CURTISS-WRIGHT

Industrial Division

Supplier Quality Manual

CURTISS-WRIGHT

Curtiss-Wright is a worldwide leader in the Design, Manufacturing and Sales of Industrial Controls.

First Edition | January 2018

CURTISS-WRIGHT

Curtiss-Wright utilizes rigorous quality processes internally and with our supplier partners to ensure we continue to provide product that will deliver the quality, reliability, and durability our customers have grown to expect.

Curtiss-Wright relies on the cooperation and support of our supply partners. We recognize that our suppliers are vital contributors towards our ultimate success, and strive to build long-term, mutually beneficial business relationships to achieve specific objectives that enhance our global market position. We expect timely, open and honest communication from our suppliers.

This Supplier Quality Manual applies to all suppliers to Curtiss-Wright. This Manual is applicable to all existing and potential suppliers that provide materials, components, products or services that contribute to, become a part of a finished product provided by Curtiss-Wright, or contribute to the integrity of the quality system through calibration or testing.

This manual has been created to assist our suppliers in understanding the purchasing expectations and quality requirements for products supplied to the Curtiss-Wright. The manual is also a tool to assist Curtiss-Wright complying with the ISO/TS 16949, IATF16949, ISO9001, ISO 14001and to develop our suppliers.

Through implementation and adherence to the standards stated herein, Curtiss-Wright looks forward to a long and mutually beneficial relationship with our suppliers.

TABLE OF CONTENTS

1.0 Purpose

The target of this standard is to synthesize and communicate towards our suppliers the Curtiss-Wright' quality and Transportation requirements to ensure the quality of supplied parts. Included are expectations and references to assist our suppliers in reaching premium supplier status. The document is organized in chapters related to our main processes.

The latest valid version of this Supplier Quality and Transportation Standard can be requested from your purchasing or supplier quality contact as well as any additional information and/or forms needed.

2.0 Scope

Curtiss-Wright relies on the cooperation and support of our supply partners. We recognize that our suppliers are vital contributors towards our ultimate success, and strive to build long-term, mutually beneficial business relationships to achieve specific objectives that enhance our global market position. We expect timely, open and honest communication from our suppliers.

The supplier agrees to participate in Curtiss-Wright's quality and development programs and to comply with all quality requirements and procedures specified by Curtiss-Wright, unless the supplier has an approved written waiver. Representatives from Curtiss-Wright shall have the right to enter the supplier's facility at reasonable times to inspect the facility, goods and materials. Curtiss-Wright's inspection of the goods, whether during manufacture or prior to delivery, shall not constitute acceptance of any work in process or finished goods.

In the event requirements stated in this supplier quality manual conflict with Curtiss-Wright's general terms and conditions, the general terms and conditions will take precedence.

All suppliers are expected to supply goods to Curtiss-Wright with zero defects. All purchased items shall meet all engineering specifications and function with no abnormalities according to intent. Curtiss-Wright has the same quality expectations and requirements for service parts as it does for manufacturing and assembly parts.

This Supplier Quality Manual applies to all suppliers to Curtiss-Wright. This Manual is applicable to all existing and potential suppliers that provide materials, components, products, outside process, or services that contribute to, become a part of a finished product provided by Curtiss-Wright, or contribute to the integrity of the quality system through calibration or testing.

3.0 Vision, Strategy, Curtiss-Wright Policy

3.1 Curtiss-Wright Corporate Vision

Curtiss-Wright will become an integrated, global diversified industrial company that consistently demonstrates top quartile financial performance as compared to its peers and is comprised of segments with: at least $1 billion in sales, critical mass, and businesses and product lines that are in the #1 or #2 positions in their markets.

3.2 Industrial Group Vision / Strategies

Become the world's leading provider of rugged man-machine interfaces and vehicle control systems delivering highly engineered solutions to safety critical applications by providing:

- Customized, highly engineered, reliable products and services
- Outstanding delivery performance and customer support

Cost effective solutions that represent excellent value to our customers

3.3 Curtiss-Wright Quality and Environmental Policy

In order to provide total customer satisfaction, and to operate in an environmentally responsible manner, we are committed to:
Compliance with our Quality and Environmental Management Systems (QMS and EMS), environmental regulations, and other requirements to which the organization subscribes
Prevention of Pollution
Continually improve the effectiveness of our Quality and Environmental Management Systems through establishing and reviewing objectives, targets and management programs.

3.4 Curtiss-Wright Commitment to Quality

Curtiss-Wright is committed to total customer satisfaction and providing quality products and services. Our primary objective is to be a world-class manufacturer through continuous improvement. We encourage open and active participation by all of our associates, stakeholders and suppliers in order to achieve this objective for our external and internal customers.

The quality of our products and services has its origin in our company philosophies and attitudes at Curtiss-Wright…

- Commitment to quality begins with senior-management and is understood at all levels of the corporation.
- Quality assurance represents a management-supported process.
- Quality assurance encompasses not only products, but also processes and systems.
- The major goal is to achieve zero defects in all company activities.
- The quality assurance system includes the requirements defined by ISO 9001:2015, IATF 16949:2016 and ISO14001:2015

Continuous improvement is aimed at all the above activities.

4.0 General Requirements

Supplying Quality Product, Service and Transportation to Curtiss-Wright.

All suppliers must comply with the requirements of this standard. It is intended to provide the necessary direction that will allow suppliers to deliver material to Curtiss-Wright in compliance with our expectations. All deviations shall be approved by an authorized Curtiss-Wright representative prior to delivery of material.

Compliance with the Standard will help Curtiss-Wright reduce costs while providing the necessary direction for our suppliers to economically and efficiently fulfill our production, raw materials and other supply needs.

In this Standard you will find instructions for working with Curtiss-Wright, quality and delivery expectations, how to select a carrier, freight terms, order fulfillment and other important elements related to doing business with Curtiss-Wright.

Curtiss-Wright suppliers shall have a documented quality system that is certified to ISO Standard or provide evidence of compliance to the standard through a third party compliance audit. Proof of compliance shall be maintained and made available upon request.

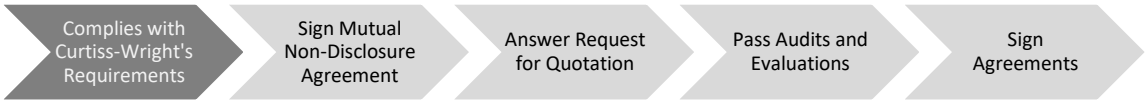
Where Curtiss-Wright identifies IATF16949:2016, ISO9001:2015 and ISO14001:2015 as a quality system requirement the supplier shall provide evidence of compliance to the standard via third party certification or compliance audit. Proof of compliance shall be maintained and made available upon request.

In addition, it is required that our suppliers comply with Curtiss-Wright Code of Ethics (4160-00).

5.0 Supplier Selection, Approval, Development and Performance Management (change this section)

5.1 Sourcing

5.1.1 Awarding Business



5.2 Current Supplier

Prior to award of additional business, Curtiss-Wright will check the supplier's scorecard and recent quality performance (PPM, OTD, Notifications/issues log, quality spills, recent audit scores, financial status and quality certification status, etc.) of the supplier. Depending on these results, Curtiss-Wright may request a further evaluation audit.

5.3 New Supplier

5.3.1 New Supplier Qualification

Curtiss-Wright will identify suppliers based on a specific need for goods or services. A supplier development requirements package, with instructions will be sent to the potential supplier(s) for completion. A supplier development requirements package consists of:

- Supplier Business Survey
- Mutual Non-Disclosure Agreement
- Banking Information and Credit References
- Proof of Insurance
- Conditions of Purchase
- Supplier Quality Standard
- Self-Assessment
- Supplier Audit

Supplier selection is determined through the evaluation of the completed Supplier Development Program Requirements Forms and other supporting documentation as requested by purchasing.

Once a supplier has been evaluated and demonstrates compliance to Curtiss-Wright requirements, the supplier shall be added to the Curtiss-Wright' approved supplier list and segmented as appropriate.

5.3.2 Supporting Documents

The following publications are available from the Automotive Industry Action Group (AIAG). These documents contain information and requirements that are mandatory for suppliers to Curtiss-Wright. The supplier is responsible to ensure they have and adhere to the latest revision document:

- Quality Management Systems Technical Specification IATF16949:2016
- Advanced Product Quality Planning (APQP)
- Potential Failure Modes and Effects Analysis (FMEA) Manual
- Measurements Systems Analysis Reference Manual (MSA)
- Production Part Approval Process (PPAP)
- Statistical Process Control (SPC)
- Applicable Customer Specifications and Requirements (Contact Curtiss-Wright)
- Guidelines for Quality Improvement ISO 9004-4.

5.3.3 Mutual Non-Disclosure Agreement (MNDA)

Prior to the distribution of a Request for Quotation (RFQ), the supplier must have an executed MNDA on file. Curtiss-Wright recognizes that its suppliers may be exposed to data and/or knowledge, which is sensitive in nature. The supplier shall treat all data and/or knowledge in strict confidence and report any intentional or non-intentional breach of confidentiality to Curtiss-Wright' management or executive level personnel immediately.

The MNDA template will be sent by the buyer.

5.3.4 Proof of Insurance

Curtiss-Wright expects all suppliers and any hired subcontractors performing work on-site to have the proper certification(s), permit(s), and proof of insurance.

5.3.5 Quality Audits

Curtiss-Wright may perform its own system and product audits in accordance with IATF 16949:2016 or equivalent standards (ISO 9001:2015, ISO/IEC 17025, IPC, UL), or have such audits performed by a third party when required.

