a quality product.	Preliminary Bill of Materials
		Preliminary List of Special Product and Process
		Preliminary Process Flow
		Product Assurance Plan
		Management Support Plan
2.	Product Design and Development	Design Review with Robertshaw
	The planning process during which design features and characteristics are developed into near final form.	Prototype Control Plan
		Drawings
		Specifications
		New Equipment List
		Facilities Requirements
		Special Product and Product Characteristics
		Gage/Test Equipment Requirements
		Team Feasibility
3.	Process Design and Development	Packaging Standards
	The process of developing a manufacturing system and its related control plans to achieve a quality product.	Quality System Review with Robertshaw
		Process Flow Chart
		Work Cell Layout
		Characteristics Matrix
		Process Failure Mode and Effects Analysis (PFMEA)
		Pre-Launch Control Plan
		Process Instructions
		Process Parameters
		MSA Study (Gage RR)
		Preliminary Process Capability
4.	Product and Process Validation	Production Trial Run Conducted (PTR)
	The validation of the manufacturing process through an evaluation of a production trial run.	Measurement Systems Evaluation
		Preliminary Process Capability
		Production Validation Testing
		Packaging Evaluation
		Production Control Plan
		PPAP
5.	Feedback, Assessment, and Corrective Action	Control Charts
	The evaluation of outputs from the manufacturing process to identify common and special causes of variation. There is also an evaluation of the effectiveness of the quality planning through data collection.	Corrective Action Reports
		Root Cause Analysis and Supporting Data
		Customer Satisfaction Data
		Delivery Data