Suppliers will allow access to its facilities upon reasonable request and provide all necessary personnel or other assistance to facilitate auditing of systems and processes by Curtiss-Wright, Curtiss-Wright' customers, or representatives of Curtiss-Wright or Curtiss-Wright' customers.

All suppliers shall provide a legible electronic or faxed copy of its certifications when requested. These certificates, or information related to such certificates, must be resubmitted to Curtiss-Wright within ten (10) days of any change or update related to such certification, where this information is unavailable a documented timing plan shall be submitted to the applicable Curtiss-Wright' buyer. All suppliers are required to immediately notify Curtiss-Wright of any major non-conformance found during any third party audits or if certification status is downgraded or revoked.

5.3.6 Supplier Management Systems Expectations

Suppliers shall have and maintain efficient quality management systems. Where Curtiss-Wright identifies ISO 9001:2015, IATF16949:2016 or ISO14001:2015 as a quality system requirement, the supplier shall provide evidence of certification to the standard via an accredited third party certification body, or the supplier must allow and pass a Curtiss-Wright audit of their quality management system. Proof of compliance shall be maintained and made available upon request.

In addition, it is required that our suppliers comply with the Curtiss-Wright Code of Ethics that can be found at http://www.curtisswright.com/investors/corporate-governance/code-of-conduct/default.aspx

5.3.7 Supplier Performance Assessment

Supplier assessment is of significant importance within the quality assurance system. It is utilized to indicate Supplier quality trends and capabilities. Supplier performance is monitored, evaluated and generally reported at least on a quarterly basis. Typical supplier goals may include:

- Zero (0) Reject Rate
- 100% On Time Delivery
- Premium Freight
- Responsiveness and efficient service related to PPAP submittals, Corrective Action Requests, Freight and Order acknowledgements
- Annual Cost Reductions
- Quality Certifications
- Supplier should have an objective to improve their QMS with an ultimate goal to be certified to IATF 16949:2016.

Suppliers are expected measure their own progress against these goals and report progress upon request. Supplier-specific requirements will be provided as required and compliance with all requirements is mandatory.

5.3.8 Supplier Scorecard

Supplier scorecards contain supplier quality and delivery performance metrics. The supplier metrics tracked on the supplier scorecards include:

- PPM
- Quantity of discrepant parts
- Cost recoveries
- Delivery performance

Scorecards are updated monthly and are emailed to the supplier.

5.3.9 Requests for Quote and Pricing Changes

Information regarding Curtiss-Wright requirements for materials or services will be provided by a request for quotation (RFQ).

It is the Supplier's responsibility to ensure complete understanding and agreement with the RFQ, to submit all offers in both hardcopy and electronic format to the requestor and to ensure that all information in the quotation and any supporting documentation has been clearly communicated and is complete.

Before submitting the quotation, supplier should conduct manufacturing feasibility analysis to make sure that it is enough capability to satisfy requirements.

These offers are the foundation of a long-term, mutually beneficial business relationship. Curtiss-Wright expects all Suppliers to provide a world-class competitive quotation in the time specified.

All quotations require, but are not limited to the following supporting documentation:

- Technical supplier requirements (tooling, special machines, etc.)
- Supporting quality/warranty documentation (PPAP, IMDS, Conflict Minerals, RoHS, REACH etc., SPC)
- Specifications
- Manufacturing Capacity Availability
- Lead times
- Available or actual lot sizing
- Pricing
- Volume discounts
- Payment term discounts

- Certifications of compliance and insurance
- Tooling and Material Cost Breakdowns
- Exceptions to any of the requested requirements

Curtiss-Wright encourages our suppliers to provide detailed quotations allowing Curtiss-Wright to evaluate alternatives in an expedient manner. We require all suppliers to provide all actual costs in addition to pricing. This enables Curtiss-Wright to understand the cost drivers of a given product. Such items may include material costs, labor, overhead and profit. Curtiss-Wright' purchasing will provide cost and tooling worksheets with the request for quotation.

5.3.10 Requirements towards Suppliers' Subcontractor

Curtiss-Wright' expectations are that its suppliers evaluate subcontractors on quality systems, delivery performance, cost management, and continuous improvement.

Curtiss-Wright (and/or Curtiss-Wrights customers) may elect to audit certain critical subcontractors, or assist suppliers in subcontractor audits; however, the suppliers' organization must assume overall responsibility for the performance of its supply base.

Purchasing requires the use of the AIAG Production Part Approval Process (PPAP). Suppliers shall insure its sub-suppliers use the PPAP process. Suppliers have the responsibility for managing PPAP from its sub-suppliers.

Once a part is approved, request for sub-supplier changes that affect fit, form or function shall be directed to Curtiss-Wright' Purchasing, according to the Product Process Change Notification process.

5.3.11 Service Part Requirements

Curtiss-Wright has the same level of requirements for service parts as it does for production parts unless otherwise specified in the purchasing contracts(s).

5.3.12 Final Agreement(s)

Once the supplier has been chosen, all agreements must be signed and returned to Curtiss-Wright including:

- Purchasing agreement
- PPAP agreement (Including approved PPM target)

5.3.13 Results Expectations

The table below defines the targets for all Suppliers. It shall be the goal for all suppliers to meet the targets of these Key Process Indicators:

KPI - Key **P**rocess **I**ndicator	***Target***
PPM – Rejected **P**arts **P**er **M**illion	< 50 PPM
OTD – **O**n-**T**ime **D**elivery	> 97%
Supplier Inventory Turns	Twelve (12) or more
Responsiveness and efficient service related to PPAP submittals, Corrective Action Requests, Freight and Order acknowledgements	100% to Promised Timing
Number of Corrective Action Notifications	< 1
Cost Savings to Target	R (RED) Y (YELLOW) G(GREEN)
Quality/Environmental Certifications	Maintained
Continuous Improvements Activities	Minimum 3 active projects

5.4 Supplier Scorecard

Supplier scorecards contain supplier quality and delivery performance metrics. The supplier metrics tracked on the supplier scorecards include:

- PPM
- Quantity of discrepant parts
- Cost recoveries
- Delivery performance

Scorecards are updated monthly and are emailed to the supplier.

6.0 Parts Development, Approval and Management

6.1 Advanced Product Quality Planning (APQP)

6.1.1 General

Curtiss-Wright utilizes the APQP process for all product and process development. To remain competitive in the markets that it participates in requires continuous improvements to existing product offerings and regular introduction of new products.

Supporting the introduction of new products requires a well-defined and organized process for project planning and launch. Curtiss-Wright organizes all new product introductions into projects.

Suppliers must use an advanced product quality planning process that follows AIAG (Automotive Industries Action Group) to develop common standards and expectations and ensures production readiness with parts that meet all of the product's specifications.

Curtiss-Wright believes that the ultimate quality of delivered parts is determined during the design and development phase of the production process.

Upon issue of any purchase order the supplier must initiate the APQP process establishing a team and team leader to address all program requirements.

6.1.2 APQP Responsibilities

Supplier	Curtiss-Wright
- Develop and organize a cross functional APQP team - Identify key APQP program contact to coordinate the completion of the APQP activities with Curtiss-Wright SQE - Develop and execute an APQP plan for successful launch	- Identify and communicate the Curtiss-Wright project team members to correlate with supplier - Assign SQE who shall coordinate the completion of the APQP activities with the project team

Program requirements are defined in the purchase order and referenced engineering documents. It is the responsibility of the supplier to ensure that APQP reviews are carried out on a regular basis to ensure program timing and requirements are met, in a format agreed to by Curtiss-Wright.

NOTE: It is the suppliers' responsibility to ensure all RFQ, purchase order and referenced documents are completely understood and incorporated into the APQP process to ensure a successful product launch.

PPAP is Mandatory for all Components/Processes

Curtiss-Wright may specify format and frequency of required program updates and/or gate reviews on a case-by-case basis.

NOTE: The AIAG published reference manual for APQP should be used as a guide. Refer to the appendix for applicable checklist

6.1.3 APQP Timing / Reviews

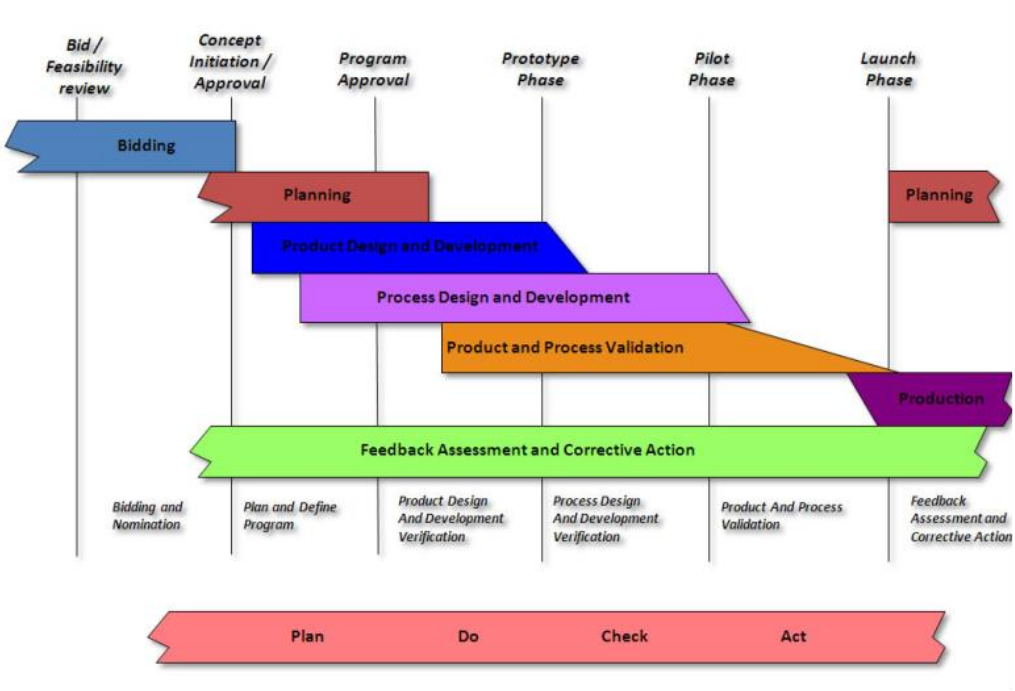
The APQP project plan shall describe how all tasks are related to each other. It shall show and reflect the task relations with the least amount of risk. It must focus on risk and problem avoidance through early problem detection and risk management. This must include regular cross-functional team feedback with the customer.

An example of a typical APQP timing chart is shown below and should be provided upon request.

If there are any questions or additional issues that may arise, please contact the appropriate Curtiss-Wright' Supplier Quality Team.

It is the supplier's responsibility to perform and drive APQP for all components. APQP is tracked in detail by Curtiss-Wright for the overall project and relies on the supplier program tracking detail.

Advance Product/Process Quality Planning Cycle – Typical Detail



6.2 Technical Requirements Review / Acknowledgement

The goal of this preventive process is to minimize the need for late design changes after the PPAP order or tooling order has been placed.

At the beginning of an award for a new program or changes to an existing program a technical review will be scheduled to review the product/process design requirements. This meeting must occur at the earliest stages of the program to ensure the voice of the supplier is acknowledged within the product design.

Once the design has been solidified, a final review shall be completed and a sign-off of supplier review approval shall be completed. This review is documented on the Print/Specification acknowledgement review form (Manufacturing Feasibility Analysis Form) and submitted to the Curtiss-Wright purchasing agent.

6.3 Supplier Tooling Approval Process

6.3.1 Initial Tooling Samples and Submissions

In order to qualify tooling, the supplier must submit the following for Curtiss-Wright review and approval prior to payment being made.

- Supplier Receives Tooling Purchase Order.
- Supplier designs and fabricates tooling (Tooling Drawings established).
- Supplier Samples tool within its manufacturing process and submits to Curtiss-Wright, initial tool samples that are representative of the design intent.
- Supplier must submit a minimum of three (3) pieces from the initial tooling run for review and disposition.
    - Samples shall be serialized by permanent marking or tagging.
    - Curtiss-Wright reserves the right to require additional or different samples.
    - Sample quantities (3) shall be submitted for each cavity, where applicable.
    - First Article Inspection must be performed to Curtiss-Wright' design documents.
    - Samples must be identified, with sample identification numbers that match the first article inspection report.
    - Packaging containing samples must be clearly identified with highly, visible labeling that includes the type of sample submission and identification of the intended recipient
    - Supplier will be notified of acceptance or rejection of submission.
    - No further shipments shall be made to Curtiss-Wright without proper authorization from the purchasing department.

NOTE: Supplier SHALL NOT ship parts without proper deviation approval. Supplier accepts all liability for costs, expenses, fees or losses related to such shipments that fail to meet this requirement.

6.3.2 Initial Tooling Samples and Submissions

To qualify the tooling for the production part approval, the supplier must submit the following for Curtiss-Wright review and approval

- Tooling Drawing
- A copy of all tooling drawings must be submitted for design review and approval prior to tooling kick-off, unless otherwise agreed in writing by an authorized Curtiss-Wright' representative.
- Initial Tooling Approval
- Upon review and approval of all tooling requirements and a successful initial sampling run, Curtiss-Wright will authorize the tooling to be released to run the Production Part Approval Samples. Final tooling approval is given at PPAP

approval. All approvals shall be documented on the tooling review and approval form and authorized by the applicable Curtiss-Wright representative.

- Final Tooling Approval -
- Prior to final payment, the following guidelines but not limited to, must be fulfilled by the supplier:
- Significant production run of design intent capable production components shall be submitted.
- Create a summary list of Curtiss-Wright purchased assets by product part number with description; Curtiss-Wright specified Asset number and tool storage location when not in use. For tooling also indicate the tool size (length, width, height, weight and cavitation)
- Permanently identify all tools and gages, by steel stamping or etching, as indicated on the tooling purchase order, and…
- Take digital pictures of each tool and gage, and submit to procurement / quality to show evidence of the tool completion and identification as required,
- Show a close-up of the permanent ownership marking on the item(s), and…
- Identify the pictures by Curtiss-Wright specified product part number, and…
- If the tool is a die or mold, show the tool open with both sections visible.
- Final PPAP approval from Curtiss-Wright quality contact (Interim approvals require Curtiss-Wright quality/purchasing approval for final tooling payment).
- Final PPAP approval requires IMDS submission and approval.

6.3.3 Tooling Inventory / Audit

The supplier shall supply an annual tooling list that includes the projected tool life and the current number of shots. A tooling audit may be performed with notice by Curtiss-Wright, a Curtiss-Wright' representative and/or customer on each tool that has been issued on a Curtiss-Wright' purchase order.

Note: Tooling must be approved prior to start-up for the production run (PPAP)

Tooling Life and Maintenance

The supplier is responsible for tooling maintenance and the tracking and reporting of tooling life. As soon as expected tool life is at or near 80% or that, a tool is no longer capable of producing product to the specified requirements the supplier shall verbally communicate immediately to the applicable purchasing representative followed by a written summary of the tooling status for disposition. It is preferred of the supplier to be proactive and provide predictive status of all tooling to avoid any production down time.

6.4 Production Part Approval Process (PPAP)

6.4.1 General Requirements

The purpose of the Production Part Approval Process (PPAP) is to assure that all Curtiss-Wright design records and specification requirements are fully understood by the supplier and that the manufacturing process is capable of producing products meeting these requirements during an actual quoted production rate.

PPAP applies to all supplied parts for all new or revised production parts (in advance of shipment) of the first production run. Refer to the latest revision of the AIAG Production Part Approval Process Manual for specific requirements. Customer specific requirements and related documentation is available from the applicable Curtiss-Wright representative.

NOTE: If a supplier is unable to obtain and or has equivalent documentation they shall contact the Curtiss-Wright assigned Supplier Quality Engineer for authorization

Curtiss-Wright requires the AIAG PPAP on all production parts, components, and/or sub-assemblies. Any Curtiss-Wright PPAP requirement differing from the AIAG requirements are addressed in this Guide. Permission to deviate from requirements defined below must be submitted in writing and may only be granted by the Curtiss-Wright assigned Supplier Quality Engineer.

The manufacturing process must meet production intent. If the intent is to use temporary tooling or hand and tool room operations to meet the PPAP schedules, the supplier must notify Curtiss-Wright assigned Supplier Quality Engineer.

The submission level of the PPAP is communicated on the latest revision of the purchase order. Any request for deviation from the requirement must be submitted in writing and may only be approved in writing by the Curtiss-Wright assigned Supplier Quality Engineer.

6.4.2 Submission to Customer

Supplier shall submit for PPAP approval prior to the first production shipment in the following situations unless authorized customer representative has waived this requirement. The organization shall review and update, as necessary, all applicable items in the PPAP file to reflect the production process, regardless of whether or not the customer requests a formal submission. The PPAP file shall contain the name of the authorized customer representative granting the waiver and date.

- A new part or product (i.e. a specific part, material, or color not previously supplied to the customer).
- Correction of a discrepancy on a previously submitted part.
- Engineering change to design records, specifications, or materials for production product/part number(s).
- Additionally, for Bulk Materials:
    - Process technology new to the organization, not previously used for this product.

6.4.3 Sample Inspection and Test

The supplier must perform all inspections and tests necessary to assure that the samples conform to specifications as stated on the Curtiss-Wright drawing. This applies to dimensional specifications, chemical and physical specifications and other requirements specified or referenced on the Curtiss-Wright drawings, Curtiss-Wright purchase order, supplier control plan, or other documentation. All results (and all tolerances) must be recorded, including those of any non-destructive tests using specified forms listed in this Guide. Samples being submitted due to engineering or tooling changes, or re-submitted due to nonconformance on an initial submission must, at a minimum, be inspected and tested for those characteristics that may be affected by the change or correction.

External/commercial/independent laboratory facilities used for inspection, test or calibration services by the supplier shall have a defined laboratory scope that includes the capability to perform the required inspection, test or calibration, and either;

- There shall be evidence that the external laboratory is acceptable to the customer, or
- The laboratory shall be accredited to ISO/IEC 17025 or national equivalent.

6.4.4 Samples Required: Quantity and Type

Unless otherwise instructed, the supplier will randomly sample thirty (30) parts (per cavity on multi-cavity tools) selected from a production run of three hundred (300) pieces. Unless otherwise stated in the purchase order, the supplier will not produce in excess of three hundred (300) pieces until formal release and approval is obtained from Curtiss-Wright. In the event the parts are being produced on multiple cavity or multiple machine stations, the supplier will produce three hundred (300) pieces per cavity or station. If the supplier cannot produce three hundred (300) pieces, a written request to deviate must be submitted to the Curtiss-Wright assigned Supplier Quality Engineer. Quantities below one hundred (100) pieces per cavity or station are unacceptable and requests for such quantities will be denied unless determined and approved otherwise.

NOTE: Where the process does not allow and or a high cost to produce 300 pieces is, determined Curtiss-Wright may authorize a significantly smaller PPAP sample quantity. This shall be documented on the latest revision purchase order.

Samples shall be serialized by permanent marking or tagging. Packaging containing samples must be clearly identified with highly visible labeling that includes the type of sample submission, the identification of the intended recipient and the wording “SAMPLE PARTS, DO NOT STOCK”.

6.4.5 Inspection and Documentation Required

A copy of the part drawing must be numbered to match each characteristic of the measurements recorded on Production Part Approval Dimensional Results.

The Supplier must measure all characteristics according to the Curtiss-Wright drawing with results from all samples recorded on the Production Part Approval Dimensional Results form or equivalent.

All material tests results including but not limited to chemical analysis, case depths, and hardness measurement must be recorded on the Production Part Approval Material Test Results form or equivalent. If deviations are found from the Curtiss-Wright specifications are noted, the supplier will immediately notify the Curtiss-Wright assigned Supplier Quality Engineer.

6.4.6 Deviation Request for Specification Change

In the event a supplier cannot produce a product to the Curtiss-Wright’ product specifications, a formal deviation request must be completed and submitted to an authorized Curtiss-Wright’ representative for review. In order to determine if the design can accommodate a change to dimension/tolerance a capability study must be performed for each characteristic and get submitted with the deviation request. If the design allows deviation, the authorized Curtiss-Wright’ representative will provide a signed copy of the approval. This approval shall provide expiration timing and/or quantities until a formal change can be processed.

NOTE: Supplier SHALL NOT ship parts that are not PPAP approved or that do not meet design requirements without proper deviation approval. Supplier accepts all liability for costs, expenses, fees or losses related to such shipments that fail to meet this requirement.

Once all inspection and documentation is complete, send all paperwork and Samples to the Curtiss-Wright Supplier Quality Engineer.

6.4.7 Release of First Production Shipment

Once the supplier's PPAP submission has been approved in writing by Curtiss-Wright, the remaining pieces process capability run, or quantity agreed upon, may be shipped.

The supplier must provide process capability data for all parts having significant/design critical characteristics noted on the Curtiss-Wright drawing. A process potential (Ppk) > 1.67 must be met or 100% inspection of the affected characteristic(s) is required. Ongoing process capability (Cpk) > 1.33 must be maintained throughout production or 100% inspection of the affected characteristic(s) is required. Ongoing process capability (Cpk) data for each significant/design critical characteristic noted on the Curtiss-Wright drawing must be provided to the Curtiss-Wright assigned Supplier Quality Engineer upon request or on a regular basis determined by Curtiss-Wright.

Curtiss-Wright Quality Manager or other representative of Curtiss-Wright may verify first production capability by performing an independent analysis.
Curtiss-Wright, at its sole discretion, may grant interim approval of PPAP submissions based on requirement(s) that have not yet been met. A written plan and time line for compliance must be submitted and approved in writing by Curtiss-Wright. The supplier will be notified in writing of acceptance or rejection of the PPAP submission.
Upon full PPAP approval, the supplier may ship product according to the Curtiss-Wright purchasing agreement. Despite the lack of any formal request for submission by Curtiss-Wright, the supplier is responsible for and must review and update all items in the PPAP file to reflect the current production process.

PPAP records shall be maintained for the length of time that the part is active plus one (1) calendar year. Failure to meet the requirements of APQP, the PPAP or parts failures may result in administrative charges in addition to supplier's responsibility for all costs, expenses and losses related to such failures.

NOTE: Supplier SHALL NOT ship parts that are not PPAP approved or that do not meet design requirements without proper deviation approval. Supplier accepts all liability for costs, expenses, fees or losses related to such shipments that fail to meet this requirement.

6.5 Product, Packaging, Labeling and Delivery Requirements

6.5.1 Demand on Suppliers

An on-time delivery performance minimum rating of 97% is a requirement of any Curtiss-Wright Supplier. A rolling monthly forecast is available for all suppliers and can be electronically communicated to you upon request. It is important to note that forecasts are estimates and in no way represent a commitment by Curtiss-Wright to purchase any specific quantity of products or services. Forecasts are intended solely for the supplier's convenience in planning manufacturing and procurement and are subject to change at any time.

Purchase Orders received by our suppliers must be checked immediately regarding quantities and dates. Purchase orders must be acknowledged within 24 hours of receipt. Purchase orders not otherwise acknowledged within two (2) business days are considered binding as provided.

Deliveries must be affected within time specified. If supplier fails to make delivery by dates committed to as acknowledged on supplier's confirmation, the supplier will be responsible for premium freight. Buyer reserves the right to cancel all or any part of the underlined portion of Buyer's purchase order if supplier cannot make deliveries as agreed. Supplier shall not, without both parties' prior written content, manufacture in advance of reasonable flow time or deliver in advance of schedule.

It is the supplier's responsibility to analyze the transit times and ensure that expected delivery dates are met and that the product is at Curtiss-Wright on the date required on the Purchase Order. Shipments received up to 3 days earlier (5 days for overseas suppliers) than the Purchase Order Due Date are considered on time, any deliveries past expected delivery date considered late. Late deliveries are not acceptable.

It is the supplier's responsibility to assure products are economically packaged / palletized in a manner such that containers and their contents arrive at their final destination free from damage. Individual boxes cannot exceed 40 lbs.

It is the supplier's obligation to assure packaging, labeling, and palletization comply with all applicable laws and regulations.

6.5.2 Action Against Delivery Problems

All costs, expenses, or losses incurred due to late or inaccurate delivery are the responsibility of the supplier. This may include but not be limited to; premium inbound freight charges,

premium outbound freight charges, production overtime or downtime, and fees or penalties. Costs will be summarized in the Supplier Cost Recovery Notification and sent to the supplier contact for resolution.

6.5.3 Lead Time

Curtiss-Wright and the supplier will agree to the lead-time for the purchased product or service before the ordering process. Where lead-time is not formally agreed or specified on the quote, the lead-time will be seven calendar days or less.

Changes or anticipated changes in lead-time must be immediately communicated to the Curtiss-Wright Purchasing Department in writing.

6.5.4 Pull, VMI or Consignment

Curtiss-Wright is interested in implementing Pull, Vendor Managed Inventory (VMI) or consignment inventory to reduce lead-time and improve planning with the supplier. Contact your Curtiss-Wright Buyer/Planner for further discussions.

6.5.5 Traceability

The supplier's quality system must ensure that all products are traceable to raw materials or settings used in the manufacturing process, production operation, and date of manufacture, specification change level and records of evaluation of conformance.

All products must have a positive identification at all times to address these requirements via date codes, lot numbers or other commercially acceptable means. The supplier's quality system must ensure that all applicable quality records and data are traceable to the appropriate drawing revision level. Product shipped to Curtiss-Wright must follow the First in First Out (FIFO) Last in First out rules of inventory.

6.5.6 Packaging and Marking

All individual packages must be marked with standardized and bar-coded goods labels. Deviations from the packaging and labeling must be agreed upon in advance with Curtiss-Wright in writing. Program and product specific requirements will be provided in writing.

Packaging for all materials, components, supplies, parts returned from outside operations and tools must be sufficient to provide suitable protection against nonconforming conditions.

Individual cartons cannot exceed 40 lbs. Pallet shipments must be shrink-wrapped and labeled on a 48” x 40” pallet with heights not to exceed 42”.

It is the supplier’s responsibility to insure that parts have adequate packaging available and meet the specified packaging standards.

6.5.7 Bar Code Label Requirements

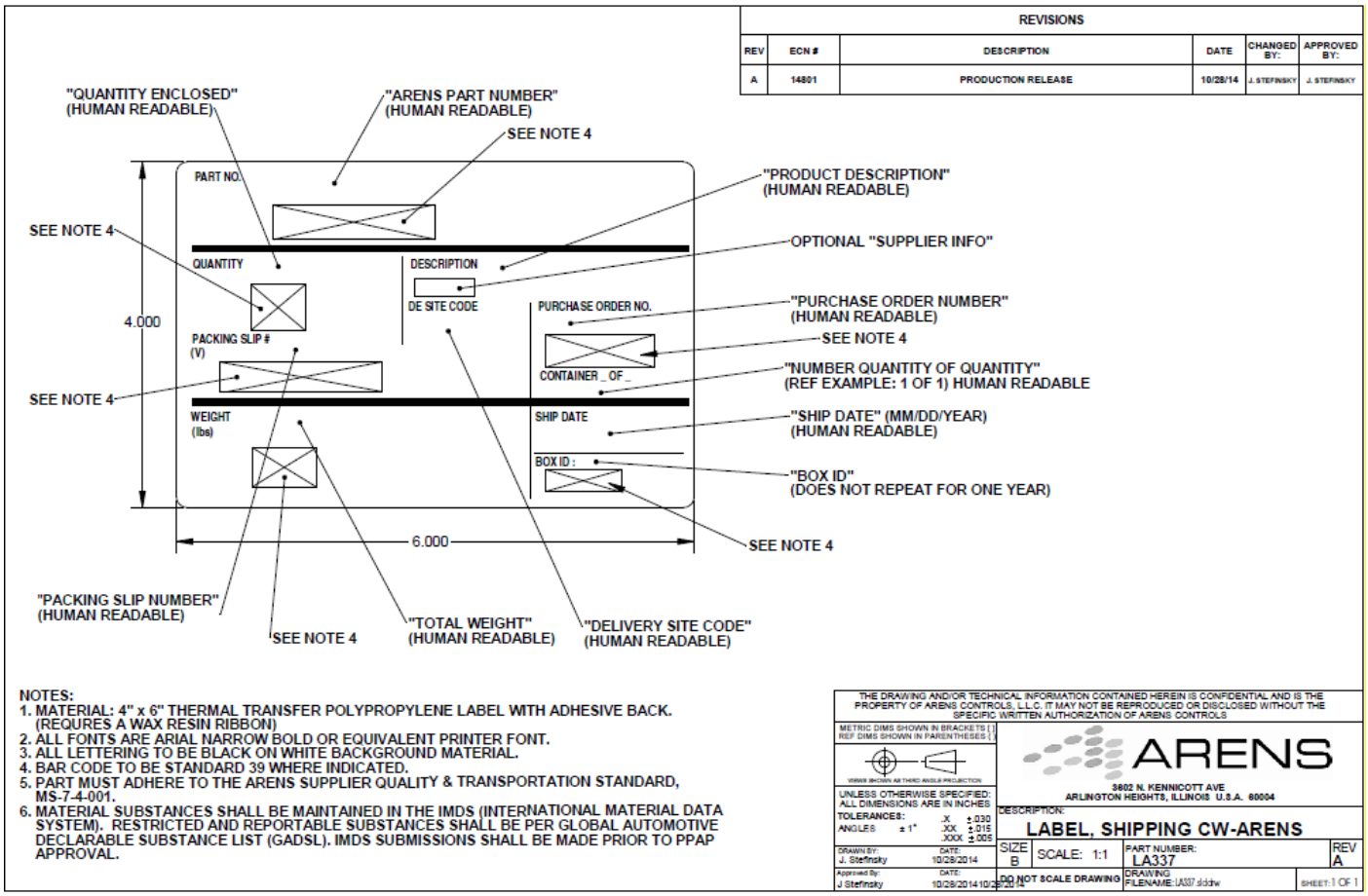
Efficient receiving and storage of materials requires incoming loads to be easily identified. Labels must be consistently placed, must not be obscured or covered by non-clear tape and/or banding.

6.5.8 Bar Code Labels

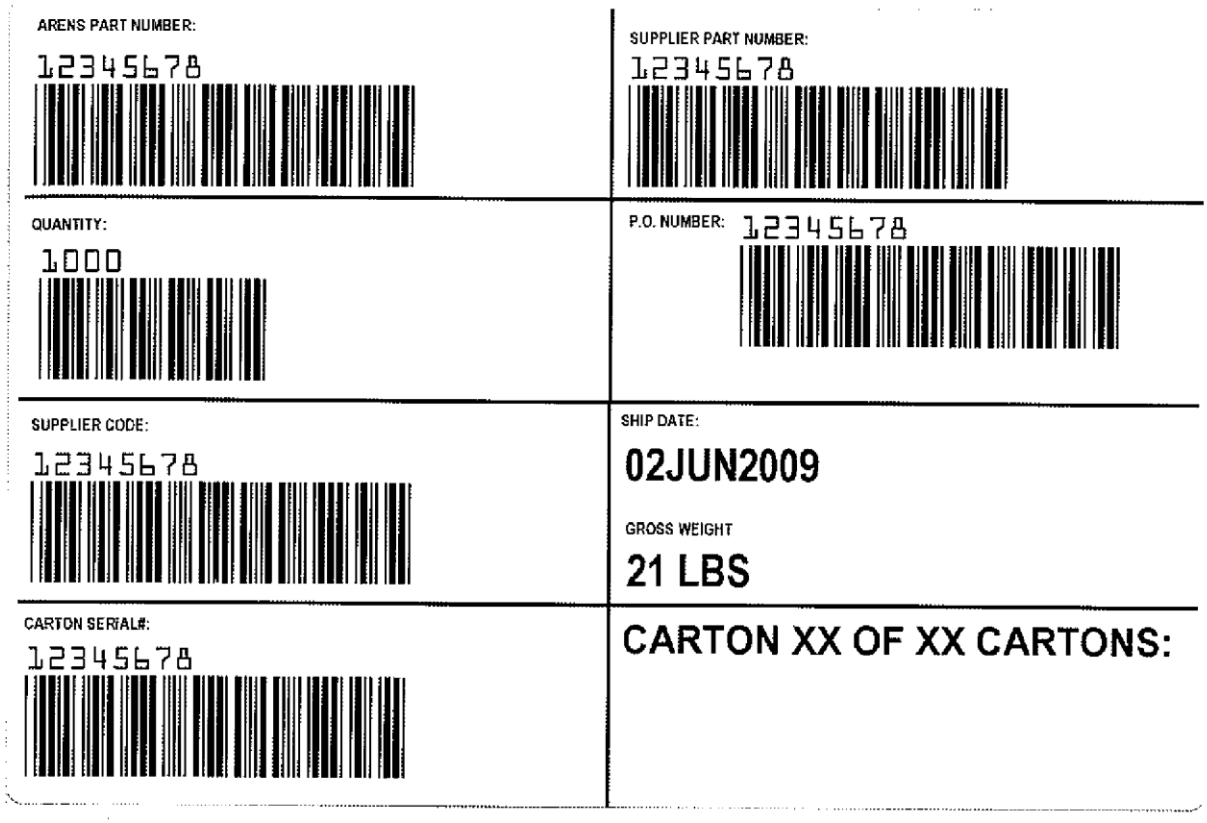
Labels are mandatory on every individual package inbound to Curtiss-Wright. All labels must be approved in testing phase prior to implementation.

The label requirements are identified on the most current revision of the CW-Curtiss-Wright Shipping Label drawing, LA337. Please contact Curtiss-Wright for additional information on Bar Code requirements (Exhibit 01).

Exhibit 1



Sample Packaging Bar Code Label


ARENS PART NUMBER:
12345678
SUPPLIER PART NUMBER:
12345678
QUANTITY:
1000
P.O. NUMBER:
12345678
SUPPLIER CODE:
12345678
SHIP DATE:
02JUN2009
GROSS WEIGHT
21 LBS
CARTON SERIAL#:
12345678
CARTON XX OF XX CARTONS:

6.5.9 ESD Packaging

All products requiring ESD protection shall be marked with compliant ESD handling labels on the unit and intermediate containers (Exhibit 02).

Exhibit 2

Sample ESD Sensitive Label

6.5.10 ESD Sensitive Product

ESD is one of the most pervasive hazards for electronic components. Virtually all electronic parts are susceptible to ESD damage in various degrees. Therefore, all electronic components will be treated as "ESD Sensitive" regardless of the component's actual ESD sensitivity. This assures that handling precautions are applied consistently. This strategy also eliminates confusion applying proper ESD protection techniques. Unless otherwise specified, all plastic based packing materials (bags, bubble-pack, foam, filler material, tape, and stretch wrap) used in packaging electronic components must be static dissipative as defined by the Electronics Industries Association (EIA) Standard No. 541. These bags must be sealed with an ESD sticker.

6.5.11 Limited Shelf Life Products

Limited shelf life products shall be clearly identified with an expiration date on the intermediate and lowest level packaging labels. Products with greater than 6 month’s shelf life must have at least 80% of shelf life remaining at the time of shipment.

6.5.12 Regulatory Requirements

Applicability of the following chemical content disclosure requirements shall be identified on the individual part specification and/or drawing.

6.5.13 IMDS (International Material Data System)

OEM automotive suppliers require their suppliers to use the IMDS to disclose and quantify the chemical and recycled content of the article and hazardous material of the products purchased and incorporated into the finished product.

Curtiss-Wright requires suppliers to utilize the IMDS for reporting and disclosing 100% substance and recycled contents prior to their PPAP submission.

Curtiss-Wright requires suppliers to certify that product is RoHS compliant.

The PPAP Part Submission Warrant (PSW) must identify the IMDS ID number or numbers and version in the comment section.

Also as part of the PPAP submission, suppliers are required to include a hardcopy receipts from IMDS containing the following verbiage.

- Article name
- IMDS ID#(s) and version #(s)
- Curtiss-Wright Part Number
- IMDS transmitted date
- Verbiage acknowledging the part or parts as “Accepted” by Curtiss-Wright.

Failure to submit “acceptable” data via IMDS and provide a hard copy receipts showing the data “acceptable” will result in the PPAP rejection.

Each supplier is responsible to contact EDS (the creator of IMDS), submit an online registration form to obtain access to the IMDS, and receive appropriate training on entering and receiving data via the system.
Information for the IMDS is available as follows:

- Website for IMDS is located at http://www.mdsystem.com/
- Curtiss-Wright IMDS ID# 23957

6.5.14 RoHS (Restriction of Hazardous Substances)

On January 27, 2003, the European Parliament issued a directive 2002/95/EC - RoHS “on the restriction of the use of certain hazardous substances in electrical and electronic equipment.” The RoHS directive became effective on July 1, 2006 and applies to new electrical and electronic equipment placed on the European market on or after July 1st, 2006. However, spare parts will continue to be available for products that were put on the market prior to that date. Below are listed RoHS exemptions and are subject to change; **Amendment 2005/717/EC, Amendment 2005/747/EC, Amendment 2006/310/EC, Amendment 2006/690/EC, Amendment 2006/691/EC, Amendment 2006/692/EC**

RoHS named six **hazardous substances** of immediate concern: lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB) and polybrominated diphenyl ethers (PBDE). It also provides for the addition of other hazardous substances, as soon as scientific evidence is available.

The maximum concentration values tolerated for the RoHS substances were established by amendment in 2005. Values are measured by weight at the homogeneous material level. The

maximum concentration value tolerated for lead, mercury, hexavalent chromium, PBB, and PBDE is 0.1% by weight in homogeneous materials and for cadmium is 0.01%.

6.5.15 RoHS Declaration And Labeling

Products meeting RoHS requirements shall be marked with compliant RoHS labels on the intermediate containers (Exhibit 03).

Exhibit 3

Curtiss-Wright requires suppliers to submit RoHS declarations prior to their PPAP submission. Declarations shall be submitted in the IPC-1752 format unless otherwise agreed to by the Curtiss-Wright RoHS Coordinator.

6.5.16 Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

As of June 2007, the European **Regulation (EC) 1907/2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH**) entered into force.

REACH affects all industries, including the Automotive Industry (AI). As the AI is made up of vehicle manufacturers and many tiers of the supply chain, it has several roles and obligations under REACH. Action is required from the OEMs and suppliers, some immediately and some over the coming 11 years and beyond.

In order to be prepared for REACH, representatives of all the major vehicle manufacturers and the automotive supply chain around the world developed an “Automotive Guideline on REACH” which can be used to get a quick overview of REACH, its requirements and the recommended actions arising. This guideline can be found at: www.acea.be/reach

6.5.17 REACH Compliance and Labeling

Products meeting REACH requirements shall be marked with compliant REACH labels on the intermediate containers (Exhibit 04).

Exhibit 4

6.6 Transportation

Failure to adhere to the following routing instructions may result in debiting transportation costs and administration charges. Costs will be summarized in the Supplier Cost Recovery Notification and sent to the supplier contact for resolution.

Shipping freight by a carrier not specified in theses instructions and/or approved by Curtiss-Wright' personnel, in writing, will result in a debit for the differential and a $250 administrative fee.

Shipping freight using an expedited transit level without written authorization will result in a debit for the differential and a $250 administrative fee

6.6.1 Domestic Shipping Requirements

Unless Otherwise Directed By Curtiss-Wright Personnel. Surface shipments 70# or less – Ship via UPS ground collect billing. No cash on delivery (C.O.D.), UPS AIR, Insurance or prepaid UPS shipments allowed unless otherwise directed in writing. If the total shipment weight exceeds 70 lbs., you must ship using a LTL carrier referenced below. Curtiss-Wright will no longer pay prepaid and add freight charges on material invoices. Purchase order number should be used as the reference number on all UPS shipments.

Less than Truckload shipments (LTL) - Shipments that are over 70 lbs and require pallets should be shipped freight collect by the following carriers:

6.6.2 International Shipping Requirements

All small package inbound international shipments or freight less than 150 lbs (70 kilos) – ship FedEx International. Call 800-GO FEDEX. Purchase order number should be used as the reference number on all FedEx shipments.

All other inbound international shipments should ship Expeditors International. Contact your local office or visit Expeditors.com.

International shipment invoices must include the following information:

- Seller name and address
- Buyer name and address
- Manufacturer (or supplier) of each item – including name and address
- Country of Origin
- Purchase Order Number
- Harmonized Tariff Schedule (HTS) – as indicated on Purchase Order

Any fees associated with amendments of import documentation will be debited to the supplier.

6.2.3 Bill Of Lading Requirements

The Bill of Lading (BOL) should show a breakdown of the number containers, material description and the weight. Shipments are to be freight collect unless otherwise directed by Curtiss-Wright Controls. Supplier responsible shipments are to be freight prepaid, FOB destination.

6.2.4 General Information

Curtiss-Wright receiving dock hours provided to suppliers by each Curtiss-Wright facility. Curtiss-Wright will issue after hours authorization, if shipments are required outside of this time frame. If the shipments received after hours are not pre-authorized, the supplier may be responsible for any storage, handling, or freight charges that Curtiss-Wright may incur. It is the supplier's responsibility to insure that Curtiss-Wright Controls' material requirements are shipped to be received by the dock date on the purchase order.

7.0 Change Management

7.1 Customer Notification

Supplier shall notify the authorized Curtiss-Wright representative of any planned changes to the design, process, or site at least 3 months prior to those changes being made. Examples are indicated in the bullets below.
Upon notification and approval of the proposed change by the authorized Curtiss-Wright representative, and after change implementation, PPAP is required unless otherwise specified.

- Use of other construction or material other than was used in the previously approved part or product.
- Production from new or modified tooling (except perishable tools), dies, molds, patterns, etc. including additional replacement tooling.
- Production following upgrade or rearrangement of existing tooling or equipment.
- Production from tooling and equipment transferred to a different plant site or from an additional plant site.
- Change of supplier for parts, non-equivalent materials, or services (e.g., heat treating , plating)
- Product produced after the tooling has been inactive for volume production for 12 months or more.
- Product and process changes related to components of the production product manufactured internally or manufactured by suppliers.
- Change in test/inspection method – new technique (no effect on acceptance criteria).
- Additionally, for bulk materials:
    - New source of raw material from new or existing supplier
    - Change in product appearance attributes

7.2 Product/Process Change Notification Data Requirements (PCN)

All product and or process changes must be communicated prior to them taking affect. No changes shall be made with the appropriate approvals from Curtiss-Wright. All requests shall be submitted electronically on a product/process change notification and submitted to the applicable Curtiss-Wright buyer.

7.2.1 PCN Documentation Format

Documentation should be provided in one of the following formats or as agreed to by the applicable Curtiss-Wright representative in writing:

a. A Microsoft Word Email attachment
b. An Adobe Acrobat file Email attachment

7.2.2 PCN Documentation Content

Change notice documentation must contain the following as appropriate:

a. Detailed description of change
b. A reference number
c. Reason for the change
d. Cost impact
A supplier contact (Name, phone, fax, email)
e. Planned implementation date
f. For discontinuations include:
Last-Time-Buy date and Replacement Part numbers
g. Anticipated impact on Quality and Reliability
h. Required inventory action
i. Method of identifying changed product
j. Provide complete manufacturer part numbers. (Not families)
k. For obsolescence, provide part number, replacement number, and last time buy date.

8.0 Improvements

8.1 Continuous Improvement Process (CIP)

Suppliers must establish, maintain and document a continuous improvement process with the focus on quality, delivery, inventory, service and cost reductions. Curtiss-Wright, together with our customers, requires that these important activities be supported throughout the supply chain. This will enhance our collective abilities to increase our pursuit of market penetration, with the focus on sustainable growth.

Continuous improvement activities must meet the intent of ISO/TS 16949, (IATF 16949) (Reference Guidelines for Quality Improvement ISO 9004-4).

8.2 Preventive/Continuous Improvement Process Activities

CIP is a continuous activity designed to achieve cost reductions along with improvements in quality and processes.

The supplier must establish and maintain documented procedures for a system of preventive measures and continuous improvement activities. Programs to improve operational areas as

well as commercial and technical functional areas must be implemented and maintained within the supplier's system. The system serves to locate and document any potential faults. Appropriate measures will be taken in order to reduce the degree of risk and extent of potential sources of deficiency. Results must be made available upon Curtiss-Wright request.

Tools recommended for this purpose include but are not limited to:

- LEAN (5S-Understanding Waste-Visual Management-Institutionalized Processes-Error Proofing-Value Stream Mapping-Kaizen)
- Risk Analysis
- FMEA
- Statistical planning of trials
- FEA - Finite Element Analysis/DOE - Design of experiments
- Examination of test and measuring capability
- Investigation of process capability
- Supplier assessment
- Problem solving techniques
- Benchmarking
- VA-Value Add/VE-Value Engineering

8.3 Nonconformance and Corrective Action Management

8.3.1 Conditions of Acceptance

The products or services supplied will be accepted only if they fulfill the parameters specified in the valid drawings or technical supplier requirements. Damaged or contaminated parts, or deficient or defective parts will not be accepted and will be returned at the expense of the Supplier. Supplier must contain all non-conforming parts within its facility prior to shipment. Supplier expected fallout due to tool age or other contributing factors, to the manufacturing process must be specified in writing and approved in advance by Curtiss-Wright. The non-conforming product fallout request must include supplier and Curtiss-Wright part numbers, potential quantity affected, plan and timing for correcting the problem and requires approval by Curtiss-Wright prior to shipment. A copy of the approval must be included with each shipment of the affected production parts to Curtiss-Wright.

Curtiss-Wright will notify the supplier immediately via phone and or e-mail of any problem associated with services or products supplied. All costs, expenses or losses whether directly or indirectly related to a quality issue, deficiency or failure, are the responsibility of the supplier. The supplier shall acknowledge that Curtiss-Wright will not inspect incoming goods for compliance with specifications. The supplier, to this extent, shall waive any objections to a delayed notice of an identified defect in Curtiss-Wright inventory.

In the event of a notification of a problem supplier will:

- E-mail Supplier Correction Action Request (SCAR) notification with immediate containment and response actions (within 24 hours of notification).
- Immediately form an improvement team.
- Immediately initiate an investigation.
- Conduct a Root Cause analysis and report initial findings within 48 hours of notification.
- Develop a Corrective Action Plan within (5) business days of original notification.
- Implement permanent corrective actions.
- Evaluate the effectiveness of the corrective actions.
- Provide an update of all quality documents.
- Communicate a Preventive action plan and implementation timeline.
- Provide final reporting within ten (10) business days of original notification. This process conforms to the 8-D process of corrective actions. Reference Schedule A for further detail.

8.4 Quality Costs

Quality costs are the responsibility of each company within the supply chain. Curtiss-Wright has instituted a program that quantifies costs arising from a supplier responsible non-conformity. Costs will be summarized in the Supplier Cost Recovery Notification and sent to the supplier contact for resolution. Suppliers are liable for all costs, expenses and losses related directly or indirectly to supply issues.

Where containment is required at Curtiss-Wright or Curtiss-Wright customers, a 3rd party sorting company may be contracted by the supplier of the nonconforming material. Suppliers are liable for all costs, expenses and losses related directly or indirectly to supply issues.

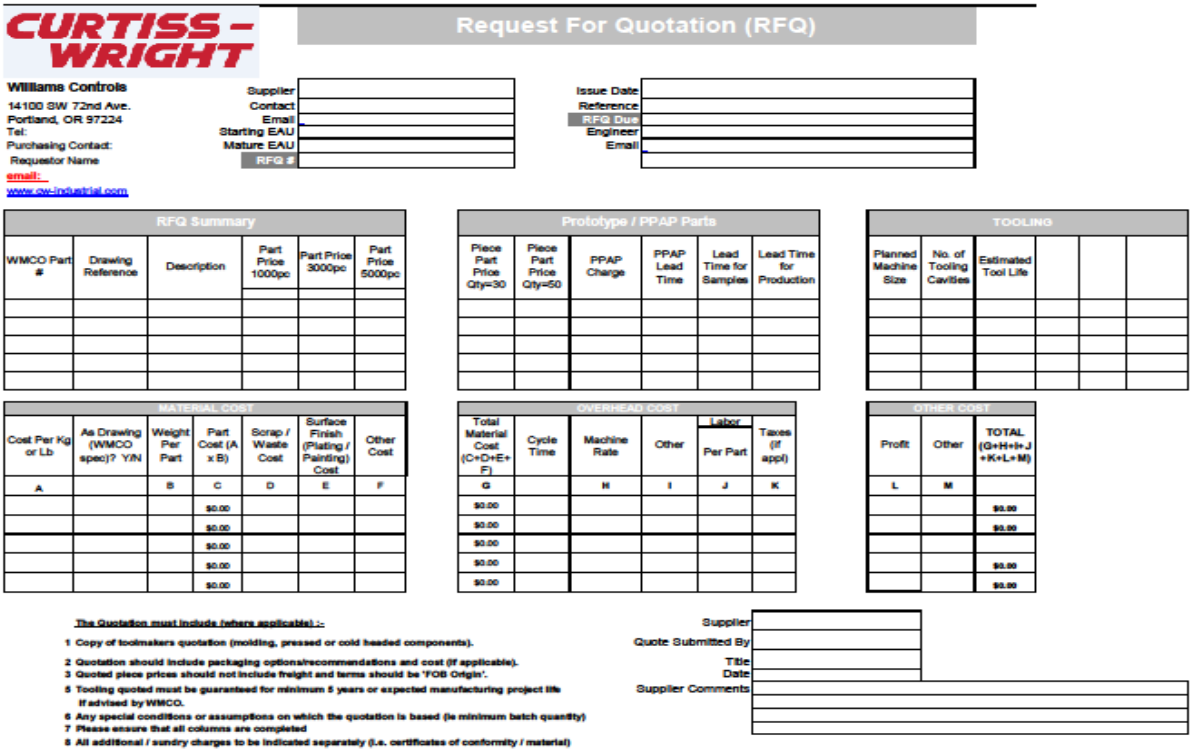
9.0 Glossary of Terms

8 – D	Reported Method of Problem Resolution Process
AAR	Appearance Approval Report
AIAG	Automotive Industry Action Group
APQP	Advanced Product Quality Planning
CIP	Continuous Improvement Process
Cmk	Index for machine capability
Cpk	Index for ongoing process capability
DFMEA	Design Failure Mode and Effects Analysis
DOE	Design of Experiments
EMS	Environmental Management System
ESD	Electro-Static-Discharge
FEA	Finite Element Analysis
FIFO	First in First Out
FMEA	Failure Mode and Effects Analysis
IMDS	International Material Data Systems
ISO/IEC 17025	International Organization for Standardization, Management requirements and technical requirements to address the competence of staff, methodology and test/calibration equipment.
ISO/TS-16949	International Organization for Standardization Technical Specification
MSA	Measuring Systems Analysis
PBB	Polybrominated Biphenyls
PBB	Polybrominated Diphenyls Ethers
PFMEA	Process Failure Mode and Effects Analysis
PPAP	Production Part Approval Process
Ppk	Index for preliminary process capability
PSW	Part Submission Warrant
QMS	Quality Management System
QSA	Quality System Assessment
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
RoHS	Restriction of Hazardous Substances
SCAR	Supplier Corrective Action Request
SPC	Statistical Process Control
UL	Underwriters Laboratories
VA/VE	Value Add/ Value Engineering

If you have any questions about this Guide, please contact you applicable representative at Curtiss-Wright

Appendixes

Appendix A – Request for Quote (RFQ)



CURTISS-WRIGHT

Request For Quotation (RFQ)

Williams Controls
14100 SW 72nd Ave.
Portland, OR 97224
Tel:
Purchasing Contact:
Requestor Name
email:
www.cw-industrial.com

Supplier
Contact
Email
Starting EAU
Mature EAU
RFQ #

Issue Date
Reference
RFQ Due
Engineer
Email

RFQ Summary

WMCO Part #	Drawing Reference	Description	Part Price 1000pc	Part Price 3000pc	Part Price 5000pc

Prototype / PPAP Parts

Piece Part Price Qty=30	Piece Part Price Qty=50	PPAP Charge	PPAP Lead Time	Lead Time for Samples	Lead Time for Production

TOOLING

Planned Machine Size	No. of Tooling Cavities	Estimated Tool Life			

MATERIAL COST

Cost Per Kg or Lb	As Drawing (WMCO spec)? Y/N	Weight Per Part	Part Cost (A x B)	Scrap / Waste Cost	Surface Finish (Plating / Painting) Cost	Other Cost
A		B	C	D	E	F
			$0.00			
			$0.00			
			$0.00			
			$0.00			
			$0.00			

OVERHEAD COST

Total Material Cost (C+D+E+F)	Cycle Time	Machine Rate	Other	Labor Per Part	Taxes (if appl)
G		H	I	J	K
$0.00					
$0.00					
$0.00					
$0.00					
$0.00					

OTHER COST

Profit	Other	TOTAL (G+H+I+J +K+L+M)
L	M	
		$0.00
		$0.00
		$0.00
		$0.00

The Quotation must include (where applicable) :-

1 Copy of toolmakers quotation (molding, pressed or cold headed components).
2 Quotation should include packaging options/recommendations and cost (if applicable).
3 Quoted piece prices should not include freight and terms should be 'FOB Origin'.
5 Tooling quoted must be guaranteed for minimum 5 years or expected manufacturing project life if advised by WMCO.
6 Any special conditions or assumptions on which the quotation is based (ie minimum batch quantity)
7 Please ensure that all columns are completed
8 All additional / sundry charges to be indicated separately (i.e. certificates of conformity / material)

Supplier
Quote Submitted By
Title
Date
Supplier Comments

Appendix B – Part Cost Breakdown

CURTISS-WRIGHT

Part Cost Breakdown

Quote in US Dollars

Date:
Supplier:
Project No:

PART NUMBER	REV NO.	MATERIAL COST				DIRECT LABOR COST	SUB-CONTRACTED COST (fill in operation)			TOTAL UNIT PRICE (Including OH and Profit)	VAT (%)	MOQ (optimum)	SETUP TIME	PRODUCTION LEADTIME
		Specification	Price/Kg	Part Wt.	Price/Part									

Notes:

- PPAP samples = 30 pcs
- PRODUCTION VOLUME FORCAST
  - Launch 10K
  - First Year 50K
  - Second Year 100K
  - Third Year 120K

Tooling Cost Breakdown

PART NUMBER	REV NO.	TOOLING (INCLUDING FAI AND SAMPLES)			TOTAL TOOLING	VAT (%)	LEADTIME
		Material	No Cavities	Life			

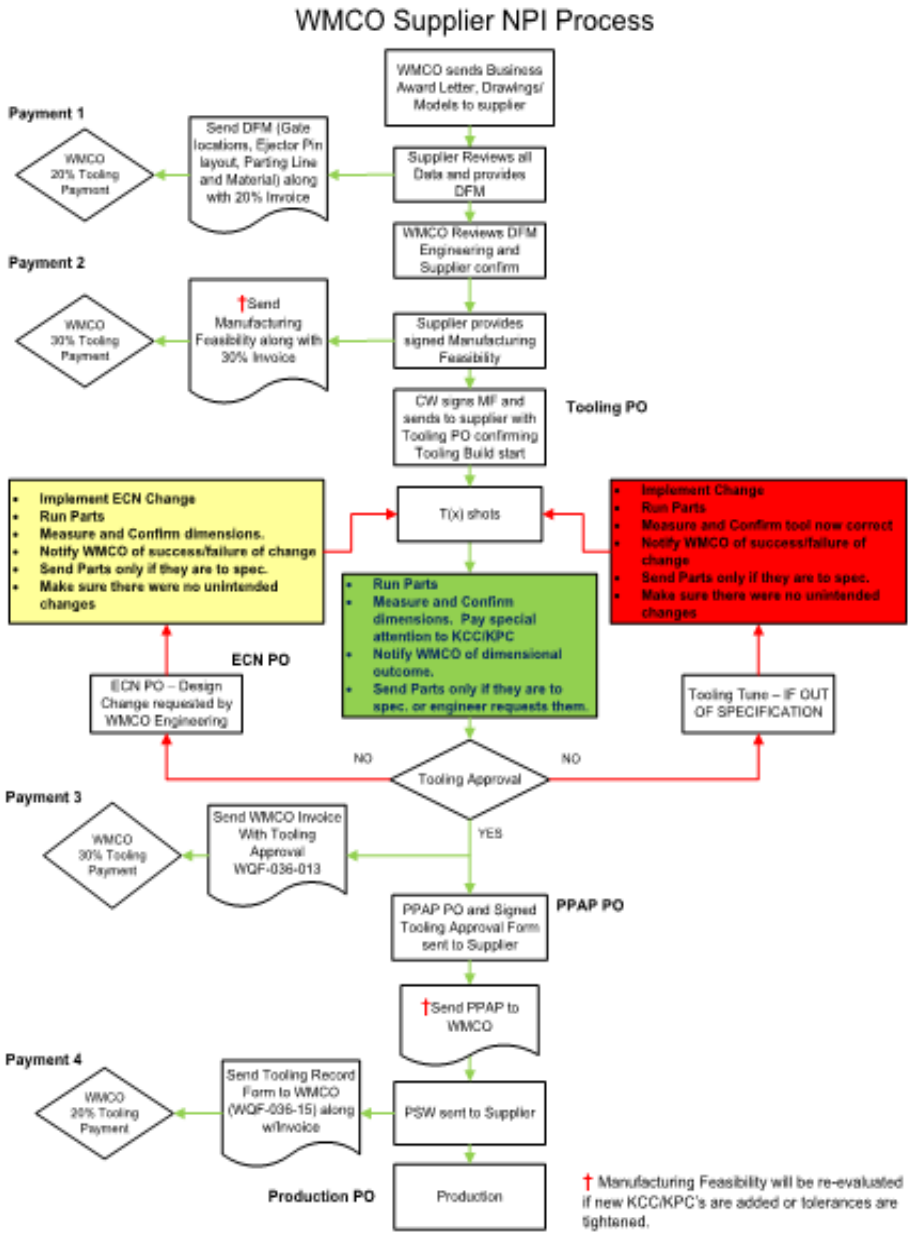
Name: _____

Title: _____

Signed: _____

Date: _____

Appendix C – Supplier NPI Process



Appendix D – Supplier Shipment / Payment Authorization

CURTISS-WRIGHT

PROCEDURE NAME: SUPPLIER SHIPMENT/PAYMENT AUTHORIZATION **DEPARTMENT:** 036

DOCUMENT NUMBER:	WQF-036-016	REVISION LEVEL	A	DATE EFFECTIVE:	5/8/2009	DAF #:	713
QEMS REPRESENTATIVE:	Richard Monday	Process Owner		Chris Fredericks	DEPARTMENT MANAGER:	Sajid Parvez	

Data (Inprocess Inspection Sheets, Final Inspection Sheets, ect...) should be readily available for verification

SUPPLIER: _____ **Part #:** _____ **DATE:** _____ **Invoice:** _____

PO #(S): _____ **LOT #(S):** _____

REVISION CONTROL

PO REV: _____ PPAP REV: _____ MASTER SAMPLE REV: _____

PART HISTORY

Past Performance

Any Open NCM/CARs? ☐ No ☐ Yes, Verify problem is not present in this shipment

Any closed NCM/CAR's since last shipment ? ☐ No ☐ Yes, Verify problem is not present in this shipment

Is the Tooling Maintenance Record up to date? ☐ No ☐ Yes, What Changed?

Have any of the following occurred since last PPAP?

- Any process changes? ☐ No ☐ Yes, What Changed? _____
- Any tooling changes? ☐ No ☐ Yes, What Changed? _____
- Any material changes? ☐ No ☐ Yes, What Changed? _____

APPEARANCE VERIFICATION

Is the surface appearance (Smoothness, gloss, lack of surface defects) the same as sample? ☐ No ☐ Yes ☐ **Verified**

If No, please explain the difference. _____

PROCESS and DIMENSIONAL VERIFICATION			WMCO AUDIT
How many inspection points are there for this part in the CONTROL PLAN?			☐ Verified
INPROCESS inspection was performed on features and at frequencies defined in the control plan?	☐ No	☐ Yes	☐ Verified
• INPROCESS inspection data for these lots are available for review?	☐ No	☐ Yes	☐ Verified
• Are any of the INPROCESS inspection points out of specification?	☐ No	☐ Yes	☐ Verified
If any Destructive testing was performed on KCC dimensions, were the results within specification?	☐ No	☐ Yes	☐ Verified
PART MEETS PRINT	☐ No	☐ Yes	☐ Verified

Comments:

Supplier Certification of Compliance

On the basis of the inspection data, I request authorization to ship these parts to WMCO Portland.

Supplier Rep. _____ Title _____ Stamp

WMCO Verification of Compliance

On the basis of verification of selected inspection data, I authorize the shipment of parts to WMCO Portland

WMCO Rep. _____ Title _____ Stamp

Comments:

Appendix E – Tooling Approval Form

WILLIAMS CONTROLS		PROCEDURE NAME:		DEPT:		036	
		Tooling Approval Form					
DOCUMENT NUMBER:	WQF-036-013	REVISION LEVEL:	D	DATE EFFECTIVE:	10/28/10	DAF#	670
QEMS Representative	Richard Monday	Process Owner	Sajid Parvez	Department Manager		Sajid Parvez	

Supplier to fill out grey areas. Send back with FAI report and numbered drawing to Williams Controls.

Williams Controls Part Number			**Revision Level:**		
Part Description			**WMCO Project Number:**		
Supplier Name :					
Type :	Full FAI ☐		Repeat FAI ☐		Partial FAI ☐
Reason for FAI	New Part / New Drawing ☐		Change of Source or Location ☐		Change of Manufacturing Method ☐
	Engineering Change Request ☐		Request by Williams Controls ☐		☐

Supplier Declaration:

This is to certify that the information on this FAI on is a true record of parts made on production tooling and machinery and that an initial capability study was done on 5 parts.

Name:		Signature:		Date:	
Position:		E-Mail:		Phone :	

List all dimensions / notes that are REJECTED on the FAI. All REJECT dimensions must be agreed upon by the Williams Controls Design Engineer and the supplier BEFORE tooling is approved.

Dimension/Specification: *Please use the number from the numbered drawing that corresponds with out of specification dimension*	**Actual**	**KCC/ KPC**	**Approved**	**Not Approved**	**Action Item** Drawing Change	**Action Item** Tooling Change	**Action Item** Re-Measure
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐
		☐	☐	☐	☐	☐	☐

FA Accepted ☐ **FA Rejected** ☐	**Signed WCI Engineer:**	**Date:**	
Comment:			

Appendix F – Manufacturing Feasibility

CURTISS-WRIGHT		PROCEDURE NAME:	Manufacturing Feasibility	DEPT:	036		
DOCUMENT NUMBER:	WQF-036-014	REVISION LEVEL:	D	DATE EFFECTIVE:	06/28/16	DAF#	671
QEMS Representative	Chris DeVencenzi	Process Owner	Sajid Parvez	Department Manager	Sajid Parvez		

Supplier Name: Part Number: Rev Level:

Manufacturing Feasibility is the commitment by a supplier to Williams Controls, Inc. (WMCO) that a proposed design can be manufactured, assembled, packaged, and shipped at a level that meets expectations.

Please identify your concerns and/or proposed changes to enable you to meet the specified requirements in the space provided on the next page. Please number your comments, exceptions or concerns to correspond with the questions below.

	Yes	No	Considerations
1.	☐	☐	Is the part adequately defined (dimensions, notes and tolerances) to enable manufacturing?
2.	☐	☐	Are you using the specified material and can you easily procure it?
3.	☐	☐	Are there any extra-ordinary features that may cause a problem? If yes, please highlight on the drawing and attach.
4.	☐	☐	In your review of the WMCO drawing, did you find any tolerancing that is not within industry standards? Please identify on the drawing and attach.
5.	☐	☐	Can all identified Key Characteristics (KCC/KPC) be measured and tracked during production?
6.	☐	☐	Will functional gauging/fixturing need to be developed to perform the required in-process measurement on the KCC/KPC? If yes, please identify and give an estimated cost.
7.	**Are you prepared to make parts with key characteristics at a Cpk ≥1.33 by the following:**		
	☐	☐	Stabilizing your process with a minimum run of 300 parts?
	☐	☐	Minimizing your process variation?
	☐	☐	Producing less than 64 non-conforming parts per million? (This means zero non-conforming parts within your sample).
8.	**If during PPAP and production runs, the Cpk on the KCC/KPC dimensions fall below 1.33 are you willing to perform the following tasks until the Cpk ≥ 1.33:**		
	☐	☐	100 percent in-process inspection on the KCC/KPC dimension?
	☐	☐	Track process variation by using x-bar and R charts (SPC)?
9.	**Packaging requirements will either be specified by WMCO or recommended by Supplier**		
	☐	☐	If specified by WMCO, can you meet the requirements?
	☐	☐	Do you have a Packaging specification and have you provided it to WMCO?

Manufacturing feasibility sign off is required for each WMCO revision level.

Appendix G – Business Award Letter

Curtiss Wright/Williams Controls
14100 SW 72nd Avenue
Portland, Oregon 97224
Phone: 503-684-8600
Fax: 503-684-3876

Business Award Letter **Date**

RE:

Dear

I am pleased to inform you that your company, <company>, has been selected to receive the award for the following item(s) per your quote dated: <date>

Products

#	Part #	Rev.	Description	Material	Price w/VAT (US$)	Lead-time

* Please note the change in price of this part number.

Upon successful review and acceptance of design for manufacturing, model files, prints, and other required documentation by both companies; Williams Controls will issue formal Tooling /PPAP and Production Purchase Orders.

Project Schedule
Our Customers' expectations and Program Schedule require the following delivery dates and milestones:

- PPAP Package and 100 piece PPAP samples submitted (dock date):
- Production Launch date:

Payment Terms

- **Production Parts**
  - Net 90 or 1.5%/15 days

Thank you very much for your interest in participating with Williams Controls on this project. We look forward to working with you and your team.

Sincerely,
Vladimir Tsimberg
Supply Chain Manager-Arens/Williams

